

A VISION FOR SCIENCE AND SOCIETY

The Academy of Social Sciences' response to the DIUS consultation

Introduction

The Academy of Social Sciences welcomes the opportunity to respond to the DIUS consultation document on 'A Vision for Science and Society'. The Academy of Social Sciences comprises 500 distinguished social scientists as Academicians and 35 Learned Societies, all of whom are knowledgeable in the field of science and society. The Academy welcomes the DIUS' commitment to high quality engagement with the public on science issues and the inclusion of social science disciplines in the definition of science. Nevertheless, we are concerned that the wealth of social science knowledge and research has not been drawn upon as there is only limited reference to the social sciences in the report. We demonstrate how the inclusion of social science knowledge in the Department's vision would enhance its objectives. Social sciences are an integral part of 'Science' and our definition of 'scientists' includes social scientists.

Questions

Q1. What steps can we take to co-ordinate better or streamline science and society activity to make it more effective?

Science, Society and Policy are neither isolated nor homogeneous and this is an important recognition (paragraph 3.5). The implications need to be further developed since separating the three aspects is inappropriate as there is interaction and overlap. There is also huge diversity within "Science" and within "Society" and the heterogeneous, dispersed nature of science is key.

There are different views on various aspects of science (eg animal experiments may be regarded negatively, whilst the Large Hadron Collider is seen positively). The wealth of publications about popular science demonstrates the extent of public interest. The diversity of views about science (for example disliking the idea of GM foods does not imply hatred of all science) suggests that streamlining science and society activity is not necessarily appropriate. Diversity should be encouraged and the 'co-production' of knowledge as being developed by, for example, the ERSC through its new forms of public engagement enhanced. In our '*Developing Dialogue*' joint report with the ESRC (June 2008; to be republished by Taylor and Francis December 2008) we have presented evidence of this approach. Engagement in the early stages of the research process – often referred to as 'upstream' engagement – needs especially to be encouraged.

Diversity rather than uniformity needs to be recognised and encouraged, if public interest is to be maintained. In today's society people value debate and controversy, as the success of Wikipedia testifies.

Q2 How should we measure progress? What indicators do we need to measure success?

There is now considerable scepticism among the general public about the notion of 'progress'. Trying to identify what is meant by 'progress' or success is complex and it would be more appropriate to focus on 'success' in terms of public engagement. There are examples of where public views have shaped public policy, eg the UK's legal framework for medical genetics. More social science research could usefully examine the effects of public engagement on specific issues. If funds are made available for evaluation studies the social scientific research community would be able to conduct this research.

A society excited by and valuing science

Q3 How can scientists further improve and professionalise engagement with the public?

The Academy of Social Sciences strongly endorses the importance of two-way engagement - the point made in paragraph 4.10. At other points in the document, there are suggestions that the role of the public is as a consumer of scientific knowledge rather than an active participant. To be effective 'engagement' should be more than either 'communication' or 'consultation'. We welcome the work the Beacons of Public Engagement are doing in the 'co-production' of knowledge. 'Improving and professionalising' public engagement can only be achieved through developing dialogue. This requires all parties, including policy makers and politicians, to develop dialogue about how the process can be strengthened.

Professor Bryan Wynne AcSS has called for 'uninvited engagement' as opposed to the 'invited engagement' characterised by involvement of government and similar official bodies. In this respect, it is clear that much successful engagement already takes place. Equally 'excitement' with science should not be taken to mean only positive support. Engagement of members of the public in debates about the direction and outcomes of science is also a healthy element of functioning democracy. The environmental movement is a good example of public engagement, with scientists working in environmental NGOs. Major forums where public engagement on science issues already take place, particularly including a mix of natural and social scientists. Such funded activities could be a cost effective way of promoting informed engagement.

'Science' is not value neutral but works through controversy and 'contestation'. Topics like climate change, GM foods, or nanotechnology, raise social and ethical issues as well as scientific ones. Interest and pressure groups provide the most effective engagement. It is therefore ironic that the views of such groups are often rejected as being special pleading or from an unrepresentative interest group. Recognising the fact that judgements in areas of applied science are essentially political (with a small 'p'), and engaging with, and drawing on, the debates which put science into this political context is a challenge for the Department, as we see it.

