

## The Price Spiral of Mathematics Journals and What to Do About It

published in the European Mathematical Newsletter, No. 38, December 2000, p. 29.

by Ulf Rehmann, Dept. of Mathematics, Bielefeld

*The material given here was presented by the author in a talk at the annual assembly of the chairmen of German Math departments (KMathF) in May 2000, and also in a talk at the DMV Jahrestagung in September 2000, both in Dresden.*

cf. <http://www.mathematik.uni-bielefeld.de/~rehmann/BIB/>

In common with scientists of other disciplines, many of us Mathematicians are concerned about the rapid price increase for scientific journals. Recently a major reduction in the library budget for the Mathematical Library at Bielefeld University forced me, as the person responsible for our departmental library at my department, to take some measures to decide which journals we should cancel. Since many departments are in a similar position, I think it may be useful to publicise the information that I gathered for my department.

As a first step I listed all the mathematical journals at Bielefeld, in a table on the Web, including the publishers, the 1998 price, and also, some information from the citation index ISI<sup>1</sup> such as the number of citations of that journal and the average impact of each article insofar as this information was available to us.

With a little perl script, I made this list more transparent by ordering it with respect to various data: by publisher, by price, or by ISI number, so by a mouse click, I could locate the most expensive journals, those with the strongest impact factor and so on. I then made this list public, not only to my department, but also to some colleagues and librarians worldwide, on the website<sup>2</sup>, and received a good response. In particular, I learned that at the same time the American Mathematical Society (AMS) had collected data on about 250 journals including their respective numbers of pages and prices for the years 1994–99, see the website. Since that table was not very transparent at the first glance I decided, with the permission from the AMS, to extract the data in a similar way as I did with the Bielefeld list, using some perl script to do computations of derived data such as the price per page and the price increases over the years, and also, to sort the table according to these data.

These tables contained some surprises. Not only that I learned that these 250 journals had published 323,786 pages of refereed Mathematics in 1999. I also learned to my great surprise that many journals had an average *annual* price increase of 15 % and more during the last five or six years. *This inflation of 15 % or more per year was during a time, when, in the western world, the average price inflation was usually below 2 % or so. And this is true for both the price increase per volume as well as for the price increase per page!*

My conclusion is that mathematicians are funny consumers: they buy the material which they produce by themselves from people – the commercial scientific publishers – who do nothing other than distribute that material at prices that increase beyond any reasonable measure. Not only that: mathematicians work hard for the publishers, usually without pay, by acting as their editors, collecting and refereeing the material written by their colleagues, and as authors, by perfectly typesetting their manuscripts, leaving almost nothing to do for the publishers but count their profits.

We have a really strange situation: it seems that serious people are willing to accept such price differences. For example, consider the following information (provided by the publishers themselves): in 1999, 'Inventiones Mathematicae' published 2894 pages for US \$ 2760, a price per page of US \$ 0.95, while 'Annals of Mathematics' published 2294 pages for US \$ 220 US, a price per page of US \$ 0.10.

---

<sup>1</sup> <http://www.isinet.com/>

<sup>2</sup> <http://www.mathematik.uni-bielefeld.de/~rehmann/BIB/>

I chose these particular journals, since I think that they have a similar reputation. But when I mention these figures to colleagues, many are surprised by that drastic price difference. This is not an isolated situation: checking the tables will show you several similar cases.

A typical pattern might occur to you when you scan these tables: Journals that are cheap are very often produced by learned societies or by universities, while expensive journals are produced by private publishers. (Using the word “produced” here is often an abuse, since I pointed out above that the production is essentially done by the mathematicians themselves, while the publisher just does the distribution.)

Another fact might strike you: Whatever you might think about citation indices and impact factors: At least they don’t seem to provide any argument for preferring high-priced journals above others. If they suggest anything, it seems to be the opposite: if you click on the list ordered by ‘impact’<sup>3</sup> you will find at the top many journals run by learned societies or universities and offered at moderate prices.

This situation is no longer acceptable. So what is to be done? It is certainly necessary for all of us to become better acquainted with the facts concerning scientific publication: Every mathematician should know more about journal prices. For that purpose, I will, in accordance with the AMS, annually update the price tables as soon as new data is available, and I hope this will help others to make the right decisions concerning their local library budget.

We also should take appropriate decisions ourselves when acting as author, referee or editor. Why are we submitting to an expensive journal, why are we refereeing for it? And if you are an editor, why are you not taking any measures to produce the journal by yourself?

Meanwhile, there are successful journals run by Mathematicians themselves, like *Geometry and Topology*, *The Electronic Journal of Combinatorics*, or *DOCUMENTA MATHEMATICA*, just to mention a few among many of them.

For example, I proved that, using the facilities of *DOCUMENTA MATHEMATICA* it was possible to produce a serious work such as the *ICM98 Proceedings* in shorter time, better quality, and for much less money than most of the earlier productions of *ICM* proceedings. To do such things is not hard nowadays, since many electronic tools are at our fingertips: I gave a public description of that production process on the Berkeley Workshop on “The Future of Mathematical Communication: 1999” including financial details and technical tools used.<sup>4</sup> And I guess most of our colleagues working actively in the area of publication are willing to share their experiences and knowledge in order to support similar projects by others.

---

<sup>3</sup> <http://www.mathematik.uni-bielefeld.de/~rehmann/BIB/impact.html>

<sup>4</sup> <http://www.mathematik.uni-bielefeld.de/~rehmann/EP/index.html>