

# The roads to open access

**Pandelis Perakakis, Michael Taylor and Varvara Trachana**

Commercial publishers and journal monopolies have radically changed a system originally designed to facilitate the dissemination of academic knowledge, turning it into a profit-seeking business whose financial barriers hinder access to information. While scholars around the world exchange results and ideas in real time and free of charge, their research articles take months or years to be published in an academic journal. And as fewer libraries are able to meet the increasing subscription costs, the work of such authors becomes invisible.

The key features of our current academic publishing system were first elaborated long before the digital era. In the early days, articles published in journals, printed on paper and distributed through postal services, formed the only means of communicating new ideas and research results among scholars. Academics looking for recognition among their peers submitted their articles free of charge to journals. Other scholars, considered to be 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 institutions at a reasonable price.

Today's academics, driven by the same desires 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 since the late 1970s. According to the Library Journal's *2008 Periodicals Price Survey*, the average cost of journal titles included in Thomson Reuters Social Sciences Citation Index (SSCI) increased in the period 2004–2008 by an average of 37.8 per cent for US titles and 40.9 per cent for non-US titles. Higher subscription costs force libraries to cancel their subscriptions to the least-used or the least cost-effective journals, and to depend more on interlibrary loans in order to provide their users with an adequate access to academic material.

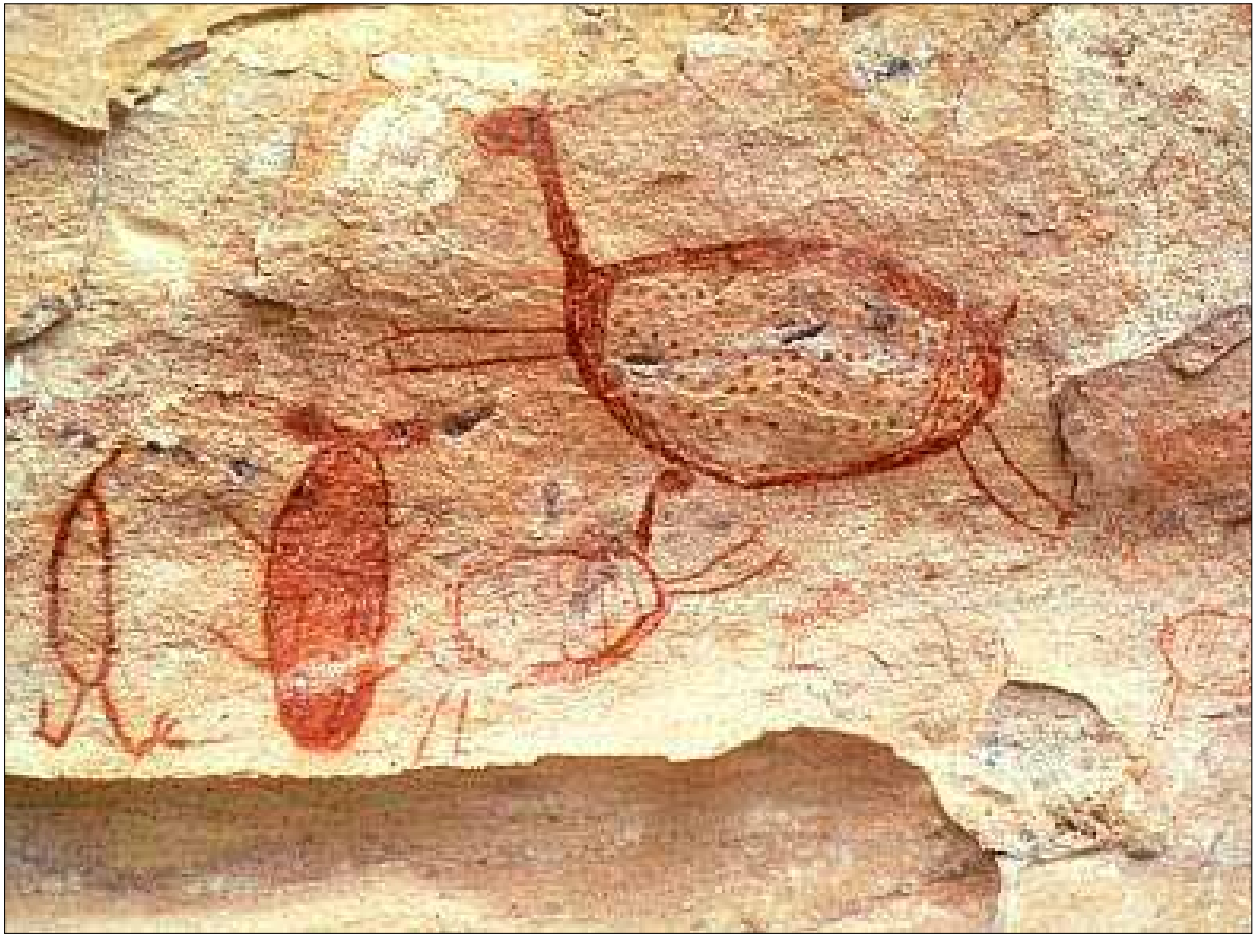
It has become evident that commercial publishers and journal monopolies have radically changed a system that was originally designed to facilitate the dissemination of academic knowledge, turning it into a profit-seeking business whose financial barriers are hindering access to information (Taylor, Perakakis and Trachana, 2008). This is most evident in developing countries, whose progress

depends heavily on the assimilation of information (Annan, 2004.) What makes this situation all the more paradoxical is that this is happening at a time when electronic media and the internet have dramatically reduced publishing costs and increased our ability to store and distribute information. While scholars around the world exchange results and ideas in real time, through emails, online chats, web meetings, homepages, institutional webpages and blogs – free of charge – their research articles take months or years to be published in academic journals. And as fewer libraries are able to meet the increasing 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 academics 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 open access (OA) publishing movement's first major international defining statement dates back to the Budapest Open Access Initiative (BOAI). Its statement (Chan et al., 2002) has been signed by 489 organizations and 5,015 individuals.

