

# OPEN ACCESS

A position paper of the EPS



European Physical Society

more than ideas

## Executive Summary

Scientific publishing isn't what it used to be. Or is it? Some things have changed, but how fundamental have these changes been, or how fundamental should they be?

A common opinion among physicists is that “reading scientific articles should be for free”. However, just as there are no free lunches, scientific publishing will never be for free. Trustworthy systems for peer review and for archiving are adamant. Publication costs are to a great extent generated by the editorial process, independent of the publication form. A change of a business model does not necessarily lead to lower costs for production or distribution.

The advent of Internet and electronic media has certainly had an impact. When we need a scientific article, we rarely go to the library these days; we get it off the Internet. What has not changed so much is that a vast majority of journals are still based on peer review. Non-peer-review electronic archives, or self-archiving, are mainly seen as complements, facilitating access. Another thing that has not changed so much is that most of scientific publishing is still financed by business models based on paid subscriptions.

Open access as a social movement has very early roots, but it mainly gained momentum with the development of the Internet. Physics as a subject has been at the forefront, with self-archiving at arXiv.org starting already in 1991, and now being well established in the physics community. But open access can reach further than voluntary self-archiving. A wide spectrum of suggestions have emerged, including making the electronic archiving compulsory, and also totally new business models, where the publications are not financed by traditional subscriptions. For example, a few journals offer the possibility of free reading to everybody if the author pays for the publication of his/her results (“author pays”).

The opinions about Open Access are many and widely differing, among scholars, publishers and librarians, and stated opinions are sometimes one-sided and not always well informed. The Executive Committee of EPS has decided to take its position in a paper on Open Access, where minimum criteria for scientific publishing are indicated, in order to safeguard the scientific quality of the publications.

The so-called Berlin declaration states that, *e.g.*, scientific results should be made as accessible as possible to as wide an audience as possible, regardless of the financial strength of the reader. EPS is in favour of this general objective and supports the Berlin declaration. Going a step further, EPS insists on maintaining and nurturing mechanisms for the upkeep of scientific quality, which in practice means peer review systems.

EPS does endorse posting of published scientific papers on freely accessible electronic archives. EPS is not in favour of a shift of the entire scientific publication industry towards a business model where the publication of results has to be paid for. In such an environment, journals would have conflicting incentives in terms of maintenance of scientific quality. Accepting fewer papers would give higher prestige and higher quality, but accepting more would give a better cash flow. No convincing solution to this problem has yet been presented.

Novel solutions have to be found in order to create a just and sustainable business model for overall Open Access. The EPS Executive Committee has proposed a set of boundary conditions for this.

The full text of the EPS position paper is published on the EPS webpage (free of charge!).

**The Executive Committee  
of the European Physical Society**

The European Physical Society is an independent body funded by contributions from National Physical Societies, other bodies and individual members. It has over 100,000 members and can call on expertise in all areas where Physics is involved. One declared aim of EPS is to strengthen Physics and Physicists in Europe.

### The Object of this Position Paper

The Executive Committee of the EPS supports the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (<http://oa.mpg.de/openaccess-berlin/berlin-declaration.html>). With this position paper, EPS takes a first step towards formulating a policy on Open Access. In particular, the aim of the paper is to indicate criteria for maintaining a high quality for scientific publications, independent of the business model financing their production costs. The text is written with the aim of particularly looking at the need for publications in physics and for the physics community.

### Introduction

Publications are an integral part of scientific work. They allow dissemination of results, in order for these to be discussed, repeated and approved by the scientific community. They are the basic building blocks of extended scientific knowledge, and they open the way for possible developments and applications. To a large extent, scientific publications are also used today as a tool to judge the quality of researchers, of research projects, and of research institutions. Easy Internet access allows broad and fast dissemination of scientific results. For a number of years now, the scientific community has been discussing open access models for scientific publications, with the main goal being the creation of free public (and non-rewarded) access to results of research.

In the following we will use the Public Library of Science's definition of open-access publications - those that have "free availability and unrestricted use". Two different levels of open

access models are mainly discussed today. Following the Budapest Open Archive Initiative 2001, level 1 means auto-archiving of articles in open repositories ("green access"), while level 2 aims at maintaining traditional publishers, but using novel business models to finance subscriptions ("gold access"). Various levels of mixed publication landscapes are also possible, and indeed the current dominant model for physics is subscription-based journals, with voluntary open access and voluntary simultaneous publishing in an open repository.

Traditional subscription based journals have evolved in the course of the last decade, with a decrease in classical print editions in favour of the more rapid publication in electronic form. Moreover, researchers are largely involved in the publishing process: as authors who will also take over part of the typesetting and formatting work necessary for a standardised publication, as scientific editors, responsible for the reviewing process and the proposal of scientific topics, as reviewers, guaranteeing the quality of the scientific content, and as delegates in steering committees of the journals. Even with these non-remunerated contributions and electronic distribution, journal subscription prices have grown faster than inflation. With the bundling of journals in thematic "packages", university libraries have to make a choice among different scientific publishers, limiting the access to researchers, while the civil society does not access results of public-funded research at all. Even without print-editions and with a non-paid peer-reviewing process, scientific publication still has a price: formatting, administrative, and archiving costs have to be covered; maintenance and technical evolution have to be financed. Open access does not mean that the production is entirely free, or even necessarily cheaper. Open access proposes ways to allow free reading access to scientific results for as wide a public as possible, which sometimes includes alternative business-models for covering production expenses.

