House of Commons

Science and Technology Committee

Peer review in scientific publications: Government and Research Councils UK Responses to the Committee's Eighth Report of Session 2010–12

Tenth Special Report of Session 2010–12

Ordered by the House of Commons
to be printed 12 October 2011

The Science and Technology Committee

The Science and Technology Committee is appointed by the House of Commons to examine the expenditure, administration and policy of the Government Office for Science and associated public bodies.

Current membership

Andrew Miller (*Labour, Ellesmere Port and Neston*) *(Chair)*
Gavin Barwell (*Conservative, Croydon Central*)
Gregg McClymont (*Labour, Cumbernauld, Kilsyth and Kirkintilloch East*)
Stephen McPartland (*Conservative, Stevenage*)
Stephen Metcalfe (*Conservative, South Basildon and East Thurrock*)
David Morris (*Conservative, Morecambe and Lunesdale*)
Stephen Mosley (*Conservative, City of Chester*)
Pamela Nash (*Labour, Airdrie and Shotts*)
Jonathan Reynolds (*Labour/Co-operative, Stalybridge and Hyde*)
Graham Stringer (*Labour, Blackley and Broughton*)
Roger Williams (*Liberal Democrat, Brecon and Radnorshire*)

Powers

The Committee is one of the departmental Select Committees, the powers of which are set out in House of Commons Standing Orders, principally in SO No.152. These are available on the Internet via www.parliament.uk

Publications

The Reports and evidence of the Committee are published by The Stationery Office by Order of the House. All publications of the Committee (including press notices) are on the Internet at http://www.parliament.uk/science. A list of reports from the Committee in this Parliament is included at the back of this volume.

The Reports of the Committee, the formal minutes relating to that report, oral evidence taken and some or all written evidence are available in printed volume(s).

Additional written evidence may be published on the internet only.

Committee staff

The current staff of the Committee are: Elizabeth Flood (Clerk); Dr Stephen McGinness (Second Clerk); Dr Farrah Bhatti (Committee Specialist); Xameerah Malik (Committee Specialist); Andy Boyd (Senior Committee Assistant); Julie Storey (Committee Assistant); Pam Morris (Committee Assistant); and Becky Jones (Media Officer).

Contacts

All correspondence should be addressed to the Clerk of the Science and Technology Committee, Committee Office, 7 Millbank, London SW1P 3JA. The telephone number for general inquiries is: 020 7219 2793; the Committee's e-mail address is: scitechcom@parliament.uk

Tenth Special Report

On 28 July 2011 the Science and Technology Committee published its Eighth Report of Session 2010–12, *Peer review in scientific publications* [HC 856]. On 28 September 2011 the Committee received a memorandum from the Government which contained a response to the Report. The memorandum is published as appendix 1 to the Report, together with a response received from the Research Councils UK (RCUK), dated 30 September 2011, which is published as appendix 2.

Appendix 1: Government response

The Government welcomes the Select Committee's report into peer review in scientific publications.

Our world class science and research base is inherently valuable, as well as critical to promoting economic growth. Despite enormous pressure on public spending, the £4.6bn per annum funding for science and research programmes has been protected in cash terms and ring-fenced against future pressures during the Spending Review period. This strong settlement for science and research is a demonstration of the Government's commitment to rebalancing the economy and promoting economic growth. The ring-fence around funding for science and research programmes, including for the first time HEFCE research programmes, provides stability and certainty to the research base.

The UK science and research sector is world class and one that we can be very proud of. The scientific publications we generate are the public face of our science which is why peer review forms a vital part of the scientific and research process. Without scientifically sound, reproducible and reliable results our outstanding scientists and researchers cannot build on the works of others to advance our knowledge and understanding of the world.

Detailed responses to specific recommendations from the Committee are provided below in relation to matters for which Government is responsible. This Government Response should be read in conjunction with the separate response submitted by Research Councils UK (RCUK), the strategic partnership of the UK's seven Research Councils. The Research Councils are independent, non-Departmental public bodies of the Department for Business, Innovation and Skills.

