Response to DIUS consultation on 'A Vision for Science and Society'

This is the Royal Astronomical Society response to the consultation on 'A Vision for Science and Society', first published by DIUS in the summer of 2008. The Society chose to respond to specific points most relevant to the interests of Fellows. Paragraphs from the document are italicised, with the Society's responses in bold.

3.1. *This chapter introduces a new vision that encapsulates our long-term ambitions and we believe directly addresses the science and society challenges facing us today. The vision has been discussed with a broad range of stakeholders, and is the basis for our consultation on the future landscape for science and society in the UK. It also addresses the issue of how we measure progress.*

"A society that is excited about science, values its importance to our social and economic wellbeing, feels confident in its use, and supports a representative well-qualified scientific workforce."

The RAS strongly supports this vision statement. We further suggest that the cultural value of science be included as another part of the 'added value' it gives society.

3.4. *...Analytically, we have found it helpful to distinguish three groups to focus our thinking.*

Science: includes areas where science is undertaken (universities, science-based industry such as engineering or pharmaceutical companies, government agencies (such as the Health Protection Agency), business, learned societies, Research Councils, national academies and research-based charities.

Society: includes schools, media, cultural institutions, citizens in communities.

Policy: includes politicians and policy makers in central, devolved and local government – Regional Development Authorities, local authorities and regulatory bodies.

We welcome the broad range of science practitioners considered to be part of the science community that are set out in this list (as a learned society the RAS is very willing to engage in this process). One further addition might be science centres, most of which were established around 2000 and which have a key role to play. Astronomy and space science activities in these centres are largely very popular and engage with sizeable audiences.

3.7. *In developing our strategy, we think it is important to measure success and to consider setting some high-level targets to measure our collective effort. We already have a number of indicators gathered through the three-yearly Public Attitudes to Science Survey, the STEM Programme Report and DCSF strategies. How should we measure progress? What indicators do we need to measure success?*

There remains a dearth of applicants to undergraduate degree pathways in physics and astronomy (and geophysics), both as a proportion of entries and also largely in absolute terms. One way to measure the impact of Science and Society initiatives would be to establish whether they succeed in arresting the long-term decline in entrants to these courses, rather than just considering the 'STEM' area as a whole.

4.7. *Policy makers and scientists are now using new communication tools, such as internet phones, blogs, Second Life and deliberative events alongside the traditional mainstays of printed media, museums and hands-on centres, consultations, surveys and dialogues. These tools are already used by a broad cross-section of society and it is almost certain that further novel tools will emerge. Scientists and policy makers need to utilise all these tools effectively.*

Professionalising public engagement.

...There is scope too for making public engagement less reliant on voluntary activity and for it to be perceived as more professional in its approach and a valued part of the work of scientists. There is more need for strategic thinking about what is being done well, what gaps there are and what needs to be done better, and for the best in public engagement to be incentivised and rewarded.

4.11. *There is a perception that scientists who engage with the public are not always rewarded or valued as much as they should be by universities, industry, funders or government. The Royal Society Report 'Barriers to scientists communicating with the public' identified that science communication was not valued as a high priority activity or a central part of academic life and that the attitude of peers was that engagement was principally for those 'not good enough' for an academic career.*

Social networking sites (e.g. Facebook and MySpace) should also be included on the list of new communication tools.

The RAS supports the professionalisation of Science and Society activity and agrees that it should not be solely delivered by volunteers. This work should be recognised as a core part of the work of research scientists and be considered beneficial to career advancement. There are many successful examples of this work in space science and astronomy (for example many of the projects funded by STFC). Geophysics has fewer examples and would benefit from investment in this area by NERC and other bodies, in line with the recommendations set out in the British Geophysical Association report of 2006 (available from the RAS).

4.18. *Most people engage with issues related to the personal impact of new science or technology. We have identified a range of current issues but these are always changing as the pace of science development increases:*

- *Synthetic biology*
- *Food security / sustainability*
- *Artificial intelligence*
- *Reproductive technologies*
- *Data issues*
- *Genetic modification technologies*
- *Nanotechnology*
- *Energy (personal responsibility)*
- *Certain medical advances, for instance those related to ageing*
- *Animal research*

Alongside the personal impact of science (for our Society this might include the work of geophysicists on climate change and the solar-terrestrial connection and its effect on e.g. power supplies), the RAS believes that curiosity-driven research has a key role to play in public engagement. Astronomy and space science consistently draw a good deal of media coverage and events involving these disciplines are extremely popular.

5.10. *Involvement in science is not limited to formal education. We are looking for innovative ways to provide access to scientific resources, in ways people want to access them. Earlier this year, DIUS launched an ambitious consultation on the future of informal adult learning and integration of this with other opportunities will be crucial to ensuring we achieve a broader approach to scientific literacy.*

The RAS believes that informal adult learning has a key role to play, for example by allowing mature students to consider whether they wish to study and pursue a career in science. However, this provision is sparse, with very few courses offered outside of the higher education sector (even within HE institutions, this provision is often pared back or under threat).

One consistently popular, albeit somewhat more formal example, is the GCSE Astronomy course, which is increasing in popularity both for learners in school and for adults. Some of the latter go on to diplomas in higher education and similar qualifications. Successful, albeit unconventional informal provision is also made by amateur astronomical societies, with around 150 voluntary groups offering a regular programme of lectures and events to thousands of members and often also to the general public. This level of activity is unique to astronomy.

6.7. *Inspirational teachers are frequently cited as the reason that young people take up science. Maintained schools, in particular, struggle with serious shortages of teachers qualified to teach physics and chemistry. Improved skills are already being tackled through a wide range of initiatives including golden hellos for STEM graduates and pre-initial teacher training for those who need to top up subject knowledge.*

The RAS strongly supports this work and further believes that all students studying physics and chemistry in secondary schools should be taught by teachers with degree-level qualifications in these subjects.

A general point from the RAS is that we wish to restate the relative success of courses in astronomy and space science in attracting women students. Data from one of our recent surveys indicates that around 29% of entrants to undergraduate courses identified as having astronomy components are women, whereas in general women make up about 20% of the entry across all physics subdisciplines (see the Institute of Physics data).

Royal Astronomical Society
16th October 2008