SERIALS AND NEW TECHNOLOGIES: OPPORTUNITIES FOR LIBRARIES, PROBLEMS FOR THE LAW AND THREATS TO PUBLISHERS

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Part 1: The growth of new technology and its impact on serials publishing, now and in the future.

(Part 2: The EEC legislative process, with particular reference to copyright and libraries, will be published in the November issue of *Serials*.)

I consider it to be a great honour that I was invited to present the keynote address for the Second European Serials Conference.

It is especially pleasing that the Conference is really growing in a European direction. There are not only more countries represented but, as you know, it is now a joint effort of the UKSG and the newly founded Dutch Serials Group and I hope that the next conference will include at least three organising serials groups.

I would like to congratulate the United Kingdom Serials Group and the Dutch NVB Serials Group on their achievements and wish them all the best for the future.

Introduction

The title of my address is "Serials and new technologies: opportunities for librarians, problems for the law and the threats to publishers". If somebody uses a title like this, one can conclude something about his background: he could be either an optimistic librarian or a pessimistic publisher. However, it is unlikely that I would be a pessimistic publisher, since publishers are by nature very commercial and follow, therefore, the competitive principle that, no matter how bad things are, you never admit publicly that your business is in danger and

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threatened. Always be, or pretend to be, optimistic! So this leaves you only one possibility, the speaker must be an optimistic librarian!

If I were a publisher the title would probably be "Serials and new technologies: opportunities for publishers, problems for the law and threats to librarians". This, for instance, was very nicely illustrated by the prediction of Mr. Kels, chairman of Elsevier Science Publishers and Pergamon Press. During the 24th Congress of the International Publishers Association (IPA) in New Delhi in January this year he stated that "libraries have been the traditional customers and partners of publishers in providing journals to scientists but electronic systems offer the tempting opportunity for publishers to bypass the library in favour of either new vendors, or direct delivery to the user!" Personally I have great doubts about these "tempting opportunities for publishers".

If I were a policy maker on the legal issues involved in this subject, the title would be: "Serials and new technologies: opportunities for the law, problems for the publishers and threats for the librarians".

This is not just a game of re-arranging words in a title. It illustrates the different opinions and expectations that the four main players in the information field, publishers, agents (and booksellers), librarians and researchers, can have about the new information technologies. No matter which expectation finally turns out to be correct, one thing is beyond doubt: we must all learn to look beyond our own specific area and get acquainted with the problems of the other partners in the information circle.

Expectations for the future with regard to new technologies

The introduction has left us with an intriguing question: what are the future expectations of the different parties with regard to new technologies and do they really have such different expectations about their own position and their role in the information chain? For this reason I did a small study during last week's IFLA Conference in New Delhi: I produced three short questionnaires for librarians, publishers and agents. About half of the 16 questions were the same for the three categories; the other half were branch specific. I would like to present to you the results of my research.

The libraries of the librarians interviewed are in 15 different countries, including the USA, Australia, Japan, Africa and Russia. The group consists of 17 special libraries (including parliamentary and governmental), 11 university libraries and 1 public library. The libraries' annual serials budgets vary from $115,000 - $2,200,000 (the very big Russian library excluded: "no hard currency"), with an average of $773,000 representing a total budget of ca. $21,650,000 (7 questions marks, from well known "big libraries" were counted as average budget).

Now the results:

- Not one librarian expects a considerable increase in the coming year's serials budget: 10 expect an inflation correction; 12 the same budget; 3 a small decrease, and 1 even a considerable decrease.
- Almost all librarians, 27, expect higher serials prices in the coming years. 2 expect stable prices. Lower prices are not expected.

