Are Libraries and Open Access Becoming Irrelevant?

Andrew Odlyzko

Open access is a hot topic among mathematicians and other scholars, and so are calls for boycotts of commercial publishers. But the real action in scholarly publishing is elsewhere. The community's reliance on publishers is growing, while that on libraries is decreasing. "Big Deal" packages, in which institutions obtain access to a large bundle of journals, are becoming more comprehensive and are reaching an increasing number of institutions. Books are increasingly also covered by similar bundling deals. This provides an illusion of true open access, in that growing numbers of scholars have seamless access to growing fractions of the material they use.

This process marginalizes libraries and entrenches publishers with their unnecessarily high costs. Few scholars (and few librarians) think of the scholarly information dissemination system as one in which publishers and librarians compete for resources. But that is the reality, and it should be recognized that the reason publishers are winning this competition is that Big Deals are good for society in the near term, as they provide much greater and more egalitarian access to the available literature.

The beneficial effects of Big Deals can be demonstrated using Figure 1. It is based on data from the Association of Research Libraries (ARL). It shows that over the last decade, there has been a dramatic increase in the number of serials available at ARL members. This occurred even though spending on serials was increasing at a slightly lower pace in the 2000–2010 period than in the 1990s. Further statistics and analyses are provided in [3], on which this piece is based. The data and analysis covers just ARL, whose members are most of the large academic libraries in the United States and Canada. It therefore

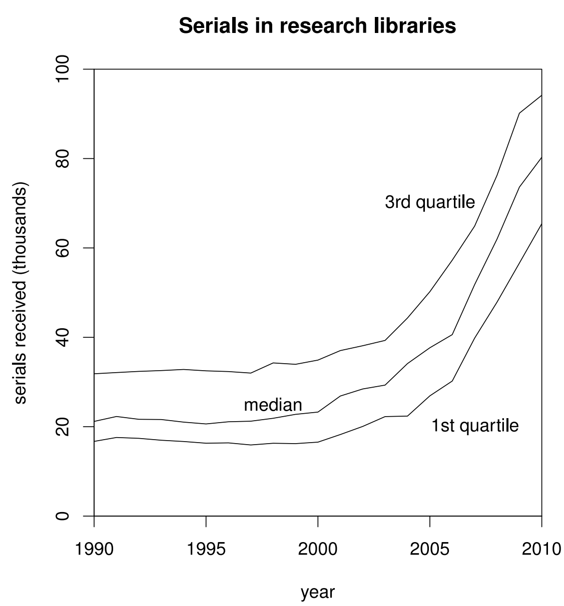

Figure 1. Number of serials available in research libraries from 1990 to 2010. Shows the median as well as the first and third quartiles of the number of serials received by academic members of ARL.

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says nothing about the majority of institutions of higher education in North America, nor about the rest of the world. However, anecdotal evidence suggests they are also benefiting from special pricing, becoming members of consortia, and other measures.

ARL statistics are strictly about quantity, not quality. There are frequent suggestions that the "journal crisis" could be solved by greater selectivity. While quality is important, we have to recognize that historical growth in the volume of publications is continuing and desirable. For the purposes of this brief discussion, I am assuming that more is better, and I leave finer points of this issue aside.

The phenomenon documented by Figure 1 appears to be consistent with personal impressions. Most readers of the *Notices* surely have noticed that a greater fraction of the papers that are available to them at their institutions are available online and are accessible by clicking on the link in MathSciNet reviews. They may also have noticed that a far greater fraction of all papers listed in MathSciNet are available to them than before. This is the result of the Big Deals and the price discrimination they implement. Publishers try to insist on nondisclosure of contract details, but Ted Bergstrom of UC Santa Barbara and his colleagues have used freedom of information requests to pry loose some of this information. As a result we now know, for example, that in 2007 the University of Michigan paid US$1.96 million for access to all Elsevier journals, while the University of Montana paid just US$442 thousand. Thus a notorious profit-maximizing capitalist organization was (and is) engaging in a very socialist practice! But that is not surprising. In fact, the only surprising fact is that it took so long for the Big Deals and their discriminatory pricing practices to spread. When marginal costs are low, as they are with electronic-only access to academic journals, the basic economic incentive is to maximize usage by charging each customer what that customer can afford. Therefore Figure 1 shows not only that more journals are available to a typical institution, but that the gaps between the rich and the (relatively) poor have narrowed.