In the case of scientific publishing, the scientific community is typically both writer and reader of the scientific work. In the traditional subscription model, we pay for reading, via subscriptions, whereas in the most far-reaching open access models, we pay for getting our work published, and we read for free. The successful realisation of open access will rely on novel business models; the overall cost for the scientific community will not necessarily be different.

### Necessary conditions

The EPS Executive Committee insists on some criteria that must be met by any open access business model, if scientific publications are to maintain a high quality.

The scientific quality of the published research must be recognised by experts in the domain. The widely applied peer-review process has been proven to guarantee a high scientific standard and must be maintained for open access publications. Peer-reviewing is also a defence against misconduct and repetition. With a possible shift towards open access based models, there must be guarantees that the peer review process will remain at a high level, and that it will be broadly trustworthy. This is an area where a particular focus is needed.

An author or a group of authors should be free to submit to a journal of his/their choice independent of the business-model his/their organisation/s has/have adopted.

Publication of a scientific manuscript must exclusively depend on its scientific content and be completely independent of the public accessibility of the journal and the form of payment made by the author's institution. It should not be possible for authors or their institutions to enhance their scientific reputation by using commercial means to ensure publication in journals with high impact factors.

Publications in electronic format need to fulfil certain conditions in order to constitute a freely accessible, searchable and permanent database. They must be edited in a universally readable

format, compatible with an "open access" software such as pdf or ps and established in a form to preserve the uniqueness of the document. Metadata should be extractable to allow search engines to be efficient.

The interoperability of open archives has to be guaranteed in order to enable overall searches. The continuity of the archives must be assured to accommodate all changes of software and hardware; technical evolution has to be taken into account.

The creation of new journals and the appearance of new publishers must be possible.

Copyright must be guaranteed to the publishing authors to protect the results of their research.

The applied business models must be balanced enough to assure a sustained development even with a varying number of member associates and changing economic boundary conditions. They also have to assure the continuity of archives should a scientific publisher or a funding institution cease to exist.

Emerging countries should be awarded free-of-charge access for reading and publication.

The EPS Executive Committee strongly supports the PERii initiative (Programme for the Enhancement of Research Information phase 2) of the International Network for the availability of Scientific Publications (INASP, [www.inasp.info](http://www.inasp.info)).

Various business models and approaches for the realisation of open access may exist in different scientific domains, depending on the habits of the concerned scientific community, the landscape of thematic journals and the politics of funding agencies. PubMed Central, Citeseer, Revues.org or SCOAP are examples influenced by, and adapted to, their thematic research environment.

### Discussion

Publishers and researchers will benefit from open access journals due to the increase in the visibility and the effective audience of scientific papers. Libraries will benefit by making more journals available to their public.

However, EPS wants to insist on certain points, which may put the high scientific quality of the existing publishing landscape at risk and which we therefore can not support.

It appears that the necessary conditions needed in order to guarantee high scientific quality of articles will not be achieved by a model of open access, which is not accompanied by a review process and an editorial decision. Reviewing, and in particular peer-reviewing, is an indispensable requirement. The “author pays” model – where the publication of results is paid for – has an inbuilt conflict, since the publishers’ profits scale with the number of accepted articles while the scientific quality is inversely proportional to this number. The existing initiatives to introduce this model should be regarded as experimental prototypes and be limited to very few journals. An exclusive “author pays” scheme for all journals should be avoided. With the advent of novel business-models, EPS and other bodies should strive to ensure that limited publication costs in one domain (or journal) will not be “counter-balanced” by increasing subscription costs in a different domain (journal). The continuity of archives has to be guaranteed by one (or several) non-commercial, independent organisations. Even though publishers should be encouraged to build lasting archives, independent organisations must build permanent “over-all” databases.

### Conclusion

EPS supports the Berlin declaration and its promotion of wider access to scientific results. However, strict demands of quality are essential, and peer review must form the basis of any publication process. Open access models should fulfil all of necessary conditions cited above, and great care must be taken to ensure that quality criteria are not compromised.

In this case, open access will certainly be of benefit to the whole scientific community (students, researchers, publishers, libraries) as well as to the general public. ■

Aarhus, June 2009

### Addendum

Following enquiries by EPS member societies, the Executive Committee wishes to expand on the following two points:

- The Berlin Declaration on Open Access to Knowledge in the Science and Humanities was first formulated and proposed in 2003 and since that time this ideal has received the support of numerous organizations throughout the world. To date however progress towards implementation has been steady but slow. This is mainly due to the fact that fulfilling the OA ideal requires, amongst other things, a complete upheaval of academic publishing. There are for example significant implications for the established financial structure of academic publishing as well as the intellectual property rights of contributing authors. A recent roadmap and guide can be found at <http://oa.mpg.de/openaccess-berlin/roadmap.html>
- One of the main concerns of this position paper has been the problem of ensuring scientific quality within an OA framework. It is the firm belief of the EPS Executive Committee that the quality of journals can indeed degrade where market forces shift the emphasis towards the enhancement of commercial profit by maximising the acceptance of author paid papers. The EPS Executive Committee is also of the opinion – as formulated and discussed during the most recent EPS Council – that this problem is less critical for Learned Society publishers where the priority of the scientific quality is undisputed and ensured by the ownership.

Mulhouse, 9 November 2009



**European Physical Society**

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