European Science Editing

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From the editors' desks

Contributions for the journal should be sent to the Chief Editor or the appropriate section editor listed above. See Instructions to authors in this issue and on EASE's web site (www.ease.org.uk).

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Barcelona and the AGM

"Habits in science communication and science publishing" is the theme of our next Barcelona seminar on 29 April 2005, between 10.00 a.m. and 6.00 p.m. And it is free to EASE members. See the advert in this issue (p. 23) for more information and a registration form. Remember too that the seminar will be followed in the evening by the EASE Annual General Meeting and a reception. Please check the EASE web page occasionally for information on the presentations and the agenda.

A step closer to Kraków

The first circular for the forthcoming 9th conference of EASE in Kraków is included with this issue. Please be sure to fill out the form and return it if you are interested in attending. The Programme Committee will use this preliminary information as it continues making plans for the conference. An official registration form will accompany a later issue of the journal.

An indication of EASE vitality

This issue not only contains details of the Barcelona seminar and 9th conference of EASE; it also includes the first chapter to appear for the *Science editor's handbook* since the EASE conference in Bath: "Genetic nomenclature" by John Pettigrew. More chapters are on their way as Moira Vekony, now the *Handbook* editor, finds authors. If you are interested in writing a chapter or have suggestions for new topics, be sure to contact Moira (e-mail MoiraVekony@aol.com). The binder (with dividers) is available for GBP 7.50 within Europe. If you live outside Europe, please add GBP 3.50 (total GBP 11.00) to cover the extra postage.

The journal welcomes a new editor

Stuart Handysides has agreed to take over the editing of meeting reports. Please help him (stuart_handysides@hotmail.com) by volunteering to write reports of meetings you attend that are of interest to readers of *European Science Editing*. Welcome, Stuart.

Web site development

EASE is also working to update its web site. See Hervé Maisonneuve's report (this issue, p. 26) of the Publication Committee meeting for a few more details.

Membership

At the end of 2004, EASE members numbered 807, a little less than during the previous year. Although 35 editors or people in related professions joined, a few more long-standing members retired (or died). Help EASE to continue to be a vital and forward-moving organization by introducing it to your colleagues.

Contributions for the May issue

Contributions for the next issue of *European Science Editing* (due out in May) are invited and should be sent to the appropriate member of the Editorial Board (see panel, and see "Instructions to Authors" in this issue or on the EASE web site: www.ease.org.uk). The deadline for the May issue is **15 March 2005 .**

Editorial

Editors are human: what should we do if they fail?

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When discussing editorial topics, editors are inclined to talk about how to tackle editorial problems successfully rather than to admit failures. Editors are human, indeed, and, as such, they are not perfect. Of course, authors may complain heavily about editors, just like the latter do about authors. It is all "in the name of the game". The game changes, however, if some thresholds are crossed.

If there is fraud or other misbehaviour by an author, editors are justified in taking steps. But what if authors have valid complaints about an editor? Many authors have felt the brunt of such editorial misbehaviour. A typical example is the following case — it is a recent event, and I can supply more details to those interested.

Three scientists proposed to a journal editor that they should prepare a special issue as guest editors. They provided titles, prospective authors, and an editorial. The journal editor agreed with the suggestion and also with fast publication (because a special occasion was involved). Once the manuscripts started to arrive, the journal editor stated that the journal would handle the reviews, not the guest editors. Unwillingly, the guest editors assented, but became worried when numerous enquiries produced scarcely any information about the progress made, until several months later, when it was reported that only 5 of the 18 manuscripts had been reviewed, and the journal editor wanted to postpone publication altogether. Suddenly, some weeks later, the editor announced that four papers would be accepted (one of which had not been reviewed at all and one of which had been rejected), seven would be rejected (most of which had not even been reviewed), and the remaining seven (which had, for the most part, not been reviewed) would get a "second chance". When the guest editors did not agree, the journal editor refused to return the material or tell the guest editors whether or not additional manuscripts had been reviewed, nor would he furnish a list of the reviewers. He also claimed the right to publish the four articles that he had accepted. The guest editors were, obviously, upset by this lack of editorial professionalism. However, they immediately found a high-ranking journal that could take over, under the guidance of a highly reputed editor.

Even with such a favourable outcome, the story is full of bitterness. Can journal editors handle material in this manner, apparently without consequences? The editorial community, as an entity, may well be blamed for such misbehaviour of (amateur) journal editors. Should there be some kind of ethics committee to which authors can complain? A Committee on Publication Ethics (COPE) exists and it has published guidelines [1], but only editors may submit cases to COPE now, so this will not help an author. There are a few journals where authors may complain, but these are, as far as I am aware, all professionally-run medical journals: the *BMJ* has an ethics committee [2], and *The Lancet* an ombudsman [3]; *JAMA* also pays much attention to the difficult position of authors [4]. Moreover, the World Association of Medical Editors (WAME) has an Ethics Committee, but even this committee cannot impose any sanctions after proven editorial misbehaviour.

The fact that some Ethics Committees exist is, obviously, a step in the right direction. One should realize, however, that no such committees yet exist outside the (well financed) medical editorial sector. Moreover, it seems most likely that journals run by "amateurs" (scientists whose editorial activities are secondary, commonly unpaid, tasks) will act less professionally than journals with a professional staff. This implies that there must be a lot to do. The few cases that have been put forward in the medical sector, with published details [5], are definite proof. It therefore seems that an Ethics Committee covering all scientific disciplines and monitoring less professionally run journals, in particular, is badly needed. But who should be on such a committee and in what context could it work? Should an organization such as EASE take the initiative in forming such a committee?

We should face the fact that editors are human and that they sometimes fail. It seems appropriate that the scientific community as a whole, as well as scientists as individuals, should have the opportunity to complain about or reveal editorial misbehaviour. It seems time to start a discussion on how to handle this. The EASE forum is open for it. Let's face it: we, too, are human.

Acknowledgements
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Articles

Beyond electrification: innovative models of scientific and scholarly publication*

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Abstract
Starting from the assumption that what is nowadays called "electronic publication" still mostly emulates traditional publishing models in digital environments, this paper examines some of the technical requirements and consequences of potential models of genuine e-publishing. The vital role of "open" strategies (in a technical perspective as well as for economy in publication) is stressed and a concluding view is given on the semiological and political context of choices to be made in this regard.

