Copyright Impacts on Chemical-Industry Users and Information Centers†

MARGARET H. GRAHAM

Analytical and Information Division, Exxon Research and Engineering Company, Linden, New Jersey 07036

Received February 9, 1976

Ready access to information is vital to the scientific and technical industrial-user community, which is concerned that this flow of information should neither be impeded by unnecessary copyright barriers nor destroyed by too open a system. Chemical-industry users and information centers are willing to pay equitably for value received under a fair-access system.

Economic problems in scientific communication, including those related to copyright, are having some serious impacts on the scientific and technical community, including its publishers and resource libraries. This is also true for chemical-industry users and the information centers which are often their representatives—even lobbyists—when it comes to looking after their information needs. But there are some differences, as we shall see.

It will probably surprise no one when I say that our chief concern with copyright is based on the fact that information is vital to the scientific and technical industrial-user community. Our real concern is that the flow of this vital information should neither be impeded by unnecessary legal barriers nor destroyed by too open a society. Our basic emphasis is on even greater availability of this information, so vital to the continued health of the industrial scientific community. And if I have said "vital" several times it is because science-based industries have so much at stake here.

Let me cite three major instances:

● **Technical Obsolescence.** Advances in science and technology continue to come at an accelerated pace. Prior to about 25 years ago a graduating chemist or engineer could look forward to applying his training meaningfully throughout his technical career. Now, the phrase "technically obsolete ten years after graduation" is all too true unless special attention is given to keeping up with developments. And even the "ten years" is sliding downward.[1]

● **The New Technology.** It has been clearly demonstrated that many technical advances can now be attributed to having the scientific knowledge developed in one discipline applied to developments in another.[4] Knowledge of those advances must increasingly come from some structured type of information exchange.

● **Industrial Research.** In industry, the Golden Age of industrial research may well be over; certainly it is not likely ever again to be quite so prodigal. Industrial-research staffs are tending to be relatively smaller; such research costs a lot of money. Researchers are having to work smarter. If they ever could before, they certainly cannot now afford the luxury of doing work in the laboratory that is then found to have been reported elsewhere the year before.

These are among the major reasons for the increased concern by the industrial technical community on the need to keep abreast of the technological advances that are coming so quickly and furiously.

Journal publications have long been the most important source of technical information, in combination with the secondary services which access them. Twenty-five years ago, many chemists still received their own copies of *Chemical Abstracts* and could readily use these to keep abreast of happenings (in 1950 CA published about 56,000 items per year), but this is no longer true. *Chemical Abstracts* now costs about $3,500 per year—and how many individuals can afford that? And it now publishes over 450,000 items per year—and how many individuals can handle that in terms of time?

Gone are the days, therefore, when chemists and engineers could pour through their current journals and recent indexes to keep abreast of information pertinent to their activities. Moreover, the fantastic growth of published information has been accompanied by a proliferation of many highly specialized journals, resulting from the increase in technical specialization. This has added even more road blocks to keeping abreast of developments in other areas of importance.

At least in industry, however, technology has already begun to come to the rescue. So as one more prelude to getting down to brass tacks about the impacts of copyright, I deem it necessary to give a brief overview of what has been happening recently in the applied information-access areas.

With the advent in the mid-sixties of computerized information sources, the ability to access large bodies of information has changed dramatically.[3] This began with computerized SDI—the computer matching of individual or project technical-interest profiles against successive issues of major computerized sources, to alert recipients to new, pertinent references.

Even more recently, the ability to access, via a local terminal, large remote, computerized information bases, and to structure one's query in such a way that pertinent material is really pinpointed, has made it so cost-effective to learn what is already known and then to keep up with current publications that more and more industrial chemists and engineers are finding that they cannot afford not to utilize this new system. For the first time they have a rapid method for identifying developments that could be pertinent to their work, regardless of originating discipline or access service.

