

LEARNED SOCIETIES AS PUBLISHERS – THE ROYAL ASTRONOMICAL SOCIETY AND MONTHLY NOTICES

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Abstract. The function of a scientific learned society is to advance the science in a way that satisfies the interests of its members, who belong to the relevant scientific community. Their primary interest is to act as a group of peers who maintain the standards of the community in an organised way and to provide a framework which at the same time does this but allows individual scientists to act vigorously, regardless of their ability to pay. The balance to be struck in these ambitions is the essence of ‘open access’.

1. Learned Societies and their Members

The function of a scientific Learned Society is to advance the science by satisfying the interests of its members. The members belong to the relevant scientific community. They act as a group of peers who develop and maintain the standards of the community in an organized way. The Learned Society provides a continuing network to do this. This is a structured manifestation of the peer review process that is fundamental to the operation of science.

The Royal Astronomical Society is a Learned Society to advance astronomy and astrophysics, geophysics, solar and solar-terrestrial physics, and planetary sciences. Its membership is open to any suitable person who agrees with the objectives. It has 3000 members including two thirds of the UK professional astronomy community. A third of the members are professional scientists who live outside the UK.

When members join the Society they are asked to adhere to the *Universal Code of Ethics for Scientists* formulated by the UK Council for Science and Technology (the UK government's top-level science advisory body¹). The *Code of Ethics* is given in Annex 1. It codifies an approach to science that is commonly accepted by the vast majority of scientists, and part of it, if not all, encapsulates the ethical aspects to scientific publishing.

2. Publications

The RAS advances astronomy by holding meetings and other activities, including publishing the results of scientific research. Our journals include *Monthly Notices (MNRAS)*, *Geophysical Journal International* and *Astronomy & Geophysics*.

MNRAS is one of the major international astronomy journals. It publishes 2000 papers per year (20,000 pages and their digital equivalent) on original primary research in any kind of astronomy. It accepts contributions from anyone, and two thirds of the papers that are submitted come from outside UK. The aim is to publish high quality papers that act as the minutes of science and help move the subject on.

Monthly Notices is edited by an Editorial Board, headed by an Editor in Chief. The Board consists of 14 scientists of high reputation and broad expertise. On average each Editor handles 140 papers per year, so there is an interaction between a given Editor and the journal usually more than once per working day. This is a persistent work load, requiring some dedication from each Editor. The Editors are chosen so that their expertise spans a range of subject areas across astronomy and they come from various geographical areas. All the Editors are members of the Society. They are appointed by and responsible to the RAS Council. Either they are given a fee for their services or their universities are offered the fees in symbolic compensation for the loss of services. The amount of the fee is nominal, and the Editors act primarily out of a sense of duty to the science. The Council may choose to dismiss an Editor, e.g. on the recommendation of an Editor in Chief who is profoundly unhappy with his/her performance. The Council monitors the quality of the journal, for example through annual reports to the Council by the Editor in Chief and citation statistics, as well as through personal involvement by individual Council members with the journal as authors or readers. Editors (in particular the Editor in Chief) are consulted by the Society to determine their scientific input into business and production matters, but in these areas decisions are made by the Council taking into account further input from the publisher.

¹<http://www.cst.gov.uk/>

Each paper submitted to *MNRAS* is assigned to an Editor for a decision whether to publish it. Each paper is refereed by (at least one) scientist close to the subject matter (not necessarily a member of the RAS). The referees, who act in confidence (unless they feel strongly that they want to waive anonymity), advise the Editors about the submitted papers. Usually the outcome is a recommendation to revise a paper somewhat and publish it. Occasionally there are differences of opinion and a more complex collective decision is made by the Editorial Board (e.g. two Editors and the Editor in Chief). This pre-publication process is all managed by 5 full-time editorial assistants. Usually the editorial assistants have some scientific training at degree level, but these administrative matters are burdensome and not of sufficient scientific interest to ask research scientists to do them, unlike the tasks of being an Editor or referee.

The referees are unpaid and so are entirely acting out of a sense of duty to the science. The burden of peer review by referees and the burden on the Editors are each considerable, and the Society has publicly called for more explicit recognition of this high quality scientific effort.

The decision whether to publish is the Editorial Board's alone and they make their decision entirely for scientific reasons. For example, they are not asked to limit or postpone acceptance on grounds of budgets or of expense of publishing, if there are unusually expensive features in the paper. If there are disputes about a paper there is a disputes procedure, which goes up through stages to the Society. The procedure is supervised by the Council.

3. Editorial Standards

As RAS members, the Editors are expected to act in general according to the *Universal Code of Ethics for Scientists*. Additionally the Society has adopted or adapted the *Guidelines on Good Publishing Practice* published by the Committee on Publication Ethics². This is the RAS *Editorial Code of Practice* for authors, editors and referees³. It is too long to reproduce in its entirety but covers issues such as plagiarism, duplication of publications, due acknowledgement of others' work, confidentiality, integrity of refereeing, etc.

What all this amounts to is a formalisation of the generally accepted standards of peer review. The code and its implementation are monitored by the Council of the Society and there are sanctions attached. No informal structure can provide clarity like this or enforce consistent standards of behaviour or quality.

