

**International Mathematical Union (IMU)**  
**Blog on Mathematical Journals**

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**<http://www.mathunion.org>**

This will probably be the last entry of the blog in this format, as the IMU is working to open a more general IMU blog site, at which it hopes members of the mathematical community will still bring up issues of wider concern that they encounter in their interaction with mathematical journals.

This first paragraph was also the last one, in this blog entry, in the official voice of the President of the IMU — everything that follows will be my own personal opinion, as one mathematician deeply concerned with the present and future of our journals. In particular, the opinions below are not vetted by the IMU's Executive Committee, and should not be construed as an official point of view of the IMU, despite my present service as the sitting President of the IMU.

The stated goal of this blog at its start was to collect opinions from the mathematical community about a proposal that the IMU and ICIAM start a committee that would produce a rating of mathematical research journals. It has fulfilled that goal; as reported in the July issue of the IMU-Net Newsletter, the IMU has decided not to go forward with the creation of such a committee. Very soon after the opening of this blog, it became a forum where mathematicians also formulated suggestions for possible IMU roles related to various other important issues concerning mathematical journals. The early discussion here led to several prominent members of our community articulating their frustration with the present situation of scholarly publishing in mathematics, and in particular with pricing policies making it very hard for all but the most prominent and wealthy universities to keep up with the cost of subscriptions. This public discussion probably played a role in the later development of the [thecostofknowledge.com](http://thecostofknowledge.com) site, where, following Tim Gowers' lead, many of us very publicly and firmly stated our opposition to these pricing policies. The protest took the form of a boycott of one particular publisher, Elsevier, and was (as of Oct 16, 2012) signed by over 12,801 scientists (the policies we were protesting are not limited to mathematics), including 2,189 mathematicians.

As was our intention, this protest elicited many reactions, albeit not all positive. Young researchers felt that, not having tenure yet, or otherwise dependent on evaluations of their record, they could not join a boycott that would cut them off from a considerable number of well regarded journals in their area. Many mathematicians were reluctant to join the movement because they felt a boycott was not an effective or attractive protest tool. Others pointed out that Elsevier, although having a large impact on mathematical library budgets as one of the largest for-profit publishers of mathematical journals (as a result of its having acquired many other publishing companies in the mathematical arena in the last 10 or 15 years), was not the only nor even the most egregious one in practicing the pricing policies that we were protesting, and decided not to join the movement for this reason. That nevertheless so many mathematicians did sign enthusiastically indicates the extent to which many in our community are deeply disturbed by the present situation in mathematical publishing.

What is it we find so disturbing?

Dissemination of new ideas, as they develop, is the lifeblood of our research community. For a long time, print journals have been a major channel through which this dissemination took place. They have evolved to become the place of record, where new results, or new takes on old results, are put forward, after having been vetted carefully by reviewers and editors. As a result, publication of their work in journals of good reputation is a goal for most mathematicians active in research; their success in achieving this goal is one way to measure their standing within the mathematical research community. At many stages in our careers, we are asked to produce the list of our publications in scholarly journals, and these lists figure prominently in professional evaluations. Good research journals are thus central pillars for our community. This is why we willingly invest our time and effort in them, be it as editors or as reviewers.

The publishing landscape has however changed drastically in the last few decades, and continues to do so, in many ways. Two big changes stand out. The internet has made electronic publication possible; most researchers now use the internet to search for, find and retrieve papers of interest to them. And second, journal subscription cost to academic institutions has increased out of proportion with other costs, and is causing serious budget trouble for libraries.

This latter evolution is what caused the frustration that led to the creation of the *thecostofknowledge* website. Why?

The community of mathematicians provides the source material (as authors of the papers), the quality control (as referees and editors of the journals) and the readership for our journals. To an extent that is greater in mathematics than in other scientific fields, mathematicians provide their reviewing and editorial services to journals almost exclusively on a voluntary basis, with no expectation of remuneration. [Most of us are surprised when offered payment (as occasionally happens) to review for a journal outside the "mathematical core"!] We provide our services for free, even though these tasks take up valuable time and energy, because we are proud of the quality of our journals, and we perceive this service as one given (gladly) to our community. Papers in mathematics have a much longer "life" than in many other fields — it is not uncommon to reference even non-famous papers that were published many decades earlier, or even well over a century. As a result, we have, as a community, much more intellectual capital "vested" in our journals than most other fields.

Many of us feel that we, the mathematical community, "own" these journals to which we contribute (almost) everything that makes them worthwhile to us. From a practical, legal or financial point of view, this is not the case, however — the majority of mathematical research journals are the legal property of commercial publishers. Some of these have a longstanding association with mathematical researchers; for others, the connection is much more recent, the result (for instance) of the acquisition of small publishers with a larger presence in the mathematics literature by a larger house with much less prior mathematics exposure. That journals are legally owned by publishers is not new, of course; few mathematical researchers have an appetite for getting involved with the practical aspects of publishing, and for many very distinguished and well established journals published by a commercial house, a *de facto* symbiosis had developed between the (possibly specialized) mathematical community serviced by the journal and its publisher. [There are journals that are owned and published by societies that have their own publication branch, such as AMS, SIAM, EMS or ASA; others that are owned by societies that contract with a publishing house, commercial or not, to ensure publication, such as Foundations of Computational Mathematics. These are not the topic of this blog entry.] Mathematicians provided their services to the journals; publishing houses ensured that the successive (printed) issues of the journal appeared on a regular schedule, were of consistent physical quality, and took care of the distribution to its subscribers, mostly libraries in research institutions. The subscription revenue covered the price of publication and provided a modest profit to publishing houses. [In other fields, subscriptions often provided only part of the revenue. In the other natural sciences, for instance, it was common for research grants to have a budget item that covered publication costs, including page charges; many journals did ask such page charge contributions from authors of papers accepted for publication. In some journals the page charges were mandatory. Others would waive these charges at the request of authors who had no grant source from which to pay them; a slightly slower publications schedule could be adopted for papers benefiting from such a waiver. This was the policy followed by some journals at the interface between mathematics and other fields, such as the *Journal of Mathematical Physics*. Journals that were squarely within mathematics, whether pure or applied, typically did not request page charges from authors or authors' institutions.]

