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The academic publishing crisis and the road to free global access

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Abstract

One of the most important technological achievements of the 20th century was the invention of the internet and the immense potential it created for information sharing. Now, at the dawn of the 21st century when a large fraction of the world's population has instantaneous access to vast amounts of data, it is ironic that access to new research papers should only be available to those who work at elite institutions able to cope with the burden of high journal subscription fees. This barrier to the world's academic output not only blocks interested readers and authors; it also slows the development of knowledge. Current trends suggest, however, that this is likely to change dramatically.

A paradox at the heart of academic publishing

The key features of the current academic publishing system were first elaborated long before our modern digital era. In the early days, articles published in journals were printed on paper and distributed by postal services as the only means of communicating new ideas and research results among scholars. Academic authors looking for recognition among their peers, submitted their articles free of charge to journals. Other scholars, considered experts in their fields, volunteered to review and assess the submitted articles. Publishers then assumed the responsibility of distributing the journals back to universities and institutes at a reasonable price.

Today, academic authors, driven by the same motivation for impact, prestige, tenure and funding, continue to provide their articles free of charge to publishers. Commercial publishers, however, have dramatically increased journal subscription prices over the last 30 years. According to the Library Journal's *2008 Periodicals Price Survey*, the average cost of journal titles included in Thompson Reuter's *Social Sciences Citation Index (SSCI)*, increased in the period 2004-2008 by an average of 37.8% for US titles and 40.9% for Non-US titles. Elevated subscription costs force libraries to cancel

subscriptions to the least used or the least cost-effective journals, and to depend more on inter-library loans to provide their users access to academic material.

It has finally become evident that commercial publishers and journal monopolies have transformed a system originally designed to facilitate the dissemination of academic knowledge, into a for-profit enterprise whose financial barriers are blocking access to information [9]. This is most evident in developing countries whose progress depends heavily on the assimilation of information [1]. What makes this situation all the more paradoxical is that this is happening at a time when the electronic medium and the internet have dramatically *reduced* publishing costs and *increased* our capacity for information storage and distribution. So, while scholars around the world exchange results and ideas at lightning speeds through e-mails, online chats, web-meetings, homepages, institutional webpages and blogs free of charge, their research articles take months or years to be published in a journal. And, as fewer libraries are able to meet elevated subscription costs, for the vast majority, the work of such authors becomes invisible.

The open access alternative

This paradox gave birth to a movement led by academic authors and librarians, and supported by private and public institutes, physicians, patients and the informed public, demanding open, unrestricted and free access to all peer-reviewed scholarly material. The first major international defining statement of the open access (OA) publishing movement came from the Budapest Open Access Initiative (BOAI). Their statement [2] has been signed by 489 organisations and 5015 individuals.

The movement comprises two main currents. The first, known as the “golden” road to OA involves authors submitting directly to an OA journal. OA journals exist since the late 80’s and come in different forms. Fully-OA journals, allow free online access to all published material without publication fees being charged to authors, hybrid OA journals charge publication costs or may charge for an “*OA option*” or may limit online access to material, and fee-based OA journals provide free OA, but often transfer the economic burden to authors through hefty publication charges [6].

At present, the vast majority of OA journals do not charge publication fees. The Directory of Open Access Journals (DOAJ) lists 4117 journals (919 belonging to social sciences) of which 1485 are searchable at article level, and of all fully-OA journals, only 33% charge publication fees [4]. Regardless of the significant presence of OA journals in the academic landscape however, the majority of them are not included in citation indices like the SSCI and its umbrella Thomson Web of Science’s *Science Citation Index* which provides citation information for just 239 OA journals, only 12 of them belonging to the social sciences. The reason why science OA journals strongly outnumber OA social science journals is because of the skewed distribution of funding and perceived impact of the two fields of academic research [9]. Science, and especially, biomedicine is big business and it appears that Thompson is serving its own financial interests rather than academia by focusing on the provision of bibliometric indices for the sciences over the

social sciences. Exclusion of social science journals from citation indices makes invisible not only articles, but also individual scholars, their research, and their institutions, invisible on the basis of impact factors [29].

Self-archiving

Self-archiving is the second current in the OA movement and is known as the “green” road to OA. It involves authors publishing in a traditional (usually non-OA) subscription journal but, at the same time, making their articles freely accessible online by either depositing them in an institutional online repository (IOR) like the ones established and maintained by many universities worldwide [23], or else in a subject-based repository such as *arXiv*. Self-archiving is not a new idea and it has been common practice for decades in fields like computer science and physics.

Scholars in the fields of social science and humanities however, are less familiar with self-archiving practices. Repositories in social sciences trail those of other fields in both the rate of establishment and submission. There are some promising exceptions like *RePEc* (Research Papers in Economics) that holds over 631,000 searchable items, and *E-LIS* (E-prints in Library and Information Science) that hosts more than 9072 documents. Other repositories in the social sciences however, have not yet gained ground in attracting scholars [10].

Despite the varying levels of awareness in different disciplines, the academic community is starting to realise that the green road, right now, appears to be a more plausible and viable route to OA. This is reflected in the number of official mandates demanding that scholars self-archive their work. The majority of these mandates come from research funders like the National Institute of Health (NIH) in the US, the Research Councils UK (RCUK) and the European Research Council (ERC) in Europe. Harvard and MIT are among the universities that have passed similar mandates [7], while two potentially influential multi-university mandates have also been proposed: one for all 791 universities in the 46 countries of the European University Association (EUA) and one for all universities and research institutions in Brazil [3]. At present, copyrights are held by journals but it is likely that this will have to change particularly if authors, responding to national, international or institutional mandates, self-archive prior to submission.

Succumbing to pressure from the academic community, a large number of journals have already become green. In a recent survey of more than 10,000 journals, 90% were found to be green (<http://romeo.eprints.org/stats.php>). Data from the DOAJ also indicates that only 10% of all journals are gold. However, due to the uncertainty regarding the cost-recovery of the golden road, most publishers prefer to give the green light to authors rather than make the transition to OA publishing [3].

Although self-archiving practices are being adopted by more and more authors, it has still not become habitual. Evidence suggests that at present 39% of authors provide OA for at least one of their published articles through self-archiving [8]. The role of librarians in the green road to OA is central, not only for establishing and maintaining repositories, but

also for informing authors of self-archiving compliant formats, copyright procedures and, in particular, about the citation advantage offered by self-archiving. A significant number of studies have shown that articles freely available online receive a significantly larger number of citations than toll-access articles [5]. In addition, in developing countries, OA articles are significantly more often cited.

A new future

OA is on the rise and increasing awareness regarding self-archiving has the potential to lead to 100% availability of all scholarly material. It is possible that the peer-review process itself may also undergo changes. As more disciplinary global archives go online providing free access to full-text articles, web technology like *GooglePeerReview* has the potential to broaden and make the peer-review process more inclusive. One may speculate on scenarios where both reviews and reviewers can be rated.

In the new publication era now taking shape, OA means that funds will be freed for library spending, and librarians will have access to more bibliographic information. Journals, far from going extinct, may take on the new role of selecting the most important and highly-evaluated articles from the vast pool of information provided by subject-based repositories and global archives. In this scenario they would, however, lose the control they currently have over access to published research.

The future looks bright for academic publishing. A road to free, global access is opening up before our eyes and it seems we all have something to gain by embracing it.

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5

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