The peer-review process

3. We recommend that publishers, research funders and the users of research outputs (such as industry and Government) work together to identify how best to evaluate current peer-review practices so that they can be optimised and innovations introduced, and the impact of the common criticisms of peer review minimised. We consider that this would also help address any differences in the quality of peer review that exist. We encourage increased recognition that peer-review quality is independent

of journal business model, for example, there is a "misconception that open access somehow does not use peer review".

The Government agrees that it is important that peer review is as efficient and optimised as possible, and welcomes innovations to reduce the burden on academic researchers. The Government agrees with the Committee that we should encourage recognition that peer review quality is independent of journal business model, for example, open access publishing. As reported by the Committee, there are some suggestions that open access publishing and online repository-type journals do not use peer review or that the peer review process is 'light'; this is not the case. Written evidence submitted by the Wellcome Trust touched on this issue and some of the potential benefits "The approach adopted by *PLoS ONE*—where the peer review process focuses solely on whether the findings and conclusions are justified by the results and methodology presented, rather than on assessment of the relative importance of the research or perceived level of interest it will generate—has both reduced the burden on the reviewer and the time it takes to get a paper published".

Publication ethics and research integrity

23. Oversight of research integrity in the UK is in need of revision. The current situation is unsatisfactory. We are concerned that the UK does not seem to have an oversight body for research integrity that provides "advice and support to research employers and assurance to research funders", across all disciplines. The UK Research Integrity Futures Working Group report made sensible recommendations about the way forward for research integrity in the UK. Research Councils UK, Universities UK and the Government should revisit these recommendations and reassess how they can best be implemented.

The Government agrees that action on assurance of research integrity is required. The Government is therefore supportive of Universities UK's (UUK) work with Research Councils UK (RCUK), research funders and representatives from Government Departments to develop and launch a Research Integrity Concordat which all employers of researchers will be encouraged to sign. The Government will be working with UUK and RCUK on development of an implementation plan to back the concordat and is therefore not minded to set in train separate arrangements for an oversight body.

24. Employers must take responsibility for the integrity of their employees' research. However, we question who would oversee the employer and make sure that they are doing the right thing. In the same way that there is an external regulator overseeing health and safety, we consider that there should be an external regulator overseeing research integrity. We recommend that the Government set out proposals on the scope and powers of such a regulator and consult with the research community and other relevant parties to develop them.

The Government agrees that employers must take primary responsibility for the integrity of their employees' research, however the Government does not agree that there is a case for setting up an external regulator to oversee the employers. There are already a number of regulatory and licensing bodies in key areas of research, and therefore any new regulatory body would increase regulatory burden on employers, and risks causing

unnecessary overlap and uncertainty. Through the Research Integrity Concordat the Government will expect employers of researchers to deal with research integrity in an open and transparent manner.

General conclusions

28. In order for current peer-review practices to be optimised and innovative approaches introduced, publishers, research funders and the users of research outputs (such as industry and government) must work together. There is much that can be done to improve the quality of pre-publication peer review across the board and to better equip the key players to carry out their roles. We note that new innovations in pre-publication review are being introduced that have the potential to accelerate the pace of research communication and avoid duplication of effort by the research community, with the consequent drain on resources. Publishers can learn much from one another and should share best practice where possible—particularly in relation to the ways in which data are managed and in terms of promoting publication ethics and research integrity. It is clear that breaches in the latter damage both the scientific record and public confidence in science.

The Government agrees that it is important that peer review is as efficient and optimised as possible, and welcomes innovations to reduce the burden on academic researchers. The Government agrees that best practice should be shared wherever possible to further improve pre-publication peer review.

Appendix 2: Research Councils UK (RCUK) response

RCUK welcomes the Select Committee's report into peer review in scientific publications, and responds below to the Committee's recommendations to those that include research funders.