The situation started changing in the 1970s and 80s. Journals, with their steady subscriber base, provided a much more secure source of funding for publishers than books. (Very few advanced mathematics books become really profitable.) Increasingly aware of this, many publishers aggressively started new journals — the number of such new starts is in itself an indication that journal publication was increasingly viewed as a lucrative business. A steady policy of raising journal prices, including guaranteed annual percentage increases that far exceed academic budget increases, made journals (or bundles of journals) increasingly expensive. [It is ironic that simultaneously mathematical authors were taking over tasks that used to be the responsibility of the publishers (e.g. mathematical typesetting); this did not lead to a decrease in prices, however.] By now, matters have gone so far that even distinguished departments decide wholesale cancellations of journals from particular publishers rather than cutting even more academic positions to keep their journal subscriptions intact (see <http://www.ma.tum.de/Mathematik/BibliothekElsevier>).

Electronic publishing is potentially a great game changer.

Many speculations have been made as to how the scientific publication world will be radically different 5 or 10 years from now. For those among us who view the most important function of a trusted, respected journal as bringing together papers that are more or less focused in a special subfield, carefully checked and processed through a rigorous reviewing system, a new incarnation journal could be as simple as a list of paper+version numbers from the ArXiv or some other permanent repository, periodically posted on a website. Others suggest that a return to a word-of-mouth system will prevail, albeit in a more modern, electronic version, in which established mathematicians spread the word, via their web postings, comments and pointers, about interesting new results they have learned about. Many other models are being proposed, discussed, tried out. Publishing houses have themselves been very active in working on electronic versions of their journals. It is not my goal here to propose yet another model, or to discuss which model I think is best or most suitable for our community. I expect that different journals may opt for variations of these models; in addition my age and limited information-technological fluency make my instincts in this matter less than trustworthy.

But whatever happens, it is clear that great change can lead to great upsets. Our whole community would benefit from orderly transitions for our journals to the new publication model(s). The best possible transition will happen if there is broad community support for the journals. With present pricing policies, publishing companies are undermining the possibility of a truly community-wide support. I personally know of several editorial boards of high profile journals where many members are torn: on the one hand, they agree with many of the issues raised by the statement of purpose at [thecostofknowledge.com](http://thecostofknowledge.com), on the other hand they don't want to cause mayhem for the excellent journals to which they have devoted considerable amounts of energy and time, in service to their mathematical communities. I have also been asked for advice by young people who are offered positions on Editorial Boards, and are tempted by this recognition of their rising status in their community, but who resonate as well with the Statement of Purpose of [thecostofknowledge.com](http://thecostofknowledge.com).

Let me formulate here a very simple proposal that, if implemented, would not upset the identity of the existing journals, that would enable commercial publishing houses to continue to make a living while servicing the publication needs of the mathematical community, but that nevertheless would make a real difference to the mathematical community:

EMANCIPATION of our journals : set our journals free!

In other words, I propose that from their present disenfranchised situation, our existing journals be allowed to incorporate, and become independent societies. Most journals already function as a small society: they have a Board (of Editors), with (in a well-run journal) a mechanism of regular replacement of the members, in a way that represents well the interests of its community (e.g. paying attention to emergence of new subfields, or subsiding of others); there is a Managing or Chief Editor and possibly a small board of core Editors that functions like an Executive Committee. Having official society status would not change the effective functioning of the journals. (There could be some small changes: for instance, it would be natural to have an Executive Committee for the journal that appoints the editorial board and managing editors, and also handles publishing, legal and other issues related to the journal, but of which not all members need be Editors themselves.) For the administrative duties, marketing and distribution, each journal society would have a contract with a publishing house, which would, to begin with, be most naturally the present publisher. But the journals would be able to review this contract on a regular basis, starting a few years after emancipation. [Such contracts would also govern the changing nature of journal content over time: truly electronic publishing will involve much more beyond just digitizing the traditional journal: it will include nonlinear formats, different platforms (iPhone, iPad, etc.), active hyperlinks both internally and externally, video, audio, manipulable graphs, runnable code, crowdsourcing, etc. All this and more (that we can't imagine yet) will probably play a major role in future electronic publishing -- but that is for the interaction between journals and publishing houses to figure out, in the future, and not the subject of this blog entry.]

I have been told this is a very naive proposal. Maybe. But I think it is less naive than might seem at first glance. One isolated editorial board might not be able to obtain its enfranchisement if it asked its publisher, however nicely. But if the editorial boards of several journals acted in concert, the chances of success would be higher. Moreover, if some publishing house, truly providing a service to its journals as excellent as it claims, and thus risking very little in emancipating its journals, were to set the example, what a coup this would be with respect to other publishers — what recognition among the community! And others might well have to file suit ...

Emancipation of the math journals would not solve the challenge of identifying the best model for electronic publication for each journal. It would keep publishing houses involved in the publication of journals they now publish.

But it would, in one fell swoop, put the mathematical community and the publication channels on a footing of partners, seeking sustainable solutions in a changing environment, together.

Messires Publishers, wouldn't you prefer dealing with us, members of the mathematical community, as partners rather than spending all this energy on trying to convince us (not very successfully) that we are much better off in our present disenfranchised situation?

Ingrid Daubechies

This entry was posted in [Uncategorized](#) on [October 25, 2012](#).