Indeed, the availability of on-line computer searching of published information has opened the door to the individual user of publications on a worldwide basis. It has dramatically made clear the limits that the user previously had placed on him when he had to rely on reading a few selected journals to maintain his current awareness, or when to answer current problems he had to search manually, with time constraints, through the resources that were chiefly available locally. Now, individuals can clearly see that information is both interdisciplinary and dispersed. Users are now asking for articles published in journals that they never heard of before, but which they are now aware contain information pertinent to their work.[5] Only now are they aware of the true significance of the fact that only 58% of all the items in *Chemical Abstracts* are based on English-language publications.[2]

It is quite time, now, to look at a copyright-related consequence of this broader access to information. Although computerized information searching now gives one an immediate awareness of the existence of specific pertinent in-

† Presented at the 171st National Meeting of the American Chemical Society, New York, N.Y., April 5, 1976, in a Joint Symposium of the Committee on Copyrights and the Division of Chemical Information on "Impacts of Copyright Developments on Chemical-Information Transmission and Use".

formation, it does not provide the actual documents. Not surprisingly, this citation of documents leads to a demand for the actual documents.

In the past, industrial information centers attempted fairly successfully to have available most of the sources that were locally demanded, but it is an absolute impossibility for these specialized information centers to maintain local copies of the full documents for many items that are now being cited in computerized information searches. Most information centers can still maintain copies of high-use sources, but the problem comes from the multitude of "others". Obviously, it is essential that copies from these other sources be obtainable quickly and reasonably.

If I had to sum up our copyright attitudes in one sentence, I would have to say that most industrial technical-information centers are willing to support a copyright law that would enable us reasonably to obtain a photocopy of any article or other document that has been cited, and to pay a fair share of the costs for this service to all concerned. And for sources in low demand, this does not mean a requirement to buy or license an entire microfilm file. What we need is a "fair-access" mechanism through which we can make or request photocopies of the specific items we need on some preestablished cost-per-item basis.[6,7]

It might be appropriate at this time to place in perspective some of the relevant functions of these industrial technical-information centers. Their "special libraries" do not serve the general public. They are not general collectors of archival information. They are a resource tool, shaped on an individual basis for the company that they serve. Frequently, they are the processors of proprietary informational materials for their company. They maintain locally the published information sources that answer the questions most frequently raised by the staffs which they serve. They do not buy indexes just for the sake of having indexes, or an encyclopedia just because it is an encyclopedia. Most industrial information centers must be highly selective in what they purchase and maintain. They must be cost-effective if they are to continue to exist and to serve the user community for which they were created.

But it is important, in this context, that I repeat that technical publications, especially journals, still serve as very effective communications tools throughout the chemical industry. A recent user study at Exxon Research has shown, for example, that published information is considered by researchers to be vital to their work, and that it is being actively and effectively employed by our researchers in many phases of their work.

In general, however, research-need patterns are ever shifting. As the cost of maintaining technical people continues to go up, the need increases for them to utilize all resources fully. Information is one of the resources that is receiving increased attention. To researchers, information centers, and management, alike, the need for quick, simple access to documents has become very apparent.

So here I would like briefly to restate all this in terms of our copyright-related goals:

- To be able to have our special libraries and/or researchers continue to make photocopies locally from available journals, legally and ethically, when this expedites the efforts of our companies.
- To have our special libraries continue to be able to buy photocopies from outside libraries or networks when we do not have the journals.
- To make or to obtain these photocopies without harm to the copyright owners, so that the present system of knowledge announcement and archival availability—publishing—will continue in existence at least until it can be replaced by a system that is technologically and economically better.
- Not to be barred from making or obtaining these photocopies by incautiously incomplete copyright legislation. As Ben Weil has recently pointed out,[7] presently pending, flawed copyright legislation could actually harm the national effort, because industrial research organizations do most of the nation's research, including that which is government funded. To bar our fair access to needed information would be worse than capricious.

I repeat: Chemical-industry users and information centers are not asking for anything or everything for free. What we need and want is a mechanism for a fair-access payment, not legislation that would raise barriers, that would have the effect of prohibiting access to information. These would be serious copyright impacts indeed.

LITERATURE CITED

(1) L. M. Branscomb, "Staff Obsolescence—Its Cost and Prevention", *Res. Manage.*, **16** (2), 16-19 (1973).
(2) "CAS Today. Facts and Figures About Chemical Abstracts Service", