

IMPROVING ACCESS TO MEDICAL LITERATURE

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We have a once-in-a-lifetime opportunity to transform access to medical literature, enabling the unimpeded flow of information to animal doctors and to human doctors and bringing huge benefits to the animals and human beings on this planet. The vision I give you is that through the Internet anybody who needs medical information should be able to receive it without payment and without obstruction. The benefits in terms of both animal and human health are incalculable. Whether we are able to take advantage of this opportunity depends on the willingness of the academic community and of publishers to change. The present system of scholarly publishing is on a downward spiral of higher cost leading to reduced access leading to even higher cost. We have to change the model of scholarly publishing in order to break out of that downward spiral and release the power of the new open access model.

There are many factors which determine whether a reader gains access to the content she or he needs. In some parts of the world the level of access is still determined by the reliability of the electricity supply, the cost of the Internet connection or the availability of a computer. The unimpeded flow of information does require an adequate infrastructure, but improvements in infrastructure need to be accompanied by the removal of those blockages in the free flow of information which are due to high cost, restrictive licensing terms and technical protection measures. Such blockages impede the free-flow of information to animal doctors and surgeons as to human doctors and surgeons. No doubt the wealthy are able to buy their way through many of these blockages to obtain the information they need, but even the wealthy are finding these barriers to access increasingly irksome. When Harvard and Yale and Oxford and Cambridge have to cancel journals, removing access to those journals for their research staff and students, you know that something is wrong in the flow of scholarly communication.

The cancellation of journals by academic libraries is one of the most public signs of the current restriction upon access to medical literature. In the vast and complex literature of medicine and surgery, however, there are many other symptoms of the disease affecting the body of scholarly communication. Just as serious as the effect upon libraries is the effect upon small publishers, who are being squeezed out of the market by the major commercial publishers. I believe that the clinical veterinary societies still offer relatively cheap journals, and long may they survive, but many learned societies in pre-clinical medicine are facing

the loss of subscriptions due to libraries' purchase of "Big Deals" offered by the major commercial publishers. Confidential information made available by some UK learned societies shows a steady loss in subscriptions over the past few years with little or none of that loss made up by consortial deals. The library consortia cannot be blamed for this situation as they have to concentrate their limited negotiation-time in arranging for big packages of journals, leaving the smaller journal publishers out in the cold. The result of this situation is that readers are losing access to important journals published by learned societies, and sometimes those societies are forced to hand over their journals to the major commercial companies. These companies then raise the price of the journal and increase their profits by including the journal in the "Big Deal" packages they offer. In the publishing world the financially strong are becoming stronger and the financially weak weaker.

The access problem is not confined to journal literature. Books, both textbooks and scholarly monographs, are bound fast by the limitation of print and by high cost. Some publishers are exploring the availability of the text of books in electronic format, but the development is being held back by uncertainty about the economic model, particularly for textbooks. Publishers and authors receive considerable income from textbook sales, and you can imagine the scenario where a library buys electronic access depriving the publishers of income from maybe one hundred copies of textbooks sold to students. Will the library pay a licence fee for the electronic copy equivalent to the cost of one hundred copies of the print volume? Unlikely. This scenario also creates organizational problems for universities, as the cost of textbooks would be shifted from one hundred individual students to the university. None of this would be of great importance if the current arrangements for access to medical textbooks were working well. As librarians you know how few medical and surgical textbooks you can afford to buy, sometimes because your budget for monographs is squeezed by the high cost of journals. And in many parts of the world access to medical textbooks or research monographs is almost non-existent, or dependent upon the use of out-of-date editions. Medical books perhaps even more than medical journals need availability in electronic format at low cost in order to boost access to the information they contain. Contrast this current situation with the situation which would exist if all medical literature were available free of charge to all veterinarians, all doctors and all surgeons across the world through the Internet. The contrast shows the extent to which the world is poorer for the restrictions upon access imposed by cost, poor licensing terms and technical protection measures.

How has this situation come about? Jean-Claude Guedon has placed the current situation into a historical context in an article in the *ARL Newsletter*¹. In brief a number of academic and commercial factors have come together to produce a very bad situation for users of academic literature. The "pressure to publish" in journals with a high-impact factor has led to a hierarchy of journals, and commercial publishers have used their financial strength to purchase the

¹ Guédon, Jean-Claude. "Beyond Core Journals and Licenses: The Paths to Reform Scientific Publishing." *ARL* 218 (October 2001): 1-8. <<http://www.arl.org/newsltr/218/guedon.html>>

journal titles highest in the hierarchy. They have then consolidated their position by using the transfer of copyright from authors to prevent publication of the same text in alternative publication outlets, thus creating a virtual monopoly. A key reason for poor access to journal literature is the lack of competition, as each journal is unique, containing text which cannot be found elsewhere. The publishing industry has been able to raise prices because there is no other product users can purchase which provides the same content. Until recently research staff in universities have turned a blind eye to this situation because their tenure and promotion prospects depend upon publication in those expensive high-impact factor journals, but there are signs that the academic community is prepared to change its attitude towards the signing-away of copyright.