The movement comprises two main strands. The first, known as the 'golden' road to OA, involves authors submitting directly to an OA journal. OA journals have existed since the late 1980s and come in different forms. Fully OA journals grant free online access to all published material without charging publication fees to authors. Hybrid OA journals charge publication costs, or may charge for an 'OA option' or limit online access to material, and fee-based OA journals provide free OA. However, they often transfer the economic burden to authors through hefty publication fees (McCabe and Snyder, 2004).



At present, the vast majority of OA journals do not charge publication fees. The *Directory of Open Access Journals (DOAJ)* lists 4,117 journals (919 belonging to social sciences) of which 1,485 are searchable at article level. Of all fully OA journals, only 33 per cent charge publication fees (Hooker, 2009). Despite their significant presence in the academic landscape, however, the majority of OA journals are not included in citation indexes such as SSCI and SCI. The exclusion of social science journals from citation indexes makes invisible not only articles, but also the scholars who produce them, their research and their institutions.

### Self-archiving

Self-archiving is the second current within the OA movement, and is also known as the 'green' road to OA. Self-archiving involves authors publishing in a traditional (usually non-OA) subscription journal while simultaneously making their articles freely accessible online by placing them on an institutional online repository (IOR) such as the ones maintained by many universities worldwide, 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 such as computer science and physics.

Scholars in the social sciences and humanities, however, are less familiar with self-archiving practices. Repositories in social sciences trail those of other fields in their rate of both establishment and submission. There are some promising exceptions such as RePEc (Research Papers in Economics), which holds over 631,000 searchable items, and E-LIS (E-prints in Library and Information Science), which hosts more than 9,072 documents. Other repositories in the social sciences however, have not yet gained ground in attracting scholars (Xia, 2007).

Despite the varying levels of awareness within different disciplines, the academic community is gradually realizing 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 demands for scholars to self-archive their work. The majority of these demands emanate from research funders such as the National Institute of Health (NIH) in the USA, Research Councils UK (RCUK) and the European Research Council (ERC) in Europe. Harvard and MIT have established similar mandates (Plotkin, 2009). 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 (Harnad et al., 2008). One significant issue is that at present, copyrights for scholarly articles are held by journals. However this is likely to change, particularly if authors, responding to national, international or institutional mandates, self-archive prior to submission.

Succumbing to pressures from the academic community, a large number of journals have already turned green. In a recent survey of more than 10,000 journals, 90 per cent were found to be green (<http://romeo.eprints.org/stats.php>). Data from the *DOAJ* also indicates that only 10 per cent 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 (Harnad et al., 2008).

Although self-archiving practices are being adopted by a growing number of authors, it has still not become habitual. Evidence suggests that at present, 39 per cent of authors provide OA for at least one of their published articles through self-archiving (Swan and Brown, 2004). The role of librarians in the green road to OA is essential, not only for the establishment and maintenance of repositories, but also to inform authors of self-archiving-compliant formats, copyright procedures, and in particular about the citation

advantage offered by self-archiving. A large number of studies have shown that articles freely available online receive a significantly larger number of citations than toll-access articles (Lawrence, 2001). In addition, in developing countries, OA articles tend to be cited more frequently.

### A new future

OA is on the rise, and increasing awareness of self-archiving has the potential to lead to 100 per cent availability of all scholarly material. The peer-review process itself may also undergo significant changes. As an increasing number of disciplinary global archives go online, providing free access to full-text articles, web technology such as GPeerReview could potentially broaden the peer-review process and make it more inclusive. We can even imagine a scenario in which both the reviews and reviewers are rated.

In a new era of publishing, OA will make funds available for library spending and librarians will have access to a greater amount of documents. Journals, far from disappearing, could select the most important and prized articles from the vast pool of information provided by subject-based repositories and global archives. Such a scenario would, however, imply a loss of control over access to published research. ☺

### Pandelis Perakakis, Michael Taylor and Varvara Trachana

---

Pandelis Perakakis has a Ph.D. in clinical psychophysiology from the University of Granada. His research interests include fractal analysis, cardiovascular physiology and the emotional modulation of defensive mechanisms.

Michael Taylor has a Ph.D. in mathematical physics from the University of St. Andrews and is a researcher at the National Observatory of Athens developing neural network space weather forecast models and inversion techniques for the visualization of 3D cosmological structures.

Varvara Trachana has a Ph.D. in biological chemistry from the Aristotle University of Thessaloniki and is currently a research associate at the Laboratory of Molecular and Cellular Ageing at the National Hellenic Research Foundation, studying molecular mechanisms responsible for normal and accelerated ageing as well as the common biology of ageing and cancer.