Recommendation 3: We recommend that publishers, research funders and the users of research outputs (such as industry and Government) work together to identify how best to evaluate current peer-review practices so that they can be optimised and innovations introduced, and the impact of the common criticisms of peer review minimised. We consider that this would also help address any differences in the quality of peer review that exist. We encourage increased recognition that peer-review quality is independent of journal business model, for example, there is a "misconception that open access somehow does not use peer review". (Paragraph 58)

RCUK notes that the focus of this inquiry was very much on the peer review of research outputs and particularly current journal publication practice—rather than on the peer review of proposals for funding which is Research Council business. Nevertheless, we would be pleased to work with publishers, other research funders and other users of research outputs to identify how best to evaluate current peer-review practices. RCUK has

been invited to sit on a new high-level independent working group to look at open access following a Ministerial round table earlier this year. As the report correctly identifies, controlling access to the outcomes of their peer review processes is currently a key part of the business model of many academic journals.

Recommendation 11: Training for early-career researchers is important. We note that "Roberts Funding" is coming to an end and that the Research Councils will therefore be increasing the amount they give to universities "for training and developing postgraduate research". We invite the Research Councils to set out further details of how and where this money will be allocated and what proportion of it will be dedicated to training in peer review, including academic writing and publication ethics (discussed later in this report). We also ask for further details of how this will be "joined up" across different research funders. (Paragraph 124)

Roberts Funding is the common term used to refer to the funding which Research Councils provided to universities and other research organisations to support employability and career planning for postgraduates and research staff, following the recommendations of the report by Professor Sir Gareth Roberts in 2002, SET for Success. The funding was not intended to support training in the skills and expertise needed for careers within academia, such as training in peer review or academic writing, but rather to help PhD students and research staff to develop and enhance the transferability of their research training to other areas of society and the economy. The report correctly states that the Roberts Funding as a ring-fenced funding stream has now finished, and that the funding has been built into normal funding mechanisms, such as student tuition fees. Universities have made good progress in embedding Researcher Development into the research and training environment. To assist universities in this endeavour, the Research Councils fund a programme, Vitae, to work with institutions to develop their training and share good practice.

It is common for the supervisors of both PhD students and postdoctoral researchers to develop peer review skills as an important area of academic practice through, for example, consulting them for views on papers which they have been sent for peer review. Vitae has produced a Researcher Development Framework which highlights the importance of such skills (see http://www.vitae.ac.uk/policy-practice/234381/RDF-overview.html). Research Councils UK have endorsed this approach through supporting the Researcher Development Statement (http://www.vitae.ac.uk/policy-practice/275981/Researcher-Development-Statement-RDS.html). This is also supported by over 30 other sector organisations (http://www.vitae.ac.uk/researchers/278641/RDS-endorsements.html).

Recommendation 18: If reviewers and editors are to assess whether authors of manuscripts are providing sufficient accompanying data, it is essential that they are given confidential access to relevant data associated with the work during the peer-review process. This can be problematical in the case of the large and complex datasets which are becoming increasingly common. The Dryad project is an initiative seeking to address this. If it proves successful, funding should be sought to expand it to other disciplines. Alternatively, we recommend that funders of research and publishers work together to develop similar repositories for other disciplines. (Paragraph 189)

RCUK welcomes measures to support the integrity and robustness of the research process, such as peer-reviewers having access to the accompanying data. Although this area needs to be addressed in the first instance by publishers, RCUK would welcome suggestions from publishers as to how the Research Councils can help in the development of viable ways of providing confidential access to relevant data associated with the work during the peer review process. However, RCUK does not consider that it is necessarily the responsibility of publishers to hold these data, rather it is the responsibility of the researcher to manage and make these data available as required to peer reviewers.

It should be noted, especially in the social and medical sciences, that there will be issues of consent and confidentiality of sensitive data which can identify human subjects which will mean that not all accompanying data can always be made available to peer-reviewers.

RCUK recognises that Dryad has the potential to be an appropriate solution in some discipline areas although there are some issues around its scalability and sustainability.