- With regard to the number of interlibrary loans (photocopies), 23 expect an increase; 3 a stable number, and 3 a decrease.
- There is more variation in the expectations of the total number of current scientific journal titles: 15 librarians expect an increase; 9 a "stable" number, and 5 a decrease in number.
- The legal implications of changes in the law with respect to copyright, lending charges, database protection etc., divide the group almost equally. 13 expect that the changes in the law will affect their library service, whilst 16 do not.
- Only 2 librarians expect those changes to be a threat for their library. 7 think it will have no influence, while the remaining consider it just "a change".

The participation in preparing the earlier mentioned legislation is surprisingly high, 30%. This is probably the main reason why the same percentage feels that the library's interests in those matters are properly watched over.

- With respect to technology, only 9 librarians believe in the concept of a "paperless library" in the (far) future. 19 do not and 1 does not know.
- An overwhelming number expects a (further) shift in the library's budget to CD-ROM products and applications; 25 against 1 "no", and 3 question marks.

A very interesting result is obtained from the question "What do you expect to have the greatest impact in libraries in the coming years?" (Mark one or more in order of importance). Figure 1 is a compilation of the answers and measured average results.

Fig 1. Compilation of results

	order of importance						
	1	2	3	4	5	6	measured average
CD-ROM	4	6	5	0	1	1	9.0
networking	17	4	2	0	0	0	19.6
electronic document delivery	8	9	3	1	1	0	13.8
expert systems	1	0	6	2	2	0	3.9
new media	1	2	1	3	1	2	3.6
new user demands	2	1	2	3	2	1	4.5
other, namely:							
hyper text interfaces	1	1					1.5

As you can see, networking is expected to have by far the greatest impact on libraries in the near future. Electronic document delivery is second.

Although the most important agents were included, there were too few questionnaires from agents to be able to present the results as justified conclusions. It is however striking that the agents interviewed all agreed on the following answers:

-   increase in the total number of subscriptions to be handled for libraries;
-   increase in scientific serials subscription prices;
-   increase in the number of interlibrary loans (photocopies);
-   increase in the total number of current (scientific) journal titles in the years to come;
-   increase in CD-ROM products and applications.

From the publishers I also received too few questionnaires to provide justified conclusions. It is however very clear that the publishers were less in agreement about the questions posed. They only agreed on the following answers:-

-   increase in CD-ROM products and applications;
-   considerable change in their products or services with regard to the "traditional" field of the libraries and of the subscription agents.

From these data one can conclude that the three main parties are almost in complete agreement about one thing and the overall conclusion must be: **"There is a bright future for CD-ROM products and applications!"**

Some statistics about CD-ROM

Whilst considering CD-ROM products and applications as an exponent of the new information technology, let us look at some other facts and expectations about CD-ROM. The first question could be: what are the recent developments of CD-ROM products? Are there any signs that support the above conclusions? The next diagram presents the growth pattern of commercial databases.

Although we see an increase in the number of CD-ROM databases, we also see that the number of on-line databases grows much faster! (Source: Tönsing, R.E.)[1].
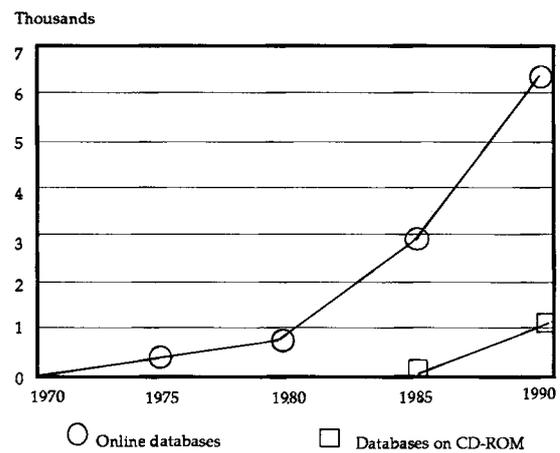

