

Royal Astronomical Society response To RCUK position statement on access to research outputs

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1 Society background

The Royal Astronomical Society (RAS) is the UK's leading professional body for astronomy & astrophysics, geophysics, solar and solar-terrestrial physics, and planetary sciences. One of its key activities is the publication of two world-class research journals:

- *Monthly Notices of the Royal Astronomical Society (MN)*, one of the world's leading primary research journals in astronomy and astrophysics. It publishes the results of original research in positional and dynamical astronomy, astrophysics, radio astronomy, cosmology, space research and the design of astronomical instruments. Although based in the UK, it derives two thirds of its content from outside the UK.
- *Geophysical Journal International (GJI)*, one of the world's leading primary research journals in geophysics and the leading solid-earth geophysics journal based in Europe. The Journal aims to promote the understanding of the earth's internal structure, physical properties, evolution and processes. Editorial management of GJI is shared with the Deutsche Geophysikalische Gesellschaft.

The Society also publishes a news and reviews journals, *Astronomy and Geophysics*. This is a topical, full-colour magazine, carrying news & reviews on major developing themes in astronomy and geophysics in succinct, readable and accessible form.

The Society operates as a charity with the objective of the encouragement and promotion of astronomy and geophysics. Its financial operations are subject to rigorous internal and external review as required by UK charity law and follow additional guidance provided by the Charity Commission. The members of the Society's Council are the trustees of the charity.

The Society's publishing policy has been to focus on high quality papers through rigorous peer review and, as far as practicable, to provide free publication. The latter is an important principle for many in the community that RAS serves – there is very strong support for the principle that good scientists should be able to submit papers to the Society's journals irrespective of financial ability. This clearly differentiates the Society journals from some of their US competitors, e.g. *Astrophysical Journal*, where pages charges are the norm. However we will test the continuing support for that principle through the experiment just started with open access publishing of selected articles from GJI on an author-pays basis using Blackwell's Online Open service. This will allow us to assess the level of interest in the author-pays approach, particularly in the light of the proposal to allow applicants for grant funding to request the inclusion of the cost of publication in author-pays journals. This is an important step and if, and only if, results warrant it, the Society will proceed to develop policies to address the demand for open access from the community that RAS serves.

The Society recognises that its present policy places the full costs of publications on subscription charges and thus these charges appear high compared with competing journals. However, the market reality is that this strategy has worked. The demand for RAS journals has held up because of the high quality of these journals. This is in line with independent studies [1] which show that quality not cost is the key driver of the market in scientific journals. We will, of course, keep this situation under frequent review so that we can respond in a timely way to market changes.

The Society produces its journals in a partnership with Blackwell Scientific Publications. The Society owns the journals and the scientific review process, but it contracts out the processes for production, sale and distribution. This delegates the non-scientific aspects of publication to a world-class commercial organisation with appropriate expertise and access to the necessary capital resources. This allows the Society to focus its resources on delivering high scientific value in its publications.

The Society recognises the importance of innovation as new publishing techniques emerge – and, in particular, of responding in a timely manner to market demand for use of those techniques. In recent years this has led to many innovations in operation of the RAS journals. These include:

- electronic submission of papers and now electronic execution of the scientific review process
- changes to copyright agreements so that pre-prints can be stored in thematic and institutional repositories, and recently also to allow storage of post-prints subject to a six-month embargo
- electronic publication with cross-links to specialist search engines such as NASA's Astrophysical Data System [5].
- free on-line publication of colour figures and modest charges for colour in the paper version. Colour has become an important tool in the visualisation of data in all areas of RAS science and there is strong demand to publish colour figures.
- archiving of data tables from *Monthly Notices* in the VizieR Catalogue Service operated by the Centre de Données astronomiques de Strasbourg (CDS). This service has a UK mirror at Cambridge [7].
- Free personal access for members to on-line versions of the Society's journals.

2 Response to the RCUK proposed position

2.1 Repository impact on the peer review process

The Society's response to the proposed RCUK position is guided by its charitable objective, namely the encouragement and promotion of astronomy and geophysics. In the present context this objective is achieved by promoting the publication and dissemination of high quality scientific papers. To do this the Society welcomes submissions to its journals from around the world and applies a rigorous peer review process to select the best. This peer review process is a core business of the Society and its sustainability is a critical issue for the management of the Society.