For many years the library community has been aware of the restrictions upon access to academic information. Librarians are committed to improving access to information for their users and various ways have been found to alleviate the situation. The longest-standing service to improve access has been inter-library loan or document delivery of books and journals articles. This service has supplied items which were not in sufficiently-high demand to justify purchase by a library. Inherently, therefore, inter-library loan has not met the need for access to high-demand journals and books. It has been an important part of the library service but one designed for low-use content. By contrast, collective purchasing through library consortia has been designed for high-use content. Through consortia libraries buy journals from the most powerful publishers, not the titles of academic value from small publishers. Those powerful publishers will tell you how much access is improved through their "Big Deals", how the cost per journal article is being reduced through the availability of many more journals than you could hope to subscribe to individually. Beware such siren messages! The reality is that libraries and smaller publishers are paying heavily for access to titles that are not really needed. Look at the list of titles offered on Science Direct and ask yourself how many of these titles your users really need. And then look at the list of titles from smaller publishers which you have had to cancel to pay for Science Direct, titles which your users really need. The "Big Deal" is superficially attractive but it has an insidious effect upon access to scholarly information. Also superficially attractive are the free or low-cost offers by a few publishers to very poor countries. Access through this route is better than no access at all, but the number of titles made available by publishers is often limited and no such offers are made to countries with middle-range GDP whose needs are just as great as the needs of the poorest countries. There has to be a better way, and various organizations are working to make that better way a reality.

The library community has had considerable success in influencing the journals market through an initiative called SPARC, the Scholarly Publishing and Academic Resources Coalition. This initiative arose from a determination by members of the Association of Research Libraries (ARL) in the US to take some collective action over the poor state of scholarly communication. Although the US librarians have taken the lead in SPARC, it is now a world-wide movement, and a separate but connected initiative is up and running in Europe, SPARC Europe.

SPARC has adopted a number of strategies, initially advocacy to make research staff aware of what is happening in scholarly publishing and also support for several low-cost journals to compete head-on with expensive journals. *Organic Letters* has been the SPARC journal with the highest profile, achieving a higher impact-factor at considerably lower cost than its competitor *Tetrahedron Letters*. As a result of this competition Elsevier have reduced the price of *Tetrahedron Letters*. Successful though this competitive model has been, it is difficult to scale up to the many thousands of academic journals currently published, and while not abandoning this strategy, SPARC has recently thrown its considerable influence behind the open access movement as the strategy most likely to bring about significant change in scholarly publishing. To bring about this change, the support of the academic community is required, so SPARC and SPARC Europe's advocacy role continues, always in collaboration with local librarians, such as the CURL and SCONUL groups in the UK. SPARC's advocacy work is improving the understanding by research staff of issues like copyright and it is contributing to a change in attitude, prompting research staff to take greater control over the publication process. SPARC and SPARC Europe depend upon the support of librarians and if your library is not already a member, I encourage you to join.

The formation of SPARC in 1997 was the first effective action by the library community in creating change in scholarly publishing, but SPARC has now been joined by several other organizations in working for change. Most influential has been the Open Society Institute, which has launched the Budapest Open Access Initiative, about which more later in this presentation. The most important initiative from the academic community has been the Public Library of Science. This initiative gained the signatures of many thousands of scientists in support of open access to academic journals, and although the withdrawal of support for publication in high-cost journals did not materialise, the strength of feeling amongst the academic community has found a new expression in the launch of new open access journals by the Public Library of Science. A year ago many people had written off the Public Library of Science as a failure, but reports of its failure were premature. Several national initiatives are also underway, for example by the Joint Information Systems Committee (JISC) in the UK and by SURF in the Netherlands. These organizations are adopting a two-fold approach to change, advocacy with funding agencies and the funding of projects to stimulate open access publication. Particularly interesting developments are coming from the publishing industry. It is not only the library and academic communities who are seeing the need for change. Many publishers also recognise that scholarly publishing has to change if the current downward spiral in access is to be reversed and small publishers are to survive. BioMed Central sees open access publication as its primary mission, and expects to make a reasonable profit from open access publication once the model is established. Several not-for-profit publishers have also taken this route and many more are considering it seriously. The largest society publisher to move to open access to date is the Indian Academy of Sciences, which publishes eleven journals. Open access gives this publisher much greater readership of its journals and the small loss it makes on subscriptions has been made up in other ways.