Fig. 2: Growth pattern of commercial databases

The next diagram presents a growth rate for all types of CD-ROMs. Again we see, after a slow start, a constant growth rate.
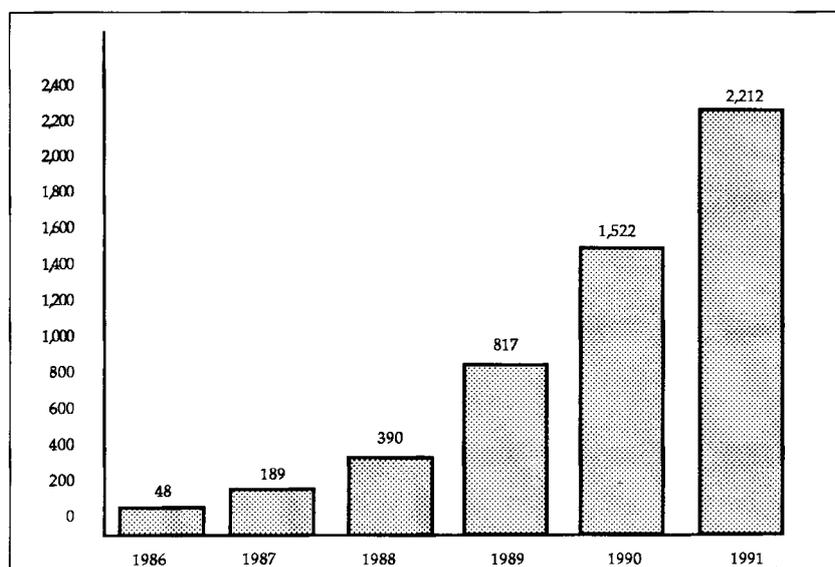

Fig. 3: Growth rate for all CD-ROMs

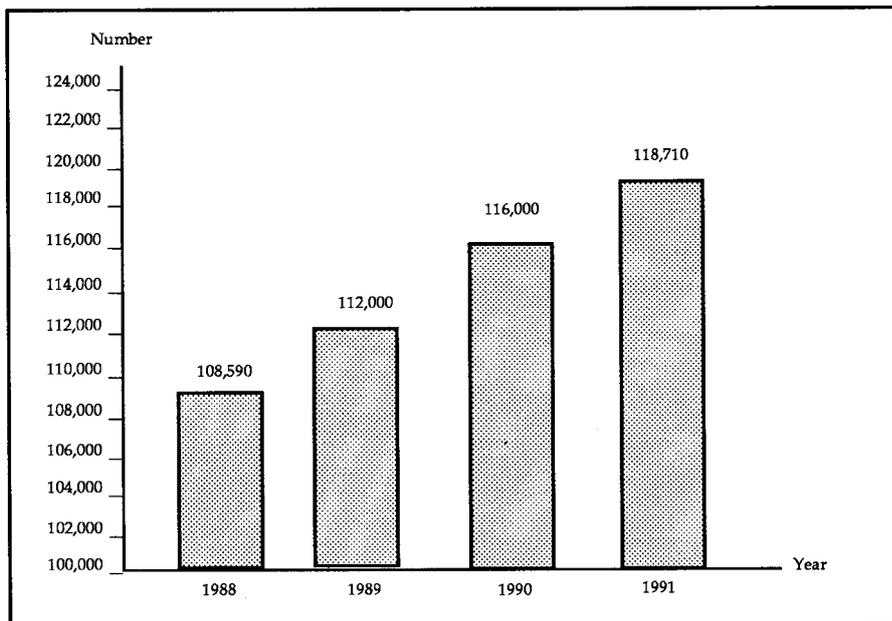*Source: TFPL CD-ROM Directory 7th edition 1992, print edition*