The role of 'expert' intermediary bodies and organisations in improving and professionalising public engagement should also not be ignored. The Learned Societies, specialist Institutes and research centres represent a greater aggregate level of informed thinking and can complement wider public views obtained through the use of polls and focus groups. The Academy of Social Sciences has identified how it could contribute to engagement with policy makers and the wider public in its report 'Developing Dialogue' (June 2008).

The ESRC's programme on *Science in Society* discussed the need to "distinguish between the need for ('upstream') public accountability of the assumed ends and purposes of scientific research, and public engagement only with the science of ('downstream') risks and other anticipated consequences." (Brian Wynne *Afterword* in M Kearnes, P Macnaghten and J Wilsdon, *Governing at the Nanoscale*, p 71, Demos 2006). Improving and professionalising public engagement requires a greater emphasis on upstream engagement. The Research Councils could produce such 'upstream' activity. The Third Report of the House of Lords Select Committee on Science and Technology, which focused on Science and Society (23 February 2000), recommended that "the Research Councils should do more to involve stakeholders and the public in the wider task of setting the priorities against which particular grants are made" (Paragraph 5.78). It is also important that lay forms of understanding have validity. The Newcastle Beacon is reaching out to communities and trying to understand the interplay between lay and expert knowledge.

Q4 How should high quality engagement be recognised and rewarded?

Public engagement activities undertaken by scientists should be more formally recognised as we noted in *Developing Dialogue* since we found that the RAEs acted as a way to limit public engagement. The British Academy report chaired by Sir Alan Wilson AcSS, FBA, FRS, (*Punching our weight: the humanities and social sciences in public policy making*) recommends that "Universities should examine their criteria for academic promotion, with a view to including public policy engagement (and engagement with other research users) as a factor to be taken into account (as appropriate to the discipline)" (R9). The House of Lords report also made a similar recommendation: "We recommend that the Higher Education Funding councils give serious and urgent thought to rewarding, if necessary through a separate funding stream, the work of those who have successfully brought the results of their research to a wider audience" (paragraph 3.32).

Q5: How can the scientific and policy communities make science more interesting for the public and particularly for those difficult to reach groups?

We understand that this issue has been addressed at length by groups such as the Science Communication group at Imperial College, London. We note in paragraph 4.12 that only 12% of the respondents of the survey said they were not particularly interested in or even distrustful about science and science issues: this is remarkably small, demonstrating that 88 percent are interested. Clearly, the sales of popular science books, TV and radio programmes and through newspaper articles and the internet demonstrate further new forms of public engagement.

Q6: What contribution can science centres make to the science and society agenda?

Not applicable

Q7 How can the media better support society's need for balanced information that accurately portrays the nature of science and improves scientific literacy? and: Q8 How can the lack of quantity and breadth of science television on terrestrial and other channels be addressed?

Our member learned societies are all involved in new forms of public engagement as evidenced in our *Developing Dialogue* report (see appendices for further information). The Academy would be happy to provide further details if that were helpful.

Q9 How can new technologies help empower all people, especially minorities and those currently excluded, to contribute ideas and opinions to scientists and decision-makers?

The best way of finding out how new technologies can help empower excluded groups is to develop dialogue with individuals within these groups, using social science research. Poverty is usually a key factor in exclusion and people may not have the funds to buy new technologies for the home or to access science centres such as Newcastle's *Centre for Life* or Hampshire's *Intech*.

Another barrier to public involvement is scepticism about the capacity of various social groups to influence policy and about consultation not leading to change. Politicians and policy makers need ensure good feedback to those who have been engaged in the process.

Q10: How can business better engage with society and policy makers about the development and use of science in everyday life?

Business is now a fundamental part of the knowledge economy and the evidence from the social sciences could help in understanding these relationships between society, policy and science as we have mentioned in answer to Q1.

Q11: How can policy makers better engage with society about the development of science?

What constitutes the direct policy arena is contested. There are important parts of the policy environment, such as *Sciencewise*, *the Council for Science and Technology* and *the Science Council* that make vital contributions. *Sciencewise* engages with society over the implications of emerging issues. Its remit could be broadened to include the social and cultural aspects of the spread of innovative ideas.

In a globalised world what constitutes the relevant 'society' has become more complex. The internationalisation of science activity and policy making, with some decisions for example now being taken by the EU, influences how this may be understood.