²<http://www.publicationethics.org.uk/>

³http://www.ras.org.uk/images/stories/ras_pdfs/Editorial%20Code%20of%20Practice.pdf

4. Ownership and Copyright

Authors are required to sign an Exclusive Licence Form (ELF) for the RAS and Wiley-Blackwells to publish papers in *MNRAS*. Signature of the ELF does not affect ownership of copyright in the material. After submission authors retain the right to publish their paper in various media/circumstances, such as subject-based pre- and re-print repositories like astro-ph immediately and employers' repositories after an embargo period, and of course authors are free to use the material in books, lectures and teaching material, as a means of advancing astronomy. Use by third parties is controlled by Wiley-Blackwells.

5. Cost of Publishing

The cost of the editorial selection process is approximately £150 per paper (= US\$300 = €200). *MNRAS* is published both in paper and electronically by our commercial publishing partner, Wiley-Blackwells. The Society sets the standard of the production process in partnership with Wiley-Blackwells e.g. time scales. The cost of publication is approximately £1M per year, or £750 per paper. The cost of publication of a paper in *MNRAS* totals about £1000 (US\$2000, €1500), equivalent to a page charge of about \$200/page. This is comparable to competitive Open Access journals.

MNRAS receives no grant whatever from any source, except for the in-kind scientific contributions by Editors and referees. It is very successful and a financial surplus from it enables the RAS to publish and give wide distribution to papers, to publish review articles in *Astronomy & Geophysics*, promulgate results via meetings, develop press releases based on *MNRAS* papers, etc.

6. Who pays?

Someone has to pay for Editors, referees, editorial assistants, computer systems, software, copy-editing, typesetting or rendering the electronic text, and printing or making available on a server. The subscribers pay for *MNRAS*. Its fate is in the hands of people who can choose not to buy what the Society and Wiley-Blackwells produce. If authors pay for publication, we fear this will have an impact on quality through its effect on our decision whether or not to publish – who trusts the decision of a judge who is paid by the person who appears before him?

If *MNRAS* goes Open Access, with the author paying for the Society to publish the journal free to readers, it will have to charge about \$200 per page as an average to cover costs. At present we make no page charges, in accordance with our policy to publish for scientific reasons alone. In

particular, this enables publication for scientists in developing countries, or even for prolific, high-quality scientists in developed countries who have run out of money for page charges (or just have better uses for the money). We regard this as truly open access for all scientists, regardless of financial ability to pay. In practice, 70% of the papers published in *MNRAS* originate from outside UK and a lot of the growth of *MNRAS* has been a growth in submissions from this sector: astronomy has grown faster outside the UK than within. Although *MNRAS* is structured administratively as the astronomy journal of the Society of one country, it is in scientific practice completely and wholeheartedly an international journal.

If *MNRAS* converted entirely to Open Access, we would have to consider how to overcharge some authors to support others who cannot pay. Alternatively, we would have to abandon our policy to provide a vehicle for publication to all for scientific reasons alone, irrespective of ability to pay. We intend to offer Open Access (author pays for publication, and publication is therefore immediately freely available to all) as an option on *MN* in the near future. We have offered this as an option on *GJI* for about a year – take-up has been at the 1% level.

7. Preprints and Impact

The science that we (RAS and Wiley-Blackwells) publish is intended to make an impact. We encourage authors to post on-submission preprints and post-acceptance preprints in open repositories in order to move the science on promptly. We have put considerable effort into a process to speed up our publication process and we encourage authors to post a pdf of the final article on their own website. Our publication of a paper is definitive and we frown on alteration of any copy of the paper after publication – this would be tantamount to changing the minutes of science.

We work hard to disseminate the journal. We try to place our journals in specialist institutes (few institutes \times many astronomers per library = many readers). We have opened up subscription arrangements to consortia of libraries, including free access to consortia in developing countries (many institutes \times few astronomers per library = many readers). We offer free access to the material to all RAS members. We cooperate fully with indexing and bibliographic agencies, in particular NASAs ADS and archiving agencies such as the VizieR Catalogue service of CDS.

8. The Archive

If papers published in *MNRAS* are part of the minutes of science these minutes must remain available. The RAS stands behind its archives. They will continue as long as the Society can continue. We and our publisher are

working with central agencies to provide a guarantee to maintain electronic access to published material, updating the format and connectivity of the archive in accordance with technical advances.

9. Conclusions

The Learned Society environment provides a structured, ethical framework for the publication process of scientific papers. It drives up quality. The costs of publishing have to be paid by someone – the author (their funding agency), subscribers or a third party: our policy to charge subscribers puts our fate in the consumers' hands and enables us to offer to authors to publish for scientific reasons alone. We provide internationally open access to publish astronomy, and the science that we publish is intended to make an impact and to endure. In short, as a Learned Society we try to use our journals to advance science.

Annex 1

Universal Code of Ethics for Scientists of the UK Council for Science and Technology: Rigour, Respect and Responsibility

Rigour, honesty and integrity

- Act with skill and care in all scientific work. Maintain up to date skills and assist their development in others.
- Take steps to prevent corrupt practices and professional misconduct. Declare conflicts of interest.
- Be alert to the ways in which research derives from and affects the work of other people, and respect the rights and reputations of others.

Respect for life, the law and the public good

- Ensure that your work is lawful and justified.
- Minimise and justify any adverse effect your work may have on people, animals and the natural environment.

Responsible communication: listening and informing

- Seek to discuss the issues that science raises for society. Listen to the aspirations and concerns of others.
- Do not knowingly mislead, or allow others to be misled, about scientific matters. Present and review scientific evidence, theory or interpretation honestly and accurately.