Context

The following observations and suggestions, even though they may be relevant well beyond open access (OA) publishing, are substantially rooted within the OA publishing community. Therefore, a quick glance at this context is required to introduce the issues considered here. The working background in this instance is the German Deutsche Forschungsgemeinschaft-funded project, GAP (German Academic Publishers, www.gap-c.de), which has the overall mission of stimulating and supporting scientific communication and helping to "return science to the scientists". GAP tries to build an open cooperation framework for bringing together academic initiatives for electronic publication in OA models and it aims to contribute to innovative models for "publication", assuring quality and providing impact assessments of scientific content. In order to reach these goals, one of the major activities within GAP is setting up shared and distributed technical facilities (for instance a shared web-based workflow engine). The project thus puts specific stress on technical aspects of "openness" that have the potential to be relevant for non-OA players too.

In order to better understand this aspect, a closer look at the entire information cycle may help to clarify some of the technical issues related to true electronic publication.

The information cycle: conventional, electronic and digital perspectives

In the traditional information cycle the basic operations carried out by authors, reviewers, publishers and the scientific community in all digesting activities (receiving, quoting, annotating, etc.) are based on just two elementary cultural techniques: reading and writing (with some help from printing technology), as illustrated in Fig. 1.

In the so-called "digital" information environments we know today, most of these steps are simply emulated in an electronic environment, making use of such solutions as Microsoft Office or LaTeX and "publishing" the results, mostly using the quasi-standard format PDF (which still remains vendor controlled!). The basic assumption of this article is that in order to explore the qualitative potential of web-based publication platforms we need to go beyond this step of mere electrification. My aim is to exemplify some of the technical and functional questions we need to resolve before being able to take this extra step.

Before going into detail it may be useful to return to Fig. 1 and think about what its stages might translate to in a digital setting such as we can conceive of today. "Authoring" then would mostly translate to generating some kind of structured XML (Extensible Markup Language), eventually coupled with XSLT (Extensible Stylesheet Language Transformations) code for rendering this content in different contexts. "Reviewing" would be the equivalent of some sort of digital annotation — the interesting aspect being the degree to which this would be public for both reading and writing. "Publishing" will most probably boil down to providing a reliable version of the digital content, together with a suitable identifier. On the reception side, it remains uncertain whether the output will still be "read" in the conventional linear sense, and we will certainly see novel modes of quoting and annotating such digital publications.

Fig. 1. The traditional information cycle.

*Article based on a presentation given at the EASE seminar, *Scientific publications in a digital age*, in Barcelona, 7 May 2004.

Functions, too ls and standards

In order for such future models of digital publication to work at all, a whole set of functions needs to be transposed to digital working environments, and probably the most effective way of doing this is to establish relevant standards as well as technical supporting platforms.

Some of these standards seem to be fairly well established and effective, or at least accepted to a degree that may be qualified state of the art. This is the case with document metadata that are now widely expressed in the Dublin Core (DC) standard as well as with methods for publishing and exposing such metadata via the open archives initiative (OAI) model. Both models are well established to a degree that does not require further mention.

In the next section I will develop one example of standards (for document identification and modelling) that need to be transposed effectively to a digital working environment in order to enable true e-research via genuine digital publication models — and I will skip other potential examples such as authentication and authorization functions.

The way documents are modelled in a digital environment, and means for identifying these over time, are absolutely crucial for digital science to work at an elementary level. In the traditional publishing environment, documents were easily referenced using bibliographic metadata and pagination if micro-structures within these documents needed to be quoted. Bibliographic metadata were sufficient to locate the resource within the library service area and pagination was a universal referencing scheme in traditional, basically linearly organized publications. In a genuinely digital model of scholarly communication, both these parameters are likely to be challenged fundamentally. As long as issues of document identification (which can no longer be resolved using bibliographic metadata) and document integrity (which have quite a few implications for transparent version management) remain unresolved, identifying an electronic document will be like spotting a moving and changing target.

Regarding document identification, solutions seem to be at hand with digital object identifiers (DOIs) — but several questions regarding both the perenniality and the transparency of this approach remain to be answered. Also, it remains uncertain to what extent scientific publication should actually be trusted in a document identification framework largely governed by the major traditional publication stakeholders. It is thus uncertain to what degree the attribution of uniform resource names (URNs) should be a public infrastructure service and which institutions could be given such a task.

Regarding document modelling, the situation is even more complicated, since in digital environments there is almost no common understanding of which elements constitute even a simple textual document (words?, paragraphs?, chapters?) and how to formalize these elements in a digital environment, let alone how to deal with genuine multimedia publications that are definitely outside the realm of traditional document metaphors.

Thus, document models derived from textual concepts such as TEI (text encoding initiative) or DocBook will definitely reach their limits once they need to be applied to genuine digital multimedia publications. Thus, even if we find means of identifying digital document resources, we definitely do not know how to reference their internal structure in the future. And very little imagination is required to realize what obstacles such shortcomings will continue to place on the path from electrified print publishing to novel models of digital publishing.

Semiological aspects of e-publication

Still, even though the aspect of technical functions, tools and standards may be essential, the understanding of the semiological aspects separating hermeneutically oriented scholarly traditions from empiricistic scientific disciplines is probably equally vital for shaping future digital publishing environments and their economic parameters.

In this respect, the information model governing the STM sciences — a model that has so far dominated the "open access"-related discussion — is relatively simple and is based on the assumption that the research work is done outside the publication context (e.g. in laboratories), and that publication is the equivalent of reporting this research work which is essentially exterior to the reporting medium. The signifiers used within this secondary communication setting are regarded as a kind of container used to transfer "results" that have no intimate relation with the way they are published. In this context, open access to networked print-analogous material is both vital and sufficient: relatively little innovation is required as a consequence of this simple carrier–content model; the practical consequences of electronic publishing are limited in this field, as it is still mostly restricted to the emulation of traditional journal publishing in networked settings (even though things change in that area, too, as a result of the growing number of dataset publications — but the consequences of this transformation do not affect the semiological issue I am trying to identify here).

The situation is fundamentally different in the hermeneutically driven humanities and parts of the social sciences, where research cannot be as easily dissociated from its linguistic "packaging" since it is essentially using the same linguistic signs as are used for communication about this work, and very often the objects of research again are language entities. As a result, in this context research and discursive "packaging" cannot be dissociated, and the robust carrier–content models that are popular in the STM sector seem over-reductionist and inappropriate in this field. In such a situation, with complex document models and publication formats that are heavily intertwined with core research operations, the introduction of genuine electronic publishing creates extremely interesting options and challenges.

In this context, "open access" to networked print-analogous material is not a critical issue; instead, access to the publication source material and

processing/reasoning methods is required. This creates a major challenge, since the hermeneutic methods used in the humanities for generating questions and hypotheses are rather tricky to implement in a digital context. However, if current efforts are successful in this area, quite substantial innovation can be expected from the sector once electronic publishing evolves into a serious substitute for traditional means of publishing. Still — tragically! — almost all financial resources needed for such innovation reside in the STM sector.