A small number of peer-reviewed open access journals have been published for some time, but until two years ago the development of open access journals was piecemeal with no overall strategy. Into this situation came the Open Society Institute (OSI), which had been funded by the financier George Soros to assist the countries of the former Communist bloc in the transition to democratic ways of working. Part of OSI's work had been to assist libraries in Eastern Europe to gain access to published information, and this work through the consortium eIFL has been successful. Like all consortia, however, eIFL has found that collective purchasing only touches the surface of access to information and that a more radical approach is required. The senior figures in OSI therefore called a meeting of around 20 people from the world of information to devise a strategy for significant improvements in access to published scholarly information. The result of that meeting in December 2001 is the Budapest Open Access Initiative (BOAI), which can be read at www.soros.org/openaccess/. The BOAI proposes two strategies to achieve the vision of world-wide open access to scholarly publications. The first strategy is through the deposit by authors of copies of their work in open web-sites. These web-sites could be managed by universities or by funding agencies. They could even be managed by authors, although institutional web-sites provide the content with greater credibility and permanence than personal web-sites. The second strategy in the BOAI is to encourage the publication of new open access journals or the transfer of existing journals from subscription funding to funding at the point of publication. In practice this has usually involved funding of a publication fee by the author's university or grant-awarding institution. It is important to stress that neither of the BOAI strategies is anti-publisher. Deposit of an article in an institutional repository can exist alongside conventional publication and support for new open access journals provides publishers with a new opportunity, as BioMed Central have demonstrated. Certainly BOAI intends to encourage competition in the publishing industry and therefore to reduce the cost to the academic community, but BOAI provides a route for publishers into the world of open access.

Much of the criticism of the BOAI has been based upon a misunderstanding of what open access involves. Essentially open access publication is defined by its meaning for users of information, and for users of information open access publication means barrier-free and cost-free access to and use of information they need. One mistaken idea is that open access publication is cost-free. The authors and supporters of the BOAI have always made it clear that publication is *not* cost-free but that legitimate costs of publication can be met in other ways while allowing readers free access. The subscription model is not the only viable economic model for scholarly publication. This is important because many of the current problems in access to scholarly publications are due to the use of the subscription model, and if we can move away from funding publication through subscriptions, access can be improved dramatically. Another false accusation against the open access movement is that it encourages vanity publication. This cannot be true because the open access journals supported by funding agencies are all peer-reviewed to the same standards as subscription journals. All the funding agencies feel that

maintenance of the quality of scholarly publishing is vital, and in no area is it more vital than in medical publications, whether for animal or for human medicine and surgery. The content in peer-reviewed open access medical journals can be trusted to the same extent as the content in subscription journals.

A more valid criticism of the BOAI is that we are only improving access to journal literature and doing nothing for access to books. Although in principle the open access model could be applied to the publication of monographs, very little work has been done to explore this application of the open access model. The economic model for textbooks is complicated by the higher level of purchase by individuals, whereas in the journals market personal subscriptions are only a minor factor for most journals. Another complicating factor is that textbook authors receive considerable sums in royalties, whereas the authors of journal articles usually receive no payment. An open access economic model for textbooks would therefore have to maintain income to authors while providing enough income to publishers to replace the income from sales to individuals. The easiest transition to open access for books would not be for textbooks but for research monographs, where authors do not receive such high royalties and where sales to individuals are not as significant. It could be argued that the publication payment for a research monograph should be provided as part of the grant from the agency funding the research, and the high cost and low availability of research monographs in medicine could be alleviated by the use of a publication payment to allow open access for readers. Improving access to student textbooks requires a different approach. For libraries in Europe and North America the answer to the present poor access to medical textbooks may lie in the success of open access journals. As open journals become more successful, funds currently used to purchase subscriptions to high-cost journals could be switched to the bulk purchase of textbooks for students. For countries which have no funding either for subscriptions or for textbooks, this solution will not work, and yet the students in those countries desperately need access to the latest editions of textbooks. One argument to be used with the publishers of medical textbooks would be that they could afford to allow free electronic access on the basis that their income would continue to be derived from sales of printed copies of the textbooks to students and libraries in the richer countries.