Q12 How can we capture emerging issues effectively and feed into the communication and engagement process?

Additional topics could usefully be added to the list in paragraph 4.18, e.g. sustainable development and climate change, and the Research Councils UK could capture emerging issues. Informal dialogues take place within and between overarching bodies such as the Royal Society, the British Academy, the Academy of Social Sciences, NGOs, and newspapers. Experts can feed back into the overarching bodies when emerging issues are detected so that, if necessary, they can be championed. The DIUS' horizon scanning unit should be open to contributions from the social sciences. *Sciencewise* could also fulfil the role of listening to other bodies and engaging with them. The UK Statistics Authority is open to discussion, monitors the media and places a list of items on its website and this experiment in openness could be imitated.

A society that feels confident in the use of science

Q13. How can we embed and communicate the principles of responsible scientific practice and ethics?

This is a question for the scientific community and its professional bodies. All the Learned Societies in the social sciences have their own Ethical Codes, as do the ESRC. We endorse the points made in paragraph 5.6.

Q14 What more can the science community and the media do to foster a shared understanding of the nature of science?

Appreciation of the diversity of views among the public and scientists could temper the understandable public policy interest in achieving convergence.

Q15 What more can the education community do to develop scientific literacy in young people?

This work is currently being undertaken by social scientists as educational researchers and especially through the ESRC's Teaching and Learning Research Programme (www.tlrp.org) and its extension into a programme of Technology Enhanced Learning (TEL). The findings are extensive and are contributing to the development of new policies and practices.

Q16 How can we develop the scientific literacy of the science, policy and public communities?

'Scientific literacy' is a concept that is being developed through and by the social sciences and again is a complex issue. Individuals and societal groups are often better informed of the policy issues than policy makers and scientists recognise. Lay knowledge can be valuable, well informed and rational, as Professor Brian Wynne AcSS and others have convincingly demonstrated.

Q17 What more can the business community do to foster public confidence in science in industry?

This question is one that could be subject to more social scientific research, than is currently available.

Q18 How can we use technology better to empower more people to contribute ideas, opinions and data to science?

and

Q19. What can we do to reach those not able to use technology?

Please see reply to Q9. In addition, there is now a growing evidence-base from social scientific research, especially that funded by the ESRC, on these questions.

Q20 How can we ensure policy makers understand the benefits of engagement with society on science in bringing a wider dimension to policy making?

This question and Q22 relate to the role of evidence and expertise in policy making about which there is a considerable social science literature. (e.g. Sandra Nutley's *Understanding Evidence* provides a comprehensive overview). A report from the Council for Science and Technology is to be published shortly covering these issues. As already mentioned we endorse the principles of co-production of knowledge and how it could become a reality at all levels within the civil service not just at the level of strategic forums. However, it requires significant shifts in the current political and policy culture. The timescales to which Ministers wish to work are not conducive to successful engagement.

Civil servants should be encouraged to develop a network of experts in their broad policy area on whom they can call at short notice for relevant input. Greater attention also needs to be paid to already available research evidence and lessons from earlier policy developments evaluations. Engagement with networks of scientists would allow the most up to date knowledge and understanding to be added.

There is also a need to improve policy makers' understanding of the underlying complexities of policy change, about which there is also a substantial social science literature, on which the Academy could advise.

In developing this consultation document it would appear that there was little real direct engagement with scientists, as there are no references to past work, despite the fact that the ESRC has funded several important programmes of work within the social sciences. Identifying the constraints to engagement by DIUS staff in relation to this consultation document would reveal pointers to developing dialogue. Ensuring that scientific input is dealt with appropriately even if the messages are uncomfortable is necessary. There is clearly a need to guard against 'evidence-based policy making' becoming 'policy-based evidence making'.

Q 21 How can good practice in public dialogue be embedded across government?

Sciencewise has been invited to undertake this role and is indeed well placed to consult appropriately and take the issue forward.

Q 22 What additional mechanisms should be put in place to enable policy makers to better interact with scientists?

The institutions of representative democracy (House of Commons, Select Committees, Local Authorities) are absent in the document and yet it is important to pay attention to these representative institutions as they provide an important avenue for interaction. The structures of civil society must be recognised as being able to offer this role.

Q 23 How is good practice by policy makers engaging with scientists celebrated and rewarded?