Conclusion: five assumptions regarding the context of "technical" decisions

My first assumption regarding what might seem to be merely technical decisions in the shaping of future electronic publication landscapes is that there are no "innocent", purely technical, decisions in scientific publishing, and that purely "political" initiatives with no awareness of the implications of technical choices are naive, dangerous . . . and common in the open access context.

The second point — closely related to the first — is that control over content has little value without control of the means to access, manipulate and use that content.

Thirdly, scientific communication needs continuity and can hardly cope with permanent shifts of technical paradigms that affect document models, formats and identifiers. We therefore need major efforts to be made to standardize and stabilize today's moving targets in document technology.

Furthermore, I assume that purely commercial perspectives leading to proprietary choices can do a lot of harm in this respect and probably will not produce innovative approaches. This applies to Elsevier and Springer as well as to Adobe and Microsoft (to name just a few examples).

Finally, I think we need to design a separate technical and political agenda for open access to scientific communication in the humanities and social sciences, and this agenda cannot simply be derived from what colleagues are aiming at in the STM sector.

Editors in Europe: EASE and its predecessors

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Lest we forget: a short account of the European Association of Science Editors (EASE) and how it came into being.

The story of editorial associations apparently starts in North America, where the Conference of Biological Editors was set up in 1957 as a result of initiatives by the National Science Foundation and the American Institute of Biological Sciences. The Conference was renamed the Council of Biology Editors (CBE) in 1965 and at a CBE meeting in 1966 another association, the Association of Earth Science Editors (AESE), was born.

With the CBE example before it, UNESCO began in 1965 to encourage the formation of similar associations in Europe. The European Association of Editors of Biological Periodicals was duly initiated in Amsterdam in 1967 and the European Association of Earth Science Editors (Editerra) in Paris in December 1968. To its members' great relief, the biological group changed its unwieldy name to European Life Science Editors (ELSE) after its first general assembly in London in 1970 [1]. An editorial in the Editerra newsletter in July 1976 noted that "cooperation between the two Associations is now very close. This is essential if individuality is to be retained and duplication of activities avoided." A little individuality was in fact sacrificed in 1977, when *Earth Science Editing* became *Earth & Life Science Editing*.

In the same year Nancy Morris, Secretary of Editerra since 1974, was persuaded to take on ELSE as well, and it was largely due to her marriage-broking efforts that Editerra and ELSE began to discuss a merger of the associations, not just their newsletters. The wedding eventually took place at a joint assembly in Pau, France, in 1982, when EASE acquired its present name. (Incidentally, CBE was again renamed in 2000 and is now the Council of Science Editors. AESE still has its original name.)

Publications

Editerra and ELSE both sent members an occasional circular or newsletter. Under Editerra's first Secretary, Arie A Manten, some 32 circular letters were issued in five years. As well as the expected lists of members and reports of meetings, these circulars also contained a large number of drafts for a proposed Handbook. In 1975 *Earth Science Editing*, a more professional-looking publication, began to appear twice a year. This became *Earth & Life Science Editing* from number 4 in 1977. Numbers 4 and 5 kept the subtitle "newsletter of the European Association of Earth Science Editors" but ELSE's name was added to number 6 in 1978.

The next change was to publish three times a year, starting with number 12 in 1981. With issue 27 in 1986 the newsletter became *European Science Editing*, bulletin of the European Association of Science Editors, and in February 1997 it began to be published with volume numbers and continuous pagination for the year. The new numbering started with volume 23, with the first issue of *Earth Science Editing* regarded as volume 1. Since February 2001 *European Science Editing* has been published four times a year and in 2002 it was designated a journal. At editorial board meetings the Chief Editor now fines anyone who utters the word "bulletin".

From the outset both European associations aimed to produce a style manual modelled on CBE's *Style manual for biological journals* [2] (now published as *Scientific style and format* [3]). The *Editerra editors' handbook* [4] began to appear in 1976, based on the work done earlier which had appeared in the circular letters, and by 1984 some 10 chapters and a looseleaf binder had been produced. For its part, ELSE produced not a style manual but, at the suggestion of Knut Fægri, a guide for authors [5]. This led ELSE and Editerra to sponsor advice for editors in a second book [6], also produced by a commercial publisher.

After the merger the example of the *Editerra editors' handbook* eventually led to the production of the *Science editors' handbook*. As was arranged for the earlier version, members were sent chapters when each was written and 14 chapters appeared spasmodically between 1993 and 2002. Then, to celebrate EASE's 21st birthday, and with much inspiration, perspiration and pushing by Hervé Maisonneuve, its chief editor, the *Handbook* suddenly shot up to 47 chapters. This looseleaf publication was given to participants at the 2003 assembly in Bath [7] and is now on general sale. More chapters will appear as time goes by (one is included with this issue of *ESE*).

Structure, meetings and other activities

Like its predecessors, EASE is directed by a Council that is elected at the triennial assembly and conference, after a postal ballot. A publications committee oversees the journal, the *Handbook* and EASE's web site, and a small nominations committee is activated at the appropriate time every three years.

EASE's triennial assemblies and conferences have been held in many different countries, among them Hungary, Switzerland, Norway, England, France and Finland, since the first meeting in France in 1982. The next assembly will be in Kraków, Poland, on 15–18 June 2006 (non-members are welcome, of course).

During 2000 EASE became a company limited by guarantee, incorporated in England and Wales. The annual general meeting that must now be held provides an opportunity for the Council to meet members in whichever country the AGM takes place.

In their early days EASE's parent organizations set up several working groups on aspects of editing. One of the ELSE groups was on medical ethics; another was on reference style, on which the group reported in 1977 [8]. A workshop in November 1977 then published revised suggestions for a "unified system of bibliographical references" [9] for either name–year or numbered references (as used in updated form in the reference list below). Later, EASE was represented on the relevant committees of the International Organization for Standardization and the British Standards Institution.

ELSE, and afterwards EASE, formerly took part in a number of annual workshops organized by the *BMJ*. These meetings have faded out but in 2004 a successful EASE seminar, "Scientific publications in a digital age", was held in Barcelona in conjunction with the AGM. A second seminar in Barcelona is planned for 29 April 2005 and it is hoped that the series will continue.

Since 1996 EASE has sponsored several short courses on writing scientific papers, held mostly in Eastern Europe but including one in China. More information about these courses and about other EASE activities is available on the web site (www.ease.org.uk). Six-month-old issues of the journal are also on the web site, now that the open access message is spreading.