The success of the movement towards open access to academic journals will have a major impact upon economic, social and personal development in countries across the globe. Although the open access movement has been in existence for such a short period of time, much has already been achieved. On the first strategy identified in BOAI, the availability of academic work through institutional web-sites, the first stage has been to establish repositories or sections of the web-sites into which authors might place their work. Many universities in the US and in Europe have set up institutional repositories to hold a wide variety of locally-produced content, such as teaching materials, theses, or the text of journal articles written by academic staff. Two countries in Europe, the UK and the Netherlands have national strategies for establishing repositories in universities. The UK's work is led by the Joint Information Systems Committee, JISC, which has committed a substantial sum of money to a Programme called

FAIR, Focus on Access to Institutional Resources. In the Netherlands the equivalent programme is managed by SURF and called DARE. In most universities the deposit of journal articles by academic staff is voluntary but advocacy programmes run by groups like SPARC in co-operation with university librarians are raising the profile of self-archiving. SPARC Europe is encouraging the development of university repositories in several countries in Europe and the SPARC Europe web-site www.sparceurope.org contains information to assist anybody setting up a university repository. There is a great deal of activity, therefore, which will bear the fruit of open access to academic content as the content in the repositories grows.

The second BOAI strategy is also beginning to show signs of bearing fruit. More open access journals are becoming available and more authors are publishing in them. One early problem faced by the supporters of open access was that nobody knew how to find peer-reviewed open access journals. This problem was addressed by SPARC and by OSI and the result is a list of peer-reviewed open access journals compiled by Lund University. This list contains 350 titles and is available at www.doaj.org. It is interesting that most current initiatives are in the biomedical area, BioMed Central and the Public Library of Science being two high-profile examples of open access publishers. Several society and university publishers in UK and US are committed to open access in principle and they are discussing ways of changing economic model away from subscriptions to publication-payments by authors or funding agencies. And action by publishers is being assisted by the fact that funding agencies are considering encouragement to authors to publish in open access journals. An indication of the way funding agencies are thinking is given by the recent Bethesda Statement <http://www.earlham.edu/~peters/fos/bethesda.htm>. In this Statement the leaders of several agencies funding medical research in the US and the UK express their support for open access publication and their hope that research staff receiving grants will publish in open access journals. Both SPARC and OSI and also working with publishers to assist the transition to open access publication. For example, SPARC and OSI have published three business guides to assist publishers willing to set up or convert journals to open access. These guides can be downloaded without charge from the BOAI web-site, www.soros.org/openaccess/. One issue of great importance is the impact factor rating of open access journals by ISI. The new open access journals are seeking impact factor recording with ISI and for the BioMed Central journals the first signs are encouraging. The impact factor system is however slow to respond to new developments. New open access journals face the same delay in being accorded ISI status as new conventional journals. Given that open access journals receive the same peer-review as subscription journals, and given the higher use of open access journals, there is no reason why open access journals should not achieve as high impact factors as subscription journals, but it will take time.

The success of open access publication is only a matter of time. Given that the open access movement has only been in existence as a world-wide strategy for less than two years, much has already been achieved. Funding agencies hold the key to further progress. If other funding agencies follow the

lead taken by the signatories to the Bethesda Statement, authors will be encouraged to publish in open access journals. Although there is no definite commitment as yet, the signs are that funding agencies are taking open access seriously and see the advantages for them in wider access to the results of the research they fund. Universities also have an important role to play in arranging for their academic staff to place copies of journal articles and teaching materials on the university web-site. Authors would like their work to be read widely, but they need to feel that they have the support of their university in placing work on an open web-site or publishing in open access journals. Many publishers are now taking open access seriously and should be encouraged to investigate the transition from subscription-funding to publication-payments. Librarians can help to make authors and readers aware of open access journals by entering open access journals in their catalogues, using the links provided in the Lund list at www.doaj.org .

All of these actions are underway with the assistance of funding from SPARC, SPARC Europe, OSI, and national organizations such as JISC in the UK. The open access movement is a world-wide movement with developments in too many countries to describe in full in this paper. I began this presentation by describing the opportunity we have to make a huge leap in the availability of medical literature to people across the globe, and I would like to end with an appeal to each one of you to help in the achievement of that vision. The vision is realistic. It is achievable through co-operation between the academic community, the library community and publishers. Please talk about these issues with any academic authors you know. Please organize advocacy events in your institution to raise awareness of the importance of improving access to scholarly publications. Please provide links from your library catalogue to open access journals. Please encourage your institution to allocate part of its web-site for the deposit of content by local authors. Please encourage your institution to develop a fair copyright policy. Please encourage your institution to join SPARC or SPARC Europe in order to assist with this international work. There is so much to do if we are to make all the world's academic resources available to everybody who needs those resources. Those of us with experience in this area can help you, but access to academic publications will only change for the better if we each work for change in our own situation.