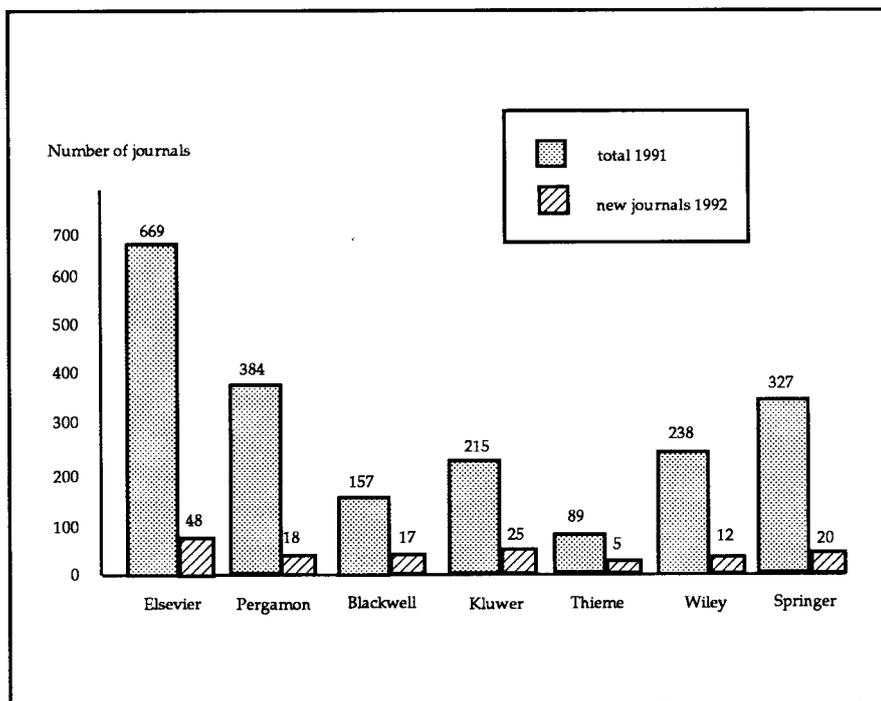*Fig. 4: Current journals*

Source: Ulrich's

Are these growth rates so different from print journals? As we can see from world-wide data, this is not the case.

Apparently the new technologies have not influenced the steady growth in the number of current print journals. Figure 5 gives an idea of the present production of scientific journals by the main publishers.

You can see that the big publishers still produce new journals; in 1992 between 5 and 12% (6%, 5%, 5.6%, 11.6%, 10.8%, 4.7%, 6.9%) of the numbers they produced during the previous year. The average prices of those journals are shown in Figure 6.

Fig. 5: Scientific journals production 1991/92
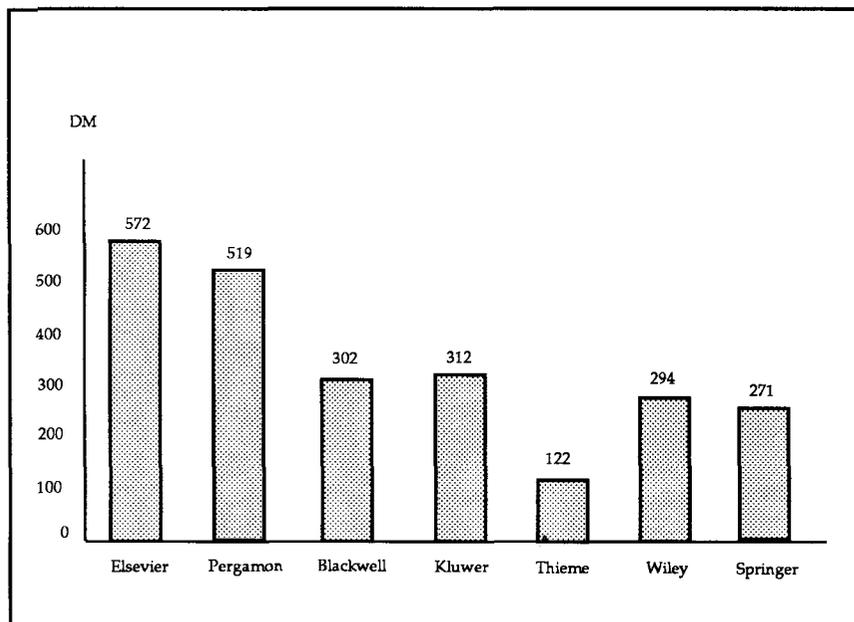
Source: Springer-Verlag 1992