This sustainability is already under pressure through the increasing difficulty that many good scientists face in acting as editors and referees – and, in particular in carrying out these tasks in a timely manner. The key point is that these tasks have long been undertaken as voluntary activities that are recognised as a natural part of scientific work. But they are being marginalised as a side effect of increased accountability on the working time of scientists. The peer review process today is sustained by the enthusiasm and willingness of scientists to do this work in the margins of their time. We consider that there is a growing need for more explicit recognition, and perhaps funding, of the peer review work undertaken by many scientists.

The proposed policy on mandatory deposit in repositories is a new pressure on sustainability. It creates a risk that subscription income will fall (as readers use free repository copies) and thus reduce the resources that the Society can put into the peer review process. Subscription income is central to the financial model that underpins peer review performed by the Society. The proposed position creates a risk that must be managed by the Society in order to sustain its peer review activities. There is much national and international debate as to the scope of this risk, i.e. the impact of repositories on the subscription model for funding scientific journals. We do not repeat that

debate here except to note that the jury is still out. There is a clear need for further debate and for that debate to be guided by much more quantitative evidence. Until that debate reaches a broader level of agreement, the Society must treat this as a major risk.

The Society is required by charity law to take a prudent approach to management of financial risk. Thus we must be cautious in our approach to repositories. The Society has taken a gradual approach, e.g. by support for pre-prints in the astro-ph thematic repository and now moving to support for post-prints after a six month embargo period. So far this has had no clear impact on subscriptions but we are monitoring developments carefully. We will continue the gradual approach as we consider it is critical to the proper management of risk. The Society opposes dramatic change as this reduces our ability to manage risk. Thus we oppose the rapid introduction of a mandatory element as envisaged by RCUK. We understand and respect the motivation behind the RCUK position – namely to bring about a cultural change in which scientists take greater responsibility for dissemination of their research results. However, we consider that overly rapid change brings risks that are inconsistent with the Society's legal responsibilities. The Society recommends that RCUK consider a more phased approach in which use of repositories is encouraged but the impact on the existing peer-reviewed literature is carefully monitored – and that the whole process is subject to regular review, e.g. through continuing discussions between RCUK and the Learned Societies.

2.2 Practical issues

The Society recommends that the RCUK position should do more to stress the importance attached to peer-review of papers. We believe that all Research Councils demand evidence of peer-reviewed papers in reports and proposals (i.e. that citations in these documents must demonstrate peer-review, such as a reference to a recognised high-quality peer-reviewed journal). We recommend that this be codified as a key policy statement within the position. It will do much to re-assure journal publishers of the importance that RCUK attaches to the peer review process.

The Society supports the underlying theme that policy should encourage and empower working scientists to use innovation to improve the dissemination of their results. But we believe it essential to avoid a prescriptive approach as that risks stifling innovation (by freezing in a particular scheme or by converting innovation into bureaucracy). We consider that, in the UK context, a policy to encourage good practice, backed by financial support and effective leadership, will have much more positive impact than a mandatory approach. The Society will support activities to promote innovation in the community that we serve, e.g. articles and talks to raise awareness of the issues, of the tools and other resources available to help authors and of opportunities to fund dissemination activities.

While the Society understands the concern of RCUK that voluntary archiving will lead to a low level of compliance, we doubt that compulsion will make a significant difference. A mandatory policy will either become a bureaucratic millstone or, more likely, be widely ignored and attempts to enforce it will divert resources from productive research. Neither of these is desirable and would best be avoided by focusing resources on positive encouragement of repository use. In this scenario compliance monitoring could focus on the repository operator level where it can be carried out efficiently and provide information to guide repository operation and development.

There is some indication that citation of repository copies of papers is reducing the accuracy of citation data collected by Thompson-ISI (because authors cite repository copies and not the journal reference of papers). These data are widely used to assess the scientific process, most notably as indicators of journal performance. But it is not the role of the Society to promote the use of ISI's

citation data; indeed we are concerned that the scientific community should be more aware of caveats on use of these data [2]. Thus we recommend that RCUK respond to this issue by

- raising UK awareness of the limitations of citation indices (e.g. could JISC fund a study and let that generate some guidelines?),
- raising the problem with Thompson-ISI and suggesting that the latter need to review/improve citation data production in the light of repository usage. It is their business that is being undermined by this trend. RCUK, as a representative of the UK research community, is much better placed to do this than any individual society or publisher.

We consider that the policy on repository usage lacks any vision on the importance of links with bibliographic services such as the Web of Science operated by Thompson-ISI and cross-linking services such as CrossRef [3] and SREF [4]. One of the great advantages of electronic publication of research outputs is the ability to build such linkages so that readers can browse the literature in a seamless manner.