We would welcome incentives for policy makers to engage with scientists, to ensure that scientific expertise and knowledge is used in policy making. 'Expertise' may be more useful term than 'evidence' as knowledgeable people are able to offer much more than just information from recent research. Of course, Ministers themselves have a vital role to play in encouraging and rewarding policy interactions with scientists and members of the public.

A society that supports a representative well-qualified scientific workforce

There is much appropriate social science research that has been carried out in this field.

Q 26 What further support do teachers need to help young people understand how science works, how government works and how the media works?

The research evidence from *inter alia* the ESRC's Teaching and Learning Research Programme (www.tlrp.org) suggests that teachers have naïve views of how science works and they therefore need opportunities to develop their knowledge and access to subject based professional development. The network of science learning centres is a valuable contribution but reaches too few teachers and does little to inspire their passion, interest and enthusiasm for the subject. Some professional bodies do offer provision for professional development for teachers within their specific fields. For example, the *British Educational Research Association* and the *British Psychological Society* two of our member Learned Societies are developing a series of CPD opportunities for teachers.

Q 27 What more do schools need to enhance the science curriculum to make it more exciting and relevant?

The basic a priori requirement is a cadre of well-qualified, enthusiastic teachers of science and mathematics. In addition they need well-equipped laboratories which are supported by good, well-trained technicians. Students also need to see what happens outside of the classroom. The DIUS and DCSF need to realise that the current emphasis on league tables has a detrimental effect on engagement in all school subjects including the sciences, forcing teachers to 'teach to the test'. The substantial evidence from TLRP demonstrates that this transmissive pedagogy is inappropriate and lacks coherence. Alternative inclusive pedagogies and practices would enhance learners' outcomes across all school subjects, including but not only science education. (www.tlrp.org)

Q28 What can the science and business communities do to tell young people about the career opportunities that a science education opens up in all work areas?

The TLRP has also provided substantial evidence about the range and possibilities for learners' progression and outcomes in post-compulsory and higher education and learning across the life course. This may include opportunities for work-based and forms of professional learning.

Q29 How can we measure future demand for science skills in the UK?

Past attempts at manpower planning and predicting future demand have generally proved unsuccessful, although there are now more effective methods of horizon scanning using social scientific methods. An effective education system that produces people who are critical thinkers and who have the ability to learn new skills, synthesise and evaluate information, and work collaboratively should be the aim. Learning across the life course would also enhance flexibility and capabilities.

Q30 What can business do to make sure that its efforts in enrichment activities are co-ordinated and effective?

Businesses, including education, should liaise with bodies such as the government STEM initiative, SCORE, the Royal Society and the Royal Academy of Engineering to develop appropriate dialogue and engagement.

Q31 Is there a different way to teach science subjects which could help overcome the issue of under-representation of some groups?

Whilst the gender gap has been narrowed across school subjects, there remains the question of how to engage particular under-represented socio-economic groups in certain subjects. Inclusive and critical pedagogies are clearly important, as again demonstrated *inter alia* by the projects funded by the ESRC's TLRP.

Q32 How can the science community and employers show society that they welcome and embrace diversity, including women, ethnic minorities and older people? And

Q33 What can policy groups and business do to address issues of under-representation and retention?

The TLRP has been developing evidence around the themes of diversity, equity and inclusion and providing evidence for policy-makers and practitioners. There is a need for more research on the questions of diversity, equity and retention in various disciplines across the sciences, including the social sciences.

Other issues

Q 34 Do these areas and questions provide a suitable framework for addressing the challenges we have identified?

We welcome this consultation. However, the framework could be strengthened by incorporating social scientific evidence, including:

- the scientific approach adopted by the interdisciplinary social sciences as a complementary understanding to those of STEM subjects;
- social scientific inter-disciplinary methods and also in the techniques used to engage the public (helpfully listed in paragraph 5.3 of the House of Lords report);
- specific knowledge of the relationship between 'Science' and 'Society' provided by the ESRC's research programmes including the awareness of the diversity of 'science' and a more nuanced understanding how people think about science and engage with it;
- social science analysis is necessary because most important scientific phenomena are in part determined by social processes;
- knowledge about policy to contribute to improving the effectiveness of particular policies and enhancing lives across the life course.

The Academy of Social Sciences would welcome the opportunity to assist the Department in strengthening its vision for *Science and Society*.



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