ON THE FUTURE OF MATHEMATICAL PUBLICATIONS

NOT A CHARTER

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There is an ongoing discussion on the future of Mathematical Publications in the age of electronic communication, and many things are happening: electronic journals appear which are no longer printed, and preprint servers take over the role of timely information on new developments in science. Many scientific news spread via email, like in the heroic days of enlightenment, when personal letters were the main vehicles to communicate scientific discoveries.

For Mathematics a lot is at stake since it depends very much on the compiled literature, its reliability and accessibility. Mathematics is very vulnerable to any downgrading of the reliability of its literature which could be a companion of the more easy means of publishing today. But Mathematics is also happy to have a de facto standard of publication: TEX. I think that TEX will be stable in the future. In certain aspects the invention of TEX is like the invention of the alphabet. There is high value in its stability, so it will be stable. Even the development of the TEX dialects (Latex, AmSTeX) is slowing down considerably, not many users are migrating. Of course the raw TEX is not the means to distribute journals. Here the standard seems to be postscript now, and might be Adobe pdf later – so one must keep the chance to transform to changed standards later. I do not think that standards will change as rapidly in the future as they did in the past, since also here stability is of high value to the community. We might even have postscript many decades from now, if not forever.

The main vehicle for the publication of Mathematical research are the scientific journals; some of them have a tradition of more than a century. There is an established method of refereeing, deciding, and editing, and some fear that this is in danger. The real opponents of journals are the preprint servers. The hep-tp server is starting already to implement refereeing. The unbundled articles alone seem to be better units of scientific information transmission than issues of journals. See also the following information:

Hayes, John R.

The Internet's first victim? (academic publisher Reed Elsevier; electronic publishing infringes on traditional publishing services) (Industry Trend or Event) Forbes v156, n14 (Dec 18, 1995):200 (2 pages).

Abstract:

London-based academic publishing house Reed Elsevier may be losing its profitable business to the powers of the Internet. Louisiana State University's library recently retracted a $446,000 subscription of 1,569 scholarly journals from Reed Elsevier, opting instead for an Internet-based service that enables the library to generate a requested article within two days. Instead of paying out $446,000, the library only needed to pay $25,000 in copyright and delivery fees. Students and professors can now use the Internet to review over 17,000 academic journals' table of contents and order any of the articles therein. The university utilizes the services of the UnCover Co, an article retrieval company that offers journals' table of contents on the Internet and faxes along any requested articles for roughly $13 each. Reed Elsevier is certain that the Internet will not completely overtake its businesses since professors still need their products. The flexibility and speed of electronic publishing could alter the landscape of traditional ink-on-paper publishing.

The decision reported in this article might not be unrelated to the court ruling against Exxon which was decided to be guilty of copyright violation since a scientist there copied articles from chemical journals although the journals were subscribed several times by the libraries of Exxon.

Mathematics is different. The literature is of high value, each paper is unique, results are rarely published several times. Journals as boards of editors and with established refereeing and publishing policies exist, are recognized, and will stay if they adapt. Old tradition nearly never die, they just become feeble if they do not serve any purpose. I think that journals could be the means of scientific publication also in the electronic age, at least in Mathematics. By adapting I mean that journals must be easily accessible and quicker in publishing, and they should be printed and distributed at lower cost. This is possible: have a look at the electronic library of the European Mathematical Society (EMS) at http://www.emis.de and its (now: March 25, 1997) 10 mirrors and 17 journals. Also some commercial journals are in there. I think that for reasonably priced printed versions of electronically accessible journals there will always be a market: libraries, even private subscriptions of the special journal in one's own field.

About archiving: The electronic library of the EMS is a sort of model for this: mirror sites have to agree to keep the whole content of the server. In the future one could ask them also to keep an intact mirror of a not publicly accessible server containing all TeX-files and necessary programs to produce dvi-files. If there are several hundreds of these mirrors over the world, we have solved the problem of archiving in the best possible way.