An important omission in the proposed RCUK position is consideration of the interaction of repositories with specialist bibliographic services. This is a critical interaction and must be considered in the planning of repositories. The usefulness of repositories will be much reduced if this is not properly handled. A key example for the members of RAS is NASA's Astrophysics Data System (ADS). This is a public domain service that has developed over the last 18 years. It is a mainstay of astronomy research across the world with mirror sites in a dozen countries. The UK mirror is based at Nottingham and is supported financially by PPARC [5]. ADS is not simply an abstracts and indexing service – it also hosts a large amount of primary material such as journal articles, proceedings and observatory reports [6], which can be downloaded for personal use. Many scientific bodies around the world have agreed to deposit copyright material in ADS in order to improve dissemination. In our own case, the Society has agreed to inclusion of its astronomy journal, *Monthly Notices* – ADS holds copies of all MN articles more than three years old. ADS has strong links to the astro-ph thematic repository and these are under continuing development to ensure that the two services work together to provide an accurate representation of the literature [8]. The Society recommends that RCUK study this as an example of what is needed.

2.3 International issues

We note that the UK-based membership of the Society does not publish solely in the Society's journals. RAS Fellows publish many papers in journals operated by our sister societies in other countries notably the American Astronomical Society (AAS), American Geophysical Union (AGU) and the European Geosciences Union (EGU). There is also some publication in commercially-owned journals – most notably Springer's *Solar Physics*, which is effectively the house journal of the international solar physics community. The interest in these journals is driven by two factors: (a) papers on topics (solar-terrestrial physics and planetary science) that are outside the remit of the present RAS journals, and (b) the need, in several areas of RAS science, to publish a proportion of papers in prestigious US journals in order to improve international visibility.

We recommend that the RCUK position include an explicit recognition of the need for UK authors to publish some papers in non-UK journals and thus to respect the publishing policy of those journals. This is implicit in the proposed position but ought to be made explicit so there is no misunderstanding. Where those journals are produced by supporters of open access (e.g. the EGU, which is signatory to the Berlin declaration), deposit in repositories presents no problems. But in other cases the journal's publishing policy may rule out repository deposit. The RCUK position should make it clear that authors are encouraged to publish in high-quality journals with world-wide reputations.

2.4 Role of commercial publishers

The position paper says little or nothing about the role of commercial publishers and lacks a vision of how they can positively contribute to the principles stated in the document. The Society's experience is strongly that commercial publishers play a major role in the processes for production, sale and distribution – by bringing in expertise that complements the skills of the scientific community and by providing access to capital resources. There is a need for someone to articulate a vision on the role of commercial publishers. Ideally this should come from the commercial sector but probably needs to be encouraged. We recommend that RCUK encourage the commercial sector to do that.

3 Summary

The Society welcomes the support for innovation that is a theme throughout the proposed position but we are very concerned that the pace of implementation puts unnecessary risk on the sustainability of the peer review process and wider dissemination of UK-led research. We strongly recommend that RCUK adopt a more phased approach that will allow the Learned Societies to manage this risk in line with their professional and legal responsibilities. A phased approach will allow the Societies, and the communities that they serve, to continue the progress that has already been made. We consider that a phased approach should include the promotion of good practice in dissemination of research outputs and provision of financial support for that good practice. We remain concerned that the proposal to 'take stock of the financial outcome' in 2008 of the proposed changes, rather than a policy of incremental change in close cooperation with the Learned Societies, involves unnecessary risks, particularly to smaller Societies whose financial viability currently rests on subscriptions to their journals.

The Society wishes to re-assert the long-established principle that scientists should be able to submit and publish papers for peer review irrespective of financial ability. We applaud efforts to improve the openness with which research outputs are disseminated, but this must not be done by raising financial barriers at the other end of the publication process, nor by dropping standards by bypassing the peer review system.

The Society also recommends that RCUK extend the position to consider some important issues that are not addressed in their present document:

- The vital role of specialist bibliographic services such as NASA's Astrophysics Data System in supporting dissemination of research outputs
- How do innovative methods for dissemination impact on citation data? - and is this a problem?
- The value that commercial publishers can bring to the dissemination of research outputs

The Society notes that RCUK and the Learned Societies are both strongly committed to peer review of research outputs. We therefore suggest that it is timely to expand the present debate to review the overall sustainability of the peer review process. This should include consideration on how to support the work of editors and referees within the new context set by full economic costing of research.

4 Postscript

Discussions with RCUK during the preparation of this paper indicate that the schedule for implementation of the RCUK position will be delayed to allow time for more consultation, especially to engage more fully with the Learned Societies. The Society welcomes this step and is most willing to participate in and contribute to those discussions.

5 References

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