Recommendation 19: Access to data is fundamental if researchers are to reproduce, verify and build on results that are reported in the literature. We welcome the Government's recognition of the importance of openness and transparency. The presumption must be that, unless there is a strong reason otherwise, data should be fully disclosed and made publicly available. In line with this principle, where possible, data associated with all publicly funded research should be made widely and freely available. Funders of research must coordinate with publishers to ensure that researchers disclose their data in a timely manner. The work of researchers who expend time and effort adding value to their data, to make it usable by others, should be acknowledged as a valuable part of their role. Research funders and publishers should explore how researchers could be encouraged to add this value. (Paragraph 203)

Enabling others to access research data in order to maximise its value and to reproduce, verify and build on the results reported by literature is a core requirement that the Research Councils place on those that they fund. The Research Councils are committed to transparency and a coherent approach across the research base: the RCUK Common Principles on Data Policy (http://www.rcuk.ac.uk/research/Pages/DataPolicy.aspx) state clearly that data with acknowledged long-term value should be preserved and remain accessible and usable for future research, and highlight the need to recognise the data management activities undertaken by researchers. However RCUK also recognises that not all research data can be made publicly available due to legal, ethical and commercial constraints.

Research Councils already provide funding to make research data available for re-use and re-purposing and data sharing, sometimes though visible infrastructures, such as the Economic & Social Data Service (ESDS) funded by ESRC, the network of NERC Environmental Data Centres, the Chemical Database Service funded by EPSRC or via dedicated funding streams such as BBSRC's Bioinformatics and Biological Resources Fund. The Councils are also actively supporting work in data publishing and data citation. It is one of the RCUK Common Principles on Data Policy that published results should always include information on how to access the supporting data, and NERC, for example, is developing guidance for its research community on how to make available model output and model codes where they form significant parts of published research.

Recommendation 23: Oversight of research integrity in the UK is in need of revision. The current situation is unsatisfactory. We are concerned that the UK does not seem to have an oversight body for research integrity that provides "advice and support to research employers and assurance to research funders", across all disciplines. The UK Research Integrity Futures Working Group report made sensible recommendations about the way forward for research integrity in the UK. Research Councils UK, Universities UK and the Government should revisit these recommendations and reassess how they can best be implemented. (Paragraph 262)

RCUK acknowledges the crucial importance of the issues discussed through the Research Integrity Futures Working Group's report and the care and thoughtfulness of the work that went into preparing the report. However RCUK felt unable to proceed with the recommendations, and to host a new service as suggested, for the following reasons:

- the complex relationship between the advisory and the assurance functions in research integrity needs more careful separation;

- there were significant opportunity and operational costs in implementing the recommendations at a time of fiscal austerity; RCUK also remains subject to the ongoing civil service recruitment freeze;

- there was substantial divergence of opinion between the partners involved on what is best for research in terms of assurance.

In light of these concerns, RCUKEG concluded that it was no longer possible for RCUK to host a new general Research Integrity Service as originally envisaged.

Under our comments on recommendation 24 we set out an alternative approach to these matters.

Recommendation 24: Employers must take responsibility for the integrity of their employees' research. However, we question who would oversee the employer and make sure that they are doing the right thing. In the same way that there is an external regulator overseeing health and safety, we consider that there should be an external regulator overseeing research integrity. We recommend that the Government set out proposals on the scope and powers of such a regulator and consult with the research community and other relevant parties to develop them. (Paragraph 271)

RCUK are working closely with UUK and others across the sector to agree a concordat on research integrity that will be published in November. The Concordat will be led by UUK with input from all the main research funders in the UK including RCUK. The Concordat will set out fundamental principles of good practice in research integrity, and will be supported by an implementation plan. The intention is for the Concordat to represent an aspirational framework that will not only proscribe activities which threaten the integrity and reputation of the UK research base but promote positive behaviours that will further enhance the perception and quality of our research. As such there will be a responsibility to monitor and evaluate the adoption of these principles by researchers and by organisations undertaking research. The intention is that the Concordat will co-exist with and support the diverse mechanisms that individual funders of research may already have in place to support the integrity of their particular research grants. The Councils will then take a view

on whether any additional action is required to provide greater assurance and consistency in relation specifically to Research Council funded work.

It is also worth noting that all Research Councils have clear procedures for the reporting of research integrity issues set out in their grant T&Cs, but that as stated during the oral evidence session (and reflected in the report) we expect the responsibility to lie with the employers.

Recommendation 26: We recommend that the Research Councils, and other funders of research, reassess the robustness of their procedures for dealing with allegations of research fraud or misconduct, to ensure that they are not falling through the cracks. (Paragraph 276)

Please refer to our response to recommendation 24.