Fig. 6: Average price of new scientific journals (1992)
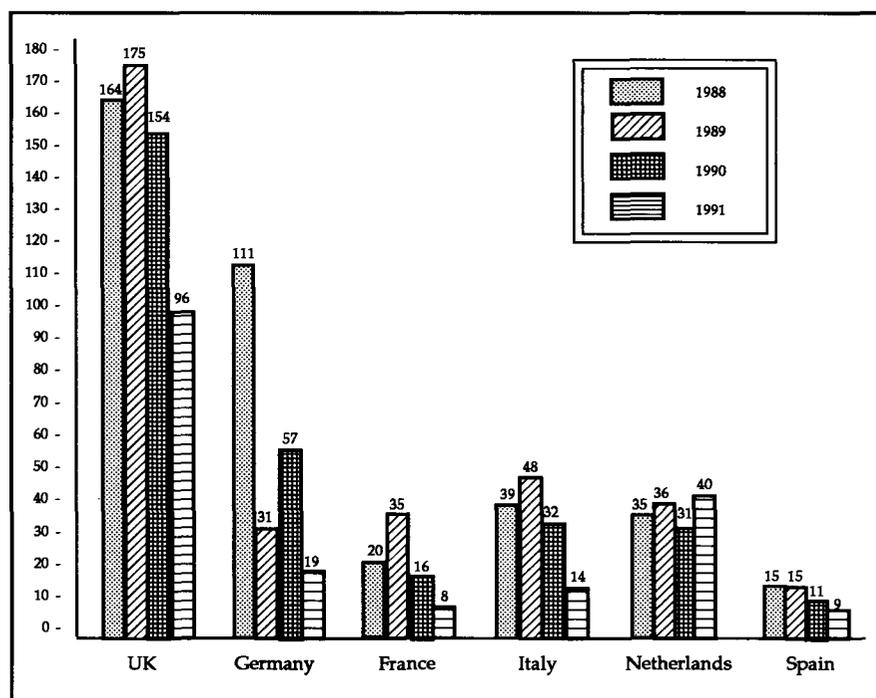
Source: Springer-Verlag 12/91

It would be interesting to know what causes the enormous differences in the average prices of the different publishers! I am afraid that I cannot give you data on that. All these figures look rather sad for libraries. There is, however, also some good news for libraries, if we look at the

number of new European periodicals over the past 4 years.

We can see that there is a clear tendency to a lower growth rate. Let us hope that this trend continues.