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Editing around the world

Editing scientific journals in mainland China

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Since 1978, the editing and publishing of Chinese scientific journals has made tremendous progress. In 1949, the last year marred by war chaos, about 80 scientific journals were published in China (Song 2003). With the improvement in the political and economic situation, the number of Chinese scientific journals increased to 400 by 1965. However, during the period of the Great Proletarian Cultural

Revolution (1966–1976), China was once again in a turbulent situation and almost all scientific journals stopped publishing.

After 1976, when stability had been restored, the Chinese government paid much more attention to science and education. By 1978, about 400 scientific journals had appeared; some were newly founded and others were older ones that had resumed publication. Since then, the number of Chinese scientific journals has expanded rapidly. In 1987 the number had increased to about 2800, reaching 4400 in 1997 (Song 2003, Zou 2004). According to recent statistics (end of 2003), 4497 scientific journals are now published in mainland China (excluding Hong Kong, Macao, and Taiwan) (Li 2004).

Profiles of scientific journals and databases in China

Of the 4497 scientific journals published in mainland China, about 210 are published in English, and another 20 in minority languages (Uygur, Kazak, Mongolian, Tibetan, etc.). The remaining journals are all published in Chinese.

Zou (2004) classifies Chinese scientific journals in four classes according to publication policy and contents: academic (basic research) journals, 30.4%; technical journals, 48.3%; popular science journals, 9.3%; and guides and directories published by information centres or government agencies, 12.0%.

Universities sponsor the majority of academic journals (45%); institutes or agencies of local governments sponsor 22%; societies of the China Association for Science and Technology (CAST) 18%; and institutes of the Chinese Academy of Sciences 15% (Li & Ding 2003).

Circulation rates of Chinese scientific journals vary quite a lot. The journal with the highest distribution is a popular science journal, *Family Doctor*. Its circulation is about 8.7 million copies per issue. In general, technical journals have higher circulations (about 3000 copies per issue) than journals publishing basic research results (about 1000 copies per issue). Journals in English or minority languages often have print runs of 200 to 500 copies.

Since the early 1990s several information and documentation centres have developed databases for Chinese scientific journals. At present there are four nationally renowned databases, all commercially operated:

(1) *Wanfang Data* (www.wanfangdata.com.cn). More than 2300 Chinese scientific journals are selected and covered in this database; full text for all these journals can be read or downloaded. Based on Wanfang Data, the Institute of Scientific and Technical Information of China (ISTIC) publishes Chinese S&T Journal Citation Reports (CJCR) annually. CJCR has been published since 1987 and has gained a good reputation in journal and research evaluation.

A profile of scientific journals in China can be derived from CJCR–2002 (ISTIC 2003). This report covers 1534 "high quality" scientific journals (including 28 in English). The distribution by discipline of these journals is: mathematics, 39; physics, 45; chemistry, 30; geosciences, 107; medicine, 391; biology, 133; technology, 573; multidisciplinary, 216. In 2002 these 1534 journals published an average of 156.5 papers, had a mean impact factor of 0.294, and had a mean of 278 citations (Table 1).

(2) *ScienceChina* (http://sciencechina.cn). This is based on the Chinese Science Citation Database, sponsored by the Documentation and Information Centre, Chinese Academy of Sciences. It covers about 2000 scientific journals. More information about ScienceChina is given by Jin et al. (1999, 2001).

(3) *Vip Information* (www.cqvip.com). Vip Information is sponsored by the Southeast Information Centre, Ministry of Science and Technology. As well as covering nearly 4000 Chinese scientific journals, Vip Information acts as an intermediary agent for some international scientific journals.

(4) *China National Knowledge Infrastructure* (www.global.cnki.net/). This database was founded by the Tsinghua Tongfang Optical Disc Co. Ltd, and is a spin-off company of Tsinghua University. At present, it covers about 5300 journals (including some social science journals).

As well as the above four databases, a book entitled *A guide to the core journals of China*, compiled by the Library of Peking University, is often mentioned in journal or research evaluations. The *Guide* is edited and published once every four years; its fourth edition was published in July 2004 (Dai & Cai 2004). For this latest edition of the *Guide*, over 10,000 Chinese journals underwent bibliometric evaluation (the number of articles indexed by relevant databases, the impact factor of each journal, etc.). In total 1798 journals were incorporated in this core publication, covering all fields of science, including philosophy, the social sciences, humanities, natural sciences, medicine, agriculture and engineering.

In 2003, the Science Citation Index (SCI) indexed 76 Chinese scientific journals, 67 of which were included in *Journal Citation Reports–2003* (JCR). Among these 67 journals, 49 are published in English while the rest are in Chinese, with English abstracts. In JCR–2003, the maximum impact factor of the Chinese scientific journals was 3.318 and the maximum number of total citations was 2410. For all 5907 journals in JCR–2003

Table 1. Bibliometric data for the 1534 journals covered in *Chinese S&T Journal Citation Reports*–2002. Values are numbers and percentage of journals.

Published papers (P)			*Impact factor (I)*			*Total number of citations (T)*		
$P > 500$	27	1.8	$I > 1$	30	2.0	$T > 1000$	62	4.0
$500 \geq P > 100$	969	63.2	$1 \geq I > 0.1$	1214	79.1	$1000 \geq T > 100$	982	64.0
$P \leq 100$	538	35.1	$I \leq 0.1$	290	18.1	$T \leq 100$	490	31.9

the corresponding data are 52.28 and 384,393.

Editorial practices in China

In China, journal publishers are often the journal's sponsoring institutes, universities or associations. In general, journal editors are employed full time and need to take care of everything other than the scientific assessment of articles. The "editorial office" is most often an independent department in a journal's sponsoring institution. The number of editors of a journal varies according to the journal's scale and periodicity; a monthly journal usually has three to five editors.

Almost all Chinese scientific journals use peer review. Generally, every submitted article is reviewed by two people. Reviewers are often selected by journal editors or members of the editorial board. These members of the editorial board and also the chief editor are usually prominent scientists in the relevant research field or fields.

Due to the large numbers of scientific journals and journal editors, activities related to science editing are prominent in China. Among the societies or associations with national scope and impact are the China Editology Society for Scientific Periodicals (CESSP), the China Periodical Association (CPA), the Editology Society of Natural Science Periodicals of the Chinese Academy of Sciences (ESNSPCAS), and the Society of China University Journals in Natural Sciences (SCUJNS). Several journals are solely devoted to science editing. Among these, *Acta Editologica* (sponsored by CESSP) and the *Chinese Journal of Scientific and Technical Periodicals* (sponsored by ESNSPCAS) have the greatest impact on the Chinese science editing community. Each of these journals has a distribution of about 3000 copies per issue.

