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Between journals and archives: peer reviewing and other possible futures for academic publishing

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Over the last decade, an extraordinary array of new online archives for academic research has appeared. Never has so much scholarship been so readily accessible. But the new online archives also have the potential to change the nature of scholarship. They raise questions over the business of academic publishing and the processes that sustain it: these are the themes of the discussion that follows.

At a superficial level, two different sorts of activity are notable. First, there are the well-known commercial research databases, such as Ebscohost and Factiva. These are products of the academic and professional publishing industries. They aggregate content mainly from academic journals or other published sources, and provide more or less sophisticated searching tools. The pricing model is subscription based, marketed towards those institutional libraries that have long supported journal publishing. Many of these journal-based archives have been very commercially successful. They have quickly become indispensable everyday tools for academic researchers, so much so that many academics and students now rarely visit physical libraries, and rarely take out individual subscriptions to journals.

The second general category is the ‘open access’ repository. A number of services present alternative options for the circulation of scholarly work. Examples from the United States are the Stanford-based social science research network ssrn.com, arXiv.org in physics and mathematics, and BioMed Central. An Australian instance is a site I have been involved with, Australian policy online, a gateway to research on public policy hosted by the Institute for Social Research at Swinburne University of Technology. APO is also part of the Commonwealth-supported Arrow project, which is developing software to support institutional digital repositories.

While there are many differences between the new open access services, several aspects are striking: they offer free access to readers; they have emerged from specific disciplines or research clusters rather than the publishing industry; most are supported by universities, government funding, or other institutions, but some such as BioMed Central are commercial sites; and they typically publish a broad range of materials, including papers, reports, drafts and reviews. These are not traditional publishers in the sense that they do not seek exclusive rights over content: instead they can act as complementary distribution services, attracting attention to work which may also be made available elsewhere on the Net, or in print forms, such as journals or conference proceedings.

Open access archives have rapidly established themselves because they make the most of the new technologies of online publishing. In terms of content, cheap hardware and bandwidth mean that they can afford to be inclusive, additive projects, while retaining some editorial direction. They can update and add material constantly, instead of waiting upon print-based publication schedules. Using open source software in many cases, and relying on generally accepted technical standards, their costs are low, and they are easily
searchable. From the point of view of authors, their main value lies in generating timely feedback and recognition. Traditional journals are still important, and the non-exclusivity of the open access archives means that they do not necessarily bypass journals, but they can usefully supplement them.

On the other hand, the commercial databases have been successful because they embody most of the strengths of journal publishing. In broad terms, the strengths of journals lie in the quality and reputation of the leading titles, in their editorial agenda-setting, and in their long histories of scholarship, which in some cases track the appearance and transformation of whole disciplines. But commercial databases necessarily also embody some of the disadvantages of the journals that comprise them. Entrenched cost structures and a highly concentrated industry mean that journal content is very expensive, prohibitively so in many developing countries. This is the widely discussed ‘serials crisis’. Further, the dynamics of the industry mean that journal publishing is slow, even when the content will be distributed electronically. Highly regarded journals necessarily are hard to be published in. Reviewing processes take time, and publishing schedules are fully committed many issues into the future. In fast moving fields, print journals provide an important imprimatur, but struggle to retain currency.

Another problem with traditional journal publishing — the difficulties in physically accessing copies of some journals, especially outside major university collections — has been in large part fixed by online distribution, although the cost barriers remain very high, especially outside well-resourced library systems. The problems of cost and frequency are, at least at this stage, better addressed by the open access archives.

Although they compete, open access and commercial archives are likely to co-exist for some time. Both are evolving models. They occupy similar ground, but arrive at it from different places. The technology of the Internet transforms scholarly repositories into systems of distribution and publication; at the same time, it enables publishers to turn journals into databases. Of course there are questions about both models. Although the commercial services enjoy a strong market position and have a proven business model, they are being challenged. And although the open access model has been rapidly and enthusiastically adopted, the best ways of funding and sustaining these archives in the long term are unclear. If their content is not paid for by readers, should authors pay, as is the case for BioMed Central? (See Solomon 2002 for a discussion of BioMed Central.)

The commercial, journal-based databases and the open access archives embody different conceptions of the future of academic publishing. The commercial products see online publishing as a continuation of established models, with the subscription-based journal at the centre. The open access systems imply a future based on the more recent past. The emergence of the Internet demonstrates the capacity of co-ordinated planning at an institutional level to create effective new communications systems.

Most accounts of these new repositories consider them from the user’s point of view — the questions of what content they provide and whether they charge for access. But there are a larger set of issues, to do with how content is acquired, and what the publishing
process involves. Here again there are striking differences. Commercial research databases necessarily depend upon the editorial processes employed by their constituent publications, and, as we noted, these are primarily academic journals which use peer review to select publishable submissions.