Fig. 7: Number of new European periodicals 1988 - 1991

Source: Ulrich's CD-ROM 1992

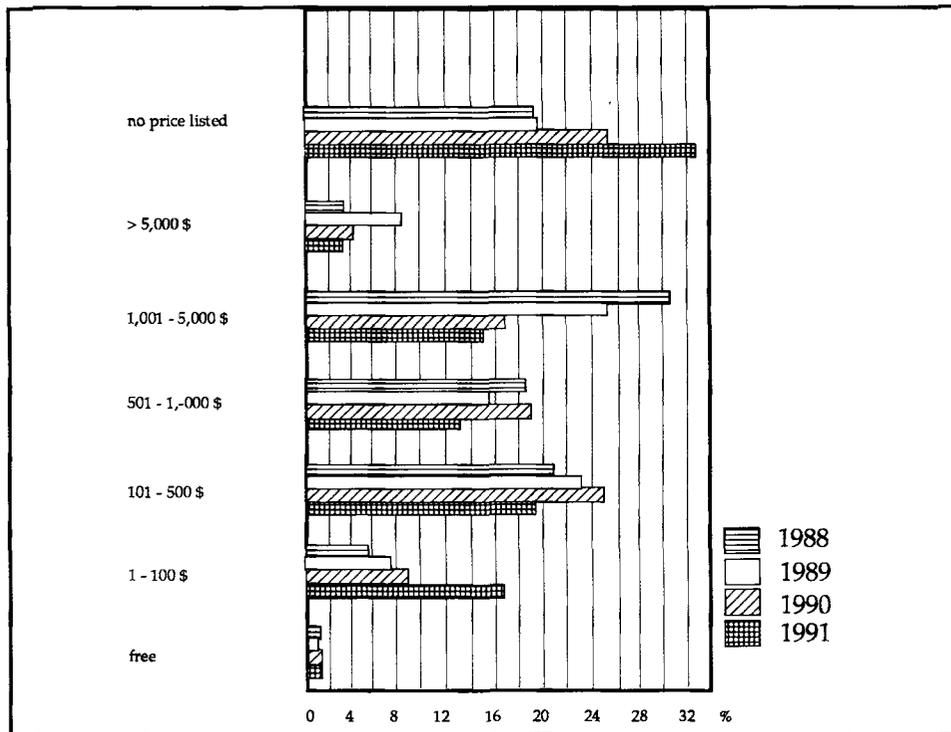Now let us return to the CD-ROMs and look at the development of their prices.

Fig. 8: CD-ROM pricing 1988 - 1991

Source: CD-ROM Directory 5th edition, CD-ROM update 7/91

From figure 8 we can see that there is a clear shift from the 'expensive' CD-ROMs (between $500 and $5000) to the cheaper ones (up to $500). This is an encouraging trend that might be of help to the libraries' financial problems.

Conclusions

On the basis of the data presented one can draw the following conclusions for the years to come:

- there will be an increase in the number of commercial databases, on-line databases as well as databases on CD-ROM;
- there will be a growth in CD-ROM titles of about 700 next year;
- the growth in CD-ROM titles will mainly be in the multimedia and full text databases;
- the number of current scientific journals will remain at a constant level of about 120,000;
- there will be a further decrease in new European periodicals;
- CD-ROM prices will fall, with a shift from the more expensive ones to the cheaper ones (less than $500);

These trends mean new opportunities for publishers as well as agents and libraries. It is a growing market for a relatively new product that is not necessarily changing the information chain.

Serials prices and new technologies

Having considered the numbers and prices of CD-ROMs and serials it might be interesting to look at the question of whether the new technologies have influenced serials prices.

In the opening of a recent review by Maurice Line of the Conference on Serials Prices organised by SCONUL and the British Library R &D Department, he wrote: "This issue, serial prices, and the related topics of scholarly communication and the future of serials, have been the subject of many conferences and papers, and will doubtless be the subject of many more. The problem is clear enough: serials keep on increasing in number and price while library budgets do not. In spite of continued cancellations, serials are still in danger of squeezing out monograph purchases altogether. Academics complain of literature

proliferation while contributing to it. From the publisher's angle, reduced subscriptions mean that prices have to be raised still further - causing more cancellations. Where does it all end - or are there alternatives?".

But what about the new technologies? Will they provide a solution for the library's economic problems? One thing is certain: publishers are facing significant changes in the publishing, communications and information industries.

The expanding role of technology in publishing will not only affect the types of information products developed and made available, but perhaps more importantly, this technology will fundamentally reshape delivery systems for information goods and services. Why will technology effect this change? According to

Mr. Regazzi of Engineering Information Inc., USA[2], there are two reasons:

- the innovations in information technologies of the past two decades have radically reduced the time and cost of processing information;

- in reducing the costs of processing, information technology will permit an overall shift towards consumer and specific markets, replacing today's highly centralised and hierarchical delivery of information goods and services.