Since the late 1990s, many Chinese journals with English editions have signed contracts with international publishing houses for cooperation in editing and distribution. With China entering the World Trade Organization, the Chinese science editing community has become even more eager to communicate and cooperate with international societies. In August 2002, the 11th International Conference for Science Editors was held in Beijing, an event co-sponsored by the International Federation for Science Editors (IFSE), CESSP and ESNSPCAS. The theme of IFSE-11 was "Global science communication in the new century", and the topics presented included the present and future of scientific communication, global citation and access to scientific literature, the peer review system, and electronic databases and digital libraries.

Problems encountered by Chinese scientific journals

As shown above, Chinese journals (in particular, China's English-edition scientific journals) generally have a low impact, as measured by citations, and many have low distributions (Moed 2002, Ren & Rousseau 2002, 2004). Why do China's scientific journals play a small role in science communication and how could their role in domestic and international science be improved? We have made several suggestions (Ren et al. 1999, 2002, 2004):

(1) The number of Chinese scientific journals should be cut back, and new journals should be subject to "birth control". In China, almost every university, institute, and professional society has at least one and frequently several journals. It is not possible for a system with limited resources to support so many journals. Hence, it may be a good plan to combine small journals covering the same or related topics, and publish larger journals.

(2) The low visibility of China's scientific journals is related to low numbers of subscribers. Moreover, most of China's scientific journals are not covered by international (or even national) databases. Often they do not even have their own web sites, and do not publish an electronic edition. No wonder such journals are invisible.

(3) China's scientific journals encounter serious difficulties in receiving good quality articles. Under the pressure of scientific evaluation procedures in which journal impact factors are of critical importance for grant renewal and promotion, Chinese scientists tend to publish their more important work in international journals (Jin & Rousseau 2004). As a result, China's journals are locked in a classic vicious cycle: domestic journals do not gain prestige and high impact factors because researchers publish their best results abroad, but Chinese scientists publish abroad because domestic journals are not visible on the international scientific scene.

With more and more international publishers paying attention to China's big market potential, China's scientific journals now have more opportunities to develop through mutual cooperation. Moreover, as Chinese journals do not operate on a purely commercial basis, the newly developed open-access movement is quite feasible for them. In fact, some journal editors and publishers have already made their published papers freely available on the internet (www.wjgnet.com; www.scienceinchina.com; www-2.zju.edu.cn/jzus/index.php; etc.). All these methods are helpful in increasing the impact of China's scientific journals on the international and national scientific community.

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Viewpoint

An unhappy equation: mistrust + confusion + politics = interference with science information transfer

What have editors done and what should they (and EASE) do about apparent or actual attempts to block scientific articles originating in certain countries?

What would you do if your government told you that your journal was not allowed to edit manuscripts submitted by authors from certain countries? Publish them as received and hope readers would be willing to put up with the unpolished version? Refuse to consider manuscripts from those countries? Try to reason with the government in the hope of getting the politicians to change their mind? Or simply ignore the prohibition and continue your publishing activities as usual — even at the risk of severe economic penalties?

These were the choices faced in 2003 and 2004 by editors of science journals published in the USA, where the decision by one large professional society to comply with the government's interdiction against providing "substantive or artistic alterations or enhancements" of manuscripts from Iranian researchers triggered waves of unease and indignation among academic publishers and civil liberties organizations.

Confusion over enforcement of the trade embargo

Confusion arose when the Office of Federal Assets Control (OFAC), an agency of the US government's Department of the Treasury, responded to a request for clarification from the Institute of Electrical and Electronics Engineers (IEEE). The agency considered editing (described initially as reordering paragraphs or sentences, correcting syntax or grammar, and replacing inappropriate words prior to publication) to be a service provided to enemy countries and therefore illegal under the terms of the US trade embargo against Iran, Sudan, Libya and Cuba [1]. Although OFAC did not explicitly "ban", "prohibit" or "prevent" peer review, technical editing, substantial editing, copy-editing or publication outright, they stipulated that certain activities might result in a "substantially altered or enhanced product." Performing these activities without a "license to edit" from OFAC was tantamount to violating the embargo and risking prosecution by the Department of the Treasury.

How did scientific societies, editors and editorial associations react?

IEEE

As news of OFAC's hard line on reviewing and editing for the enemy spread, editors in the USA were left wondering how far the government was prepared to go to control the publication of manuscripts from the sanctioned countries. The IEEE, having been "caught" by their bank and OFAC for trying to pay an Iranian hotel bill by bank transfer after a conference in 2001, had suspended many membership benefits for its approximately 2000 members in sanctioned countries for fear of violating the embargo. Apparently they had also stopped editing manuscripts from these countries, although they continued to review and publish articles as long as they were suitable for publication with no copy-editing [2, 3]. In response to an OFAC letter of 30 September 2003 the IEEE, which publishes about 100 journals, formally applied for either a license or exemption from the need to obtain a license to perform copy-editing [4]. Between October 2003 and April 2004 IEEE (like other academic publishers) liaised with OFAC to seek clarification and a practicable solution. At the same time IEEE battled the many critics of their widely denounced compliance with the embargo, interpreted as evidence of discrimination against some of their own members, in violation of the institute's own code of ethics.

Other scientific societies

Reactions by other scientific societies and their editors varied. Some editors invoked the First Amendment and freedom of speech as grounds for their refusal to discriminate editorially against scientific information from any country. Others interpreted the language of

the OFAC ruling to mean that their usual editing practices were exempt from the requirement to obtain a license. Publishers who refused to apply for a license included the AAAS (publisher of *Science*), the American Institute of Physics (which publishes over 100 journals), the American Physical Society [5], the American Chemical Society (which publishes 35 journals) [6], the American Geophysical Union and the American Society of Mechanical Engineers [7] (although this latter society stopped accepting members from Cuba and Sudan [2]). The American Chemical Society, however, did impose a moratorium on publishing articles from sanctioned countries. This was done to protect the society, its editors and employees while the issues and risks were evaluated [8].

The American Society for Microbiology (publisher of 12 journals) reluctantly opted to apply for their own "license to edit" in the hope that the permission to handle manuscripts from embargoed countries would be forthcoming and that life could go on as usual. This decision, criticized by some as implicitly recognizing OFAC's right to interfere with science publishing, was based on uncertainties over the risk of exposing their employees (some of whom were said to be volunteers) to legal action by the Department of the Treasury [9].

For several months the American Chemical Society, American Society for Microbiology, and American Nuclear Society (and probably other societies too small to make the news) refused to process manuscripts from Iran, Sudan, Libya and Cuba [5], even if only one of the several co-authors was from an embargoed country — a policy even more drastic than IEEE's compromise solution of peer reviewing and publishing, but not copy-editing, manuscripts from sanctioned countries. This measure left authors the choice between withdrawing and resubmitting their papers to a non-US journal, or waiting indefinitely for the US journal's license application to be approved (or possibly rejected). Regardless of what authors decided to do, they faced an unforeseen delay in publication; some may have been forced to withdraw manuscripts that would otherwise have been published. This situation must have been extremely painful and frustrating to researchers in Iran, Libya, Sudan and Cuba.