The conclusion is that publishers are indeed correct when they claim that they are providing better service to the academic community, even while their revenues and profits climb. This does not mean, though, that they are providing optimal service.

I started studying electronic publishing two decades ago, stimulated by the issues faced by a small committee of the AMS that I was asked to chair. This effort led to the paper [1] and made me a fervent advocate of open access and of pushing costs of scholarly publishing to a much lower level. (Open access and publishing costs are often conflated, but while they are not independent, they represent different axes of the publishing space.)

The main failure of [1] was in underestimating the inertia of the academic system. A prediction made there was that little change would be visible in the traditional high-cost journal system for a decade, but that it would likely collapse within two decades and be replaced by a lower-cost open access system, with many of the journals run by scholars themselves. The first part of this prediction has come true, but not the second. An explanation (even if not an adequate excuse) for this was that the paper was written at an industrial research lab, so with an inadequate appreciation of how slowly everything changes in academia. Had I then had my current experience as a professor and university administrator, I would likely have doubled both estimates. However, if current trends persist, the collapse prediction may not come true at all.

The key to understanding what is happening and in particular how the "unsustainable journal price escalation" has been sustained for a long time comes from the observation (made in [1], see also [2]) that most of the costs of the typical academic library in rich countries like the United States are internal. Curating huge collections of paper volumes is a challenge that requires large numbers of professionals, many of them highly trained, as well as expensive physical facilities. Back in the early 1990s, only about 25 percent of the library budget went for outside purchases of books, journals, and other materials. Even today, this proportion is only around 33 percent (see [3] for more details and references). Publishers have been able to increase their revenue and profits by getting a larger piece of the library pie and disintermediating the librarians. But this process can go much further as we move further towards relying on digital formats and continue to reduce usage of printed copies.

Just as Google can handle email for many universities at low cost, so Google, the Internet Archive, JSTOR, and the publishers are able to provide library services in a more efficient centralized way than used to be done. Note that even if the inexpensive open access journal system that I (along with many others) envisaged had come into being, it would still have been true that many traditional functions of libraries and librarians would have become much less significant. While those traditional functions shrink, a variety of new information handling jobs are opening up, as that inevitable growth in volume of information creates new challenges. But librarians have to compete for those jobs with publishers and other agents.

In my view, the optimal course would have been for librarians and scholars to cooperate in setting up a new system of low-cost open access journals. The resources and organizational skills of the librarians, combined with the subject expertise of the scholars, could have led to a much more effective and efficient system for disseminating research. That would have forced publishers to move into the new functions that are opening up. (As with medical care, there is little likelihood of lowering the costs of the entire scholarly information ecosystem, as the savings in one area are eaten up by new services.) However, publishers suffered from a lower degree of inertia than that of scholars and librarians and have moved faster. They have built a system in which the incentives for scholars to move to true open access are decreasing, as the papers and books those scholars need are just a click away (because they are paid for by the libraries in ways invisible to those scholars). As they include more materials in their Big Deals, especially books, the justification for keeping the expensive traditional library will be diminishing.

Publishers may also be able to adapt to the open access mandates that are increasingly coming from funding agencies and some academic institutions. As long as those mandates can be accommodated with gold open access (where authors or authors' funding agencies or institutions pay, very likely often with money squeezed out of library budgets), publishers might be able to maintain their unnecessarily expensive system. It's not the ideal solution, perhaps, but one that will still be better than what we have now, where much of the valuable information is available in only a handful of libraries in the richest institutions. There will still be opportunities to push for lower costs in basic journal publishing. But for the time being, scholars will likely have to accept the continuation of publishers squeezing librarians out of their functions and resources.

References

[1] A. Odlyzko, Tragic loss or good riddance? The impending demise of traditional scholarly journals, *Intern. J. Human-Computer Studies* **42** (1995), 71–122. Preprint available at `http://www.dtc.umn.edu/~odlyzko/doc/tragic.loss.long.pdf`. Condensed version in *Notices Amer. Math. Soc.*, **42** (1) (1995), 49–53, `http://www.ams.org/notices/199501/forum.pdf`.

[2] ______, Competition and cooperation: Libraries and publishers in the transition to electronic scholarly journals, *J. Electronic Publishing*, **4** (4) (1999), `http://quod.lib.umich.edu/cgi/t/text/text-idx?c=jep;view=text;rgn=main;idno=3336451.0004.411`.

[3] ______, Open Access, library and publisher competition, and the evolution of general commerce, 2013 preprint, available at `http://ssrn.com/abstract=2211874`.