In the context of this conference I consider the following table, showing the dramatic reduction in the cost of processing, to be quite important (taken from Mr Regazzi's article).

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Price/performance comparison: 1970 - 1988	1970 in $	1988 in $	Cost reduction in %
Computational Technology (GPU instructions per second)	3.00	0.12	96
Storage Technology (per million characters) - Magnetic Discs - CD-ROM (Master)	2,500	15 4	99
Telecommunications Technology (per million characters transmitted) - Dial Access - Leased Line	1,000	10 10	80

Table 1: Processing costs

As one can see, there has been a 96% reduction since 1970 in costs associated with computer processing units or the ability to process information. The savings realised by storing data on magnetic discs or optical discs are even more dramatic, exceeding in both cases a 99% reduction in cost. In sharp contrast with these incredible reductions in production costs, libraries are faced with ever rising prices for serials. This looks rather contradictory to me.

Network-based electronic journals

Having made some remarks about the traditional print journal and the influence of new technologies on its production process, let us now turn to a new form of serial: the network-based electronic journals. The creation of this type of serial is another application of the new technology. Utilising computer networks, researchers have become electronic publishers, creating an alternative publication system.

Electronic serials hold great promise, but a variety of problems currently limit their effectiveness. Let me first summarise the advantages of electronic information:

- timely (update facility)
- interactive (two-way communication)
- re-packing (formatting, adding and stripping)
- retrieval possibilities (easy and precise access)
- storage possibilities
- usage processing.

During the last few years, a small group of pioneering publishers on the world-wide electronic communication system, simply called "the net", has been distributing electronic journals, magazines and newsletters that are not derived from printed serials. Publishers send these electronic serials to subscribers via e-mail messages or file transfer. Usually they are free of charge and there are typically no licensing agreements. Some of these electronic publishers are producing serials that are similar to the well known printed publications. Others are inventing new forms of serials.

Another new phenomenon is computer conferencing. E-mail messages on a special topic or cluster of topics are sent out to the "conference partners". All messages have identified authors and a date and time stamp, and thus have a "chronological designation". Messages are usually short but they can be more lengthy as well. Some computer conferences are "edited" by a conference moderator. At a basic level the moderator screens the incoming messages and sends out only those that are relevant to the conference. At a more advanced level, the moderator may assemble messages into formal "digests" and send these composite messages to conference participants. There are even moderated conferences that issue messages with a volume and number designation.

Those who are interested in existing network-based electronic serials and computer conferences are referred to "The Directory of Electronic Journals, Newsletters and Academic Discussion Lists"[3] which was published in July 1991 by the Office of Scientific and Academic Publishing of the Association of Research Libraries in Washington DC.

The future of electronic serials

Although I do not expect that electronic serials will displace print serials in the near future, I do think that they will become an increasingly important parallel form of scholarly communication. It is quite possible that a substantial non-profit serial publication system will emerge from the efforts of network-based electronic serials publishers. This system is likely to be characterised by low or no subscription fees and the retention of the intellectual property rights by authors. Given the grim realities of the current serials pricing crisis and the apparent absence of viable solutions to this crisis, it is in the librarian's interest to try to make this vision a reality. Unlike the CD-ROMs, this application of new technology changes (or could change) the information chain considerably. I think one can say that this is a threat to the publishers, an opportunity for the researchers and a challenge for the librarians.

References:

1   Tönsing, R E   *Downloading and reformatting external records for researchers' personal databases* Program, 1991 25 (4), 303-317, illus 17 refs.

2   Regazzi, J J   *New technologies and information delivery systems*   In: *Online information 89* Proceedings of the 13th International Online Information Meeting, London, 12-14 December 1989. New Jersey, Oxford and Medford, 1989. 331-336.

3   *Directory of Electronic Journals, Newsletters and Academic Discussion Lists*   Washington, Office of Scientific and Academic Publishing of the Association of Research Libraries, 1991.