Editorial organizations

The World Association of Medical Editors (WAME) posted a Policy Statement entitled "Geopolitical intrusion on editorial decisions" on their web site on 23 March 2004 [10], and a Spanish translation of the statement on 8 April [11]. By 20 December 2004, a total of 44 journals had formally endorsed the statement [12]. In an editorial endorsing the WAME statement, William F McCool at the *Journal of Midwifery & Women's Health* expressed the concerns of many editors, noting that it would be a great tragedy if the threat of political violence led to censorship of important scientific work occurring in other parts of the world [13].

The Council of Science Editors (CSE) reproduced the WAME statement in the July–August 2004 issue of their journal *Science Editor* [14], noting that they also supported extending the statement beyond biomedical journals to include all scientific journals.

EASE first noted the controversy in the News Notes section of the May 2004 issue of *ESE* [15], but so far has yet to publish any institutional statement regarding the issue. Is this because most members of EASE do not work in the USA and therefore feel removed from the controversy?

Progress towards resolution

A meeting between publishers and OFAC in February 2004 went some of the way towards allaying editors' mistrust of the Department of the Treasury's motives. A week after the meeting the American Chemical Society, which must have felt embarrassed over the apparent contradiction between its publicly stated belief that "scholarly publishing should not be constrained by federal regulations" and its decision to stop considering manuscripts from sanctioned countries, announced that it would immediately resume publication of papers from all countries [8]. Other publishers, still uncertain of the outcome of these conversations, preferred to wait and see.

When the IEEE was notified by OFAC on 2 April 2004 that both peer review and "style and copy editing" of manuscripts from Iran, Sudan, Libya and Cuba could be performed without a special licence, the institute trumpeted this as their victory for freedom of the press and against government intrusion in science editing. Other restrictions against its members in sanctioned countries were eventually lifted in October 2004 [4], but only after an internal battle over what some members saw as self-imposed compliance — possibly motivated in part by political or economic reasons — with unfair stipulations of the trade embargo [16].

In a press release dated 5 April 2004, OFAC declared that it "does not regulate the important peer review process, as well as the process of style and copy editing, with respect to scholarly papers submitted by authors in a Sanctioned Country" [17]. An editorial in *Science* commended OFAC for implicitly admitting its mistake and changing its policy in favour of open scientific communication [18]. Publishers that had applied to OFAC for a license, notably the American Society for Microbiology, breathed a sigh of relief and resumed handling manuscripts from sanctioned countries as usual.

Further restrictions on publishing

However, not all academic publishers interpreted the OFAC ruling as the end of all limitations on peer review and copy-editing. Some noted that the language of the OFAC ruling left it unclear whether their decision applied to all publishers or only to IEEE, despite the statement that the "ruling makes clear that scientific communities in sanctioned countries may publish their works in U.S. scholarly journals." Others were unsure whether the ruling applied specifically to peer review and "style and copy editing" only as defined by the OFAC on the basis of practices at IEEE, or whether all variants of these editorial processes were covered.

Their mistrust was justified in the light of several factors. The language of the OFAC communications issued in 2003 and 2004, while not entirely inscrutable, left key points open to interpretation and often failed to address specific points that editors were most concerned about — forcing the IEEE to request and await further clarification. Moreover, the procedure some editors felt would protect them from sanctions for violating the embargo — application to OFAC for a license — was a step with an uncertain outcome. There was never any assurance from OFAC that all such requests would be honoured (in fact, their position was to consider each request on the basis of its individual merits), and the delay of many months between IEEE's initial request in 2003 for either a license or exemption and the 2 April 2004 ruling that finally exempted them from the requirement to apply for a license no doubt contributed to editors' disquiet. Even after the April press release, mistrust was probably further heightened during the months before the US general election in November 2004, as the Republican party used increasingly aggressive language with reference to enemy states, and as evidence came to light of the Bush administration's selective use of science information to support its conservative views.

Unease on the part of journal publishers over exactly where OFAC stood on "routine activities necessary to publish foreign literature from embargoed countries" culminated in a lawsuit brought against the OFAC in September 2004 [19]. The main plaintiffs in the case are the Association of American Publishers' Professional & Scholarly Publishing Division (AAP/PSP) and the American Association of University Presses.

So the OFAC versus editors saga continues. Under the circumstances it is understandable for academic publishers to want assurance that they will not be breaking the law in carrying out their professional activities. The 2 April 2004 letter to the IEEE (but not the 5 April press release) from OFAC includes the ominous statement that the agency would consider "a prohibited exportation of services to occur when a collaborative interaction takes place between an author in a Sanctioned Country and one or more US scholars resulting in co-authorship or the equivalent thereof" [20]. This position is a threat to the free exchange of science information between US researchers and their colleagues in certain countries, and is a potential impediment to research and publication. In fact, *Science* reported that the restriction on collaborative research had already led to the cancellation of some projects, and that OFAC intends to examine applications for a "licence to co-author" on a case-by-case basis [21]. On 15 December 2004 OFAC announced it would issue a general license for "US persons to freely engage in most ordinary publishing activities with persons in Cuba, Iran and Sudan" [22]. The ruling apparently removes obstacles for manuscripts from these three countries, at least as long as the authors are not affiliated with any government agency. However, collaborative research involving US researchers and colleagues from these countries is still considered a punishable violation.

Fortunately, editors whose journals are published in countries other than the USA can work unfettered by their government's ignorance of journal publishing processes. However, the threat to international science publishing posed by OFAC's de facto restrictions on certain countries should be of concern to EASE members regardless of where they live. Now is a good time for EASE to reaffirm its support for editorial independence and to formally endorse the WAME statement on geopolitical interference. Perhaps some EASE members would be willing to translate the WAME statement into other languages and take steps to have it disseminated in their own country. These gestures would reinforce EASE's position as the most international of science editors' associations. No doubt colleagues in the US would appreciate an explicit statement in support of their right to publish the best science they can regardless of the authors' country of origin. Moreover, EASE members working in countries now subject to the US trade embargo may have seen their right to publish in the international science literature unjustly curtailed. These colleagues would welcome expressions of support and recognition from EASE for the unjust situation they are in.

How efficiently OFAC acts to reduce the damage being done by their interference in science communication may well depend on how much help, advice, or pressure it receives from concerned professionals. Meanwhile, the somewhat ambiguous language in their rulings on some aspects of international collaboration remain a potentially serious obstacle to the free exchange of science information.