There is always the argument about copyright, and about the interests of the commercial publishers which should be protected. On the other hand nearly nobody speaks for the interests of the main actors involved: authors and readers. Authors of scientific articles want their work widely distributed, easily accessible, and safely kept in the future. They do not earn money with most of their articles, only scientific reputation, and this is not provided by commercial publishers who severely restrict the circulation of journals by very high prices, it is only provided by the reputation of the editorial board and by the readership of a journal. Readers of scientific articles want quick information and easy access. One has the feeling that today more is written than read, so readers are very valuable, it should be easy for them to get at their reading. Who is speaking on behalf of authors and readers? It should be the learned societies. But the largest of them are indeed like publishing houses and they seem more interested in the wellbeing of their revenue-generating enterprises than in the interests of their members, the author and readers of mathematical articles.

The following charter would take care of the interests of authors and readers.

DRAFT OF A CHARTER OF FREE ELECTRONIC ACCESS TO PUBLICATIONS

Mathematical literature and access to it is the single most important asset of the world of mathematics. But there is stress to it: prices of journals are rising higher and higher, whereas budgets of libraries are increasing rather below the rate of inflation or even decreasing. There are more and more new journals. Even in big libraries one cannot find all serious journals today. The role of a printed copy of a journal nowadays consists of sitting in a library waiting for an article out of it to be photocopied. A conservative estimate is that on the average an article is photocopied 50 times, all over the world, and read 25 times. To typeset, print, and distribute it is a waste of human and natural resources, the same service could be done via computer quicker and more widespread.

This charter is not meant to formulate the future of all the mathematical communication, its aim is only to pave a way for the transition of traditional journals to freely accessible electronic ones. The result might be cheaper and better accessible mathematical literature in the future.

The rationale behind this charter is the following. The aim is to try to lower the overall cost of mathematical literature. One way could be the following: One should distinguish carefully between the final electronic version of a paper, into which besides the work of writing and refereeing only marginal costs have been invested, and the printed and distributed version, which makes use of a somewhat industrial process. The costs of the former, since they are small, should be carried locally, by academic institutions or libraries. Important libraries could adopt existing journals and take over their costs up to the electronic product. Free personal access to the electronic product should be ensured. The costs of the latter industrial process should be borne by the consumer (library) who prefers to have at hand a nicely printed version. There will be not so few of them, perhaps.

DRAFT OF THE CHARTER

1. The right of access to the electronic file of a paper which was prepared electronically by the author or his institution lies with the author(s).
2. If the author submits this paper to a preprint server and/or if the paper went through a refereeing process positively, the author automatically acknowledges the right of free electronic access to this paper to the (mathematical) public.
3. If a journal prints a refereed article the right to distribute and sell this printed paper lies completely with the publisher of the journal. But the right of free electronic access to the file remains at the public.
4. Everybody who uses the right of electronic access to a paper is entitled to print freely some copies of it for personal or restricted (educational) use. He is not entitled to sell copies of this paper at profit.
5. Libraries are entitled and asked to keep permanently accessible files of electronically accessible journals, in order to ensure their perpetuity, besides or without printed copies.

STATUS OF DISCUSSION

The draft above got very mixed responses. Among them: A short charter like this has its charm, but if we start making all the sentences really precise it will get as ugly as the declarations of the European Community. Some say that it is by far too early to fix any rules, or that it is really dangerous to do so: it might wake sleeping dogs.

The idea to have a charter like that has not found enough support by the influential persons thinking about the future of Mathematical Publications, especially in Europe. It seems better to drop the idea. On the other hand, things may be formed and influenced now, whereas habits will be fixed later, and the chance to lower the cost of mathematical literature as a whole may be over.

Thus the formulation of the charter is presented to the public in the form of this article. The reader should be aware that no assembly of any legimitation has voted on it - it is just the personal opinion and guideline of the author: but it did lead to the creation of the Electronic Library of the European Mathematical Society (http://www.emis.de).

(P. Michor is secretary of the EMS 1995-98 and chairman of its Committee on Electronic Publishing)