On the other hand open access repositories are more open to their contributors as well as to their readers. They rely on authors to post content. It is of course completely open to these repositories to then employ the same editorial processes as scholarly journals, particularly peer review. But it is interesting that few of them do so. Instead, many use a lighter touch in editorial direction, preferring more inclusive practices. I will say more about the editorial processes below, but this is a crucial point of difference. Peer reviewing, at its best, has helped to produce journals with consistently excellent content. Journals put quality before quantity because editorial discrimination is the basis of journal publishing. The entire content of the journal is displayed to the reader, who believes that they (or their library) are paying for the whole journal, even if not all of it is read. A list of well-known authors or apparently strong articles gives readers the apprehension of quality; it builds confidence in the highly selective process that has formed the journal. Hence the practice of listing articles or authors’ names in advertisements for journals. But high consistent quality is less important for an archive. Readers will judge an archive on the basis of the content they use. Because they can search for what is most relevant to them, they value comprehensiveness and overall coverage, rather than rigorous selectivity.

In the new world of online archives, a model of exclusive selectivity may be less attractive than one of expansive inclusion. Peer reviewed journals are in trouble, and there are more problems ahead.

Although peer reviewed journals occupy a dominant position in academic publishing, they may not be as deeply embedded in scholarly practice as many academics imagine, especially in some fields. The practice of peer reviewing first emerged in Philosophical Transactions, the wide-ranging journal of the British academy created by Henry Oldenburg in 1665. The French Academy’s Journal des sçavans began publication only a few months later. But peer reviewing did not become widespread until the enormous expansion of university research in the United States and elsewhere in the 1950s. In the post-war era journal publishing, especially in the sciences, boomed as government funding for research dramatically increased, and peer reviewing became the preferred mechanism for rationing access to these expensive new printed journals. The rise of the peer reviewed journal has been inexorable but gradual. Alternative editorial models have proved tenacious in some fields such as law; in the humanities, journals have competed with refereed books as the preferred form of publication.

The slow advance of the peer reviewed journal is often seen as a hallmark of the evolving professionalism of academics; it appears to foster relevance, to enhance quality and reduce error. Further, because the fact of peer-reviewing provides a simple, verifiable indicator, publication of this sort is fairly easily measured, audited, compared and analysed. So while universities have emphasised peer-reviewed articles in promotion
processes and grant allocations, government agencies and other funders of research have also embraced the peer reviewed article as an elementary, if not singular, unit of scholarly value. In this context, the peer-reviewed article plays a part in the larger project of liberalising academic research, despite its costs and its inefficiencies. It lends itself to policies that seek to allocate scarce resources according to performance, and to decision-making processes that emphasise transparency and simplicity.

In Australia and elsewhere, a range of carrots and sticks have had the effect of changing publishing patterns over the last two decades, encouraging the further spread of peer reviewed journals across the disciplines. The pattern of the publishing industry has been to develop new journals not so much through direct competition with established titles, but through increasing segmentation and specialisation across and within traditional disciplines. As products of a concentrated industry, new journals rarely replace old ones: instead they aim to enlarge the total market by careful positioning alongside existing titles. The journal market benefits from intellectual debate, although its ideal model is probably less the Kuhnian revolution in scientific paradigms, and more the polemical proliferation of the ‘new humanities’ commencing in the 1960s.

The editorial process of peer review has helped form new disciplines and fields, and has shaped the scholarly norms and standard methods which support them. From there, however, the peer-reviewed journal begins to raise serious difficulties for academics, universities, and reformers of higher education. At the most general level, is it in the interests of universities to have academics concentrating on journal publication? The development of a more broadly based Commonwealth framework for assessing the quality of university research suggests that the carrots and sticks may have taken researchers too far in one direction. Journals encourage academics to write for increasingly specialised audiences. Market segmentation is no bad thing, but it may become a problem if publication in this form becomes the only professionally acceptable means of communicating at a time when, for other reasons, universities must better promote the benefits of research.

At the same time, journal publishing has become a highly profitable business (see Odlyzko 1995, 1997 for useful discussions of the economics of journals). Subscription fees have steadily increased as the industry has become more concentrated in the hands of a small number of international publishers. From a policy perspective, the position is problematic to say the least. Australia is a net importer of intellectual property and journal subscriptions comprise a large part of publicly funded library budgets. The research that appears in journals is in many cases publicly funded. The time and effort involved in the peer review process is also publicly funded. Journals, and the databases that are based upon them, sell the results of publicly funded research back to publicly funded libraries.

All this would be defensible if we could be certain of the value added by the journal editing process. But writers and readers are increasingly asking a more awkward question: what exactly are peer reviewed journals for? Recent essays by Paul Ginsparg (2002) and David Solomon (2002) explore this point in more depth, but the embarrassing
answer is that, apart from the fact that appearing in them seems to reward us, we don’t really know. They no longer serve a particularly important role in communicating research: in many disciplines, that is achieved more efficiently and rapidly through other means. As for the reviewing process itself, every academic knows that it remains an unpredictable and haphazard business, one capable of contributing to the quality of an article but by no means certain to do so. As Paul Ginsparg notes, the fact of peer reviewing is clearly not an assurance of the quality of a text, or its accuracy (Ginsparg, 2002). It does not mean that an article has not been plagiarised. It is no guarantee that quotations, references or data are correct; we know that peer reviewers may check some of those things, but will rarely if ever check all or most of them. Instead the fact that something has been peer reviewed probably means no more than that it is not completely wrong, or that that there are no serious, glaringly obvious problems with it. While academics may sometimes look down on other forms of non-fiction writing, the best journalistic practices for ensuring quality, such as the rigorous fact checking undertaken at the New Yorker magazine, far exceed scholarly norms. The same could be said of professional book editing. The result of this is that the peer reviewed article also fails as a device for evaluating research performance: any serious job selection process for a research position must look well beyond a candidate’s list of journal publications.

If we return to Philosophical Transactions, we find that that original journal served a particular function, one that was quite different to its French counterpart. In Jean-Claude Guédon’s illuminating discussion, Oldenburg’s system is seen as a means of establishing the originality of scientific contributions, and thereby ordering science around a stable institution (Guédon 2001). By contrast the French publication was a product of the Republic of Letters; it was devoted to what was new and interesting; it was epistolary, journalistic, and focussed on news, although it did publish some longer articles. It had more in common with Scientific American or New Scientist than a contemporary scholarly journal. The distinction between originality and novelty is the critical point. Philosophical Transactions was actually much closer to a public record of intellectual property rights. At a time when controversies over the ownership of ideas were endemic, the process of reviewing provided validation, stability and transparency to claims of originality. For this reason Guédon describes the journal as something like a patent office for innovations in natural philosophy.

So the peer reviewed journal was not invented to communicate knowledge, but to organise it. There are now, however, many other possible ways of establishing authorship of ideas. More substantial institutions (such as patent offices) order knowledge and manage competing scientific claims, and the role of journals seems much less clear. We are left with a process, its specific purpose uncertain, which consumes time for reviewers, editors and authors. The emphasis on peer reviewing ensures that articles are often out of date or otherwise superseded well before they see the light of day, without providing an assurance of quality. The process channels scholarship into expensive journals, putting the outcomes of publicly funded research beyond the reach of libraries in developing countries and poorer institutions generally. Public funds support both supply and demand for a system that ensures high costs and tiny readerships; research policy and licensing agreements often discourage academics from distributing their work in other ways. All
this, at a time when universities are urged to explain the benefits of research to the wider community.

Of course peer reviewed journals will not disappear. The new publishing systems will work alongside traditional journals. Topic specific networks, such as the Australian Fibreculture list, are an example. Fibreculture uses email, the web, physical meetings and print. The new online repositories are popular because they are quick and efficient means of distributing new work as widely as possible. I noted earlier that these new systems rely far less on peer reviewing than traditional journals. Some are open to anyone to upload. There is of course nothing to stop electronic journals and repositories employing peer review, or developing more efficient, automated forms of peer review. ArXiv.org has an interesting editorial policy, which appears to aim primarily for relevance: new authors are ‘endorsed’ by established ones, and papers submitted to arXiv are moderated by subject area specialists, who decide whether the paper is of peer reviewable standard (see http://arxiv.org/blurb/ for a description and background to the site). The question is, if the paper had been submitted to a journal, would it be of sufficient quality to be passed on to reviewers? If the answer is yes, the paper is posted to arXiv. Many arXiv articles are subsequently submitted to and published in journals; many are not.

The arXiv process, a form of triage, is an economical one which is designed to exclude plainly deficient work. It grasps the most useful aspect of peer review, which is not quality but relevance: the notion that certain work merits the considered opinion of other academics — but the triage system makes no assumptions as to what that opinion may be, and it recognises that opinions will vary. It is a simple, and very limited endorsement, which puts to one side further questions of quality or significance. It does this because there is simply no need for a repository to answer those questions further: the marginal cost of making the article available for download is far lower than for print; and researchers themselves can very quickly judge whether the article is of any value to them. The arXiv website merely affirms that ‘the contents of arXiv conform to Cornell University academic standards’.

The arXiv approach recognises that the value of a paper generally emerges over time, as it is downloaded, referred to, argued with, or ignored. But the value of any research will be enhanced if the work is available widely, freely and speedily.

Peer reviewing may well evolve into a useful set of conventions for online commenting on other people’s work. But if the process remains cumbersome, costly and vaguely conceived, the special place of the peer-reviewed journal may erode as rapidly as it emerged. This is in some ways a difficult conclusion: peer reviewing is very widely seen as the essence of academic prestige and scholarship; peer reviewed articles are essential currency in the academic labour market, and peer reviewing is central to the mechanisms that allocate resources for research. The whole business consumes enormous academic time and energy. In some cases it produces wise judgements and consistently excellent scholarship. But the flexibility and diversity of the new archives suggest it may be time to reconsider peer reviewing, along with the strange business of journal publishing that relies on it.
References