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More information

www.ieee.org. Accessed 21 October 2004. Typing "OFAC" into the search window brings up about 120 links to IEEE documents relating to this now long-running controversy.

www.treas.gov/offices/enforcement/ofac/rulings. Accessed 8 December 2004. Interpretative Rulings issued by the Office of Foreign Assets control, alerting to ways in which travel, publication, and other forms of international research collaboration might violate the US trade embargo.

www.aaup.org/ofac. Accessed 1 December 2004. This site provides a long list of links to all documents pertaining to the suit brought by the Association of American Publishers' Professional and Scholarly Publishing division (among other plaintiffs) against the US Department of the Treasury.

Correspondence

Open access . . .

I read the editorial "Who will pay for open access?" (*ESE* 2004;30(4):112) with interest. Although you raised a number of questions relevant to scientific publishing, I would like to concentrate on the question posed in the title.

I have been interested in the free flow of scientific information from the time I served as editor-in-chief of *Periodicum biologorum*, Zagreb (1975–1994). It was our policy to allow unrestricted use of the information published in the journal, provided its source was acknowledged. Consequently, I became a supporter of the Open Access Initiative and signed the Budapest Open Access Initiative (BOAI, www.soros.org/openaccess). Also, I participated in the BOAI Forum (boai-forum@esc.soton.ac.uk), and have recently published a review article on open access in Croatian, with an English summary, in the journal *Kemija u industriji*, Zagreb (accessible through www.hdki.hr). From this you can see that I do believe in open access to peer-reviewed and published scientific information. This is because I find open access to be consistent with the very nature of the scientific research.

Now back to the question of who will pay. There is no doubt that publishing scientific information, in whatever form, will always have a cost. Even if publication is totally in digital form, the cost of the peer review process and of some editorial work before the actual publication will have to be covered. As you can imagine, this question was frequently raised in discussions on open access. For example, there was the discussion at the BOAI Forum (see above) on 16 October 2003 on "Scientific publishing is not just about administering peer-review". Similarly, Stevan Harnad, in his discussion at the BOAI Forum (6 November 2003, "The green and gold roads to open access") stated "The only essential service that peer-reviewed journals will always have

to be the ones to continue providing is peer-review itself (and perhaps some editing). The cost of that is about $500 per article. But what the planet is paying right now per article (summed up from the tolls paid by those institutions that can afford that particular journal) is about $1500 per article." I do not have to tell you that the author(s) and the peer reviewer(s) are free. Nor that the most prestigious (and expensive!) toll-access journals are not easily available to scientists in all countries.

You may be aware of the existing business models for open access publishing. Again, I may quote part of a letter that Jan Velterop of Biomed Central wrote to Dr Elias Zerhouni of the National Institutes of Health (www.biomedcentral.com/openaccess/miscell/?issue=20). Here it is:

> "Since we publish research articles with open access and have done so for the last five years, we have come to conclude that there is a viable and feasible business model that ensures immediate open access, based on article processing charges payable by or on behalf of the author, as an integral part of the research process, instead of the traditional subscription charges to users and institutional libraries, which restrict access. All the open access articles we publish are deposited immediately in PubMed Central and in a number of other repositories in Europe as well, ensuring redundancy in accessibility. Whilst we have not reached our break-even point yet, our growth is in line with our business plan and we expect to reach profitability late in 2005 or early in the following year, thus demonstrating a sustainable business model for a commercial open access science publisher."

Yes, it will always cost to publish scientific information, but the question is how to make the spending most cost-effective and how to increase the accessibility of published information to maximize its impact on the development of science and society. I do believe that the open access concept is a move in the right direction to achieve this.

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. . . and editorials

I agree with Hervé Maisonneuve (*ESE* 2004;30(4):112) that someone will have to pay for open access. The more information is available, the more important the means for obtaining it in manageable form, which is where we science editors come in. Whether we are paid front end or back end will be seen over the years.

In answer to Marie-Louise Desbarats-Schönbaum's question about what kind of editorials we want (*ESE* 2004;30(4):116–117), I think we need more *tours d'horizon* than tours of the journal, which should be able to speak for itself. Controversy need not be avoided — it would provoke more correspondence!

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From the literature

Suggestions on reviewing from the world of marine biology

How can journal editors maintain high standards of peer review when faced with an ever-increasing number of submitted manuscripts? This question was addressed by 20 editors and reviewers in a special theme section of the *Marine Ecology Progress Series* (*MEPS* 2000;192:305–313) which provides a fascinating insight into the demands placed on reviewers and proposes some radical solutions.

Virtually all the respondents agreed that paying reviewers would not solve the problem, since most faced a shortage of time and they could not simply pay others to lighten their workload. However, some did comment that, since commercial journal publishers profit from the hard work of reviewers, gestures such as free copies or reprints for reviewers would be appreciated.

Several people noted that involving junior colleagues in the reviewing process had a number of benefits. Not only does it ease the burden for the senior scientists, but it can also provide a learning opportunity and increase the potential reviewer population. One editor noted that "the review should of course be returned to the editor in the name of the younger scientist" rather than being passed off as the work of the supervisor.

Most of the respondents were researchers who undertook editorial roles in addition to, or as part of, their academic appointments. I was struck by the amount of time these scientists devoted to the peer-review process. Many mentioned limiting their reviewing activity, yet they were still prepared to review 36–50 manuscripts per year and they agreed that they probably spent 15–20% of their time reviewing.

Some justified this workload with some calculations estimating the "debt" authors owed to the scientific community. For example, if a researcher publishes four papers per year (as first author), if each paper is read by three reviewers, and if the journal rejection rate is 50%, then that researcher "owes the system" 24 reviews per year. Put another way, and with slightly different assumptions about rejection rates and the

number of reviewers per paper, scientists should be prepared to review about three times as many papers as they publish over the course of their careers.

Despite acknowledging that the peer review process seems to work (which, one editor noted, is "truly astonishing") there was a feeling among the discussants that some scientists were not pulling their weight. One respondent judged that about 10% of scientists receive 80% or more of the review requests and several editors expressed frustration over colleagues who repeatedly refuse to review. Seven of the discussants were in favour of penalizing scientists who do not take their fair share of reviewing by refusing to accept submissions from researchers who consistently (or without convincing reasons) refuse to do reviews. One proposed a system under which every scientist would have the right to publish three papers in a particular journal (to allow younger researchers to get started) but would have to review a certain number of manuscripts for the journal if they wanted to publish more. This editor also suggested that such a "credit/penalty" system should also apply to co-authors "but with some attenuation" and commented that such a system would "not be such a big effort" because most publishers already maintain reviewer databases. However, another editor commented that "penalizing those submitting manuscripts to journals they refuse to review for is going to be difficult to sell". An informal follow-up sent to the participants revealed that none had actually implemented such a system since this discussion was published.

Several respondents mentioned the need to acknowledge reviewers better. Although reviewing is considered part of an academic's responsibilities it is rarely assessed or formally recognized by institutions. Simple acknowledgements in the form of an annual letter from the editor were also suggested. One journal had considered listing reviewers annually but rejected this because of "potential problems", in particular authors being able to identify the reviewers of their work from such a list. It appears that reviewer anonymity is considered very important in these biology journals, which contrasts with journals in other disciplines which quite frequently acknowledge reviewers by annual lists and may even use open (i.e. signed) review.

MEPS has published several other theme issues on aspects of peer review — some are available at www.int-res.com/journals/meps/themeSections.html.

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Reports of meetings

Greetings from the new section editor

I am delighted to have joined the Publications Committee of *European Science Editing* as the editor of reports of meetings. The clutch of reports that follows fills me with optimism, but meetings reports are a challenge. I encourage reporters to make us as readers wish we had attended and feel that we have shared their experience. But how is this to be done? The setting of a conference may have been idyllic, the food and drink to die for (if any but the starving can ever justly say such a thing), the speakers inspirational and their visual aids stunning, but reports of meetings run the risk of having all the impact of one's friends' holiday photographs.

What I hope to receive are the pearls, the nuggets of pure delight that have inspired you. This is no place for "minutes": I want no slavish itineraries of the sessions; a fair description of all presentations is a sure cure for insomnia. What made you sit up, made the hairs tingle on the back of your neck, drove you mad? What led you to borrow a ballpoint and scribble on the back of an envelope?

Science is moving all the time and the media for sharing scientific information are changing too. Meetings are, or should be, where the cutting edge is whetted, where we share with each other ideas and experiences before they have even been committed to paper or electronic publication.

When you attend a meeting, remember *European Science Editing*. When you are inspired, tell us what moved you. Write it down while it's fresh in your mind and e-mail me at the address below — 800 words maximum, no more than five references, and no complicated coding in the file. I look forward to hearing from you. Perhaps that should be "downloading from you", but it doesn't sound right.

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Spreading the word: who profits from scientific publishing?

A symposium at the EuroScience Open Forum 2004
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In any field of scientific enquiry, the final act of the research process is the publication of papers. Scientific papers display the working of the ethical principles that underpin academic science (the CUDOS principles: communality, universality, disinterestedness, originality, and scepticism) [1, 2].

This symposium at the EuroScience Open Forum 2004 (see www.esof2004.org/programme_events/session_papers.asp for symposium papers and www.euroscience.org for details of the organizing institution) compared reality with the ideal, in the gloomy context of an "unscientific culture in which

pushiness and political skills are rewarded too much, and imaginative approaches, high-quality results and logical argument, too little" [3].

Let us begin with the statement, "Everybody should have access to the results of scientific research considered as a public good", embodied by the CUDOS principle of "communality". As Robert Terry (Wellcome Trust) put it, "the people who conduct the research and the people who pay for it are unable to read the results without paying a fee . . . subscriptions to journals have risen by more than 200% in the last 10 years, generating large profits for some publishers, and the university library system (in the United Kingdom) now spends £76 million annually on journal subscriptions." The solution usually put forward is that of the internet-driven open access.

"[The] Budapest Open Access Initiative, on 14 February 2002, was a call for all scientists in the world to become aware of the possibility of gaining open access to all scientific publications, via . . . creating institutional archives and depositing published journal articles in them (self-archiving); and publishing in open access journals" commented Hélène Bosc (Institut National de la Recherche Agronomique, France). But "the open access journal model is, as yet, largely untested . . . While open access saves some costs for publishers, it may add others" according to Sally Morris (Association of Learned and Professional Society Publishers, UK). Many experiments are going on, thus shaping progressively a new landscape. Claus Montonen (European Physical Society) said, "The old publishing model is already broken and is being replaced in the short term by a confusing mixed model of central repositories, institutional repositories, open access journals and a few surviving strong, well-established conventional prestige journals . . . The market will become less and less attractive for commercial publishers . . . A sustainable model in the long run could consist of a restricted number of open access prestige journals, published by learned societies."

Disinterestedness ("Nobody relies upon publishing to get rich") is another cornerstone of CUDOS ethics. "A greater emphasis on wealth creation, even in academic research, has distorted the old norms of academic behaviour so that everyone is now encouraged to consider the potential financial rewards which may be derived from their work . . . But although intellectual property rights can aid the conversion of good science into tangible benefits, the fact that they are monopolies can cause a tension between private profit and public good" (Sir Roger Elliott, Royal Society, UK). The European scientific community must be much more active and effective in explaining the special status required for scientific data and information.

"Everybody contributing to the scientific archive must have to say something new" ("originality"). As Frank Gannon (European Molecular Biology Organization, Germany) pointed out, however, "Scientists submit their work to journals for a variety of reasons. For some it is to announce some fantastic data, which they and their colleagues in the laboratory have generated. For others it is to fulfil a requirement for a thesis examination. Another reason is to demonstrate to funders that their money has been spent wisely. A final reason occasionally may be to advance by indirect means a particular commercial compound." Today, the *a posteriori* citation recognition of the contributions made to the scientific archive is no longer sufficient. "Post-publication evaluation (such as citation counts combined with citation content analysis) would help editors to determine the success of the peer review process, and the scientific community to filter out those papers that contribute most to scientific advancement," remarked Hans Dieter Daniel (Eidgenössische Technische Hochschule, Switzerland).

Scepticism was in the air. It was clear to the symposium participants that the CUDOS system has reached its limits. Philip Campbell, editor in chief of *Nature*, said: "Referees are overwhelmed, grant selection committees are overwhelmed", but nevertheless the "system is working and the CUDOS principles are valid". Wilhelm Krull (Volkswagen Foundation, Germany) applied Winston Churchill's words about democracy — "Democracy is the worst form of government except for all those others that have been tried" — to our scientific publishing system.

Pierre Baruch (Université de Paris VII, France) stressed that the very lively debate on scientific publishing and open access is now shifting from scientific and publishing circles to the political level, as shown by the announcement, on 15 June 2004, by the European Commission of "a study on the economic and technical evolution of the scientific publication markets in Europe" and by the publication on 20 July of the House of Commons Science and Technology Committee report "Scientific publications: free for all?" The scientific communities in Europe should take part in this process, and we hope that Euroscience, together with non-governmental organizations such as ALLEA (All European Academies) and Academia Europaea, will be a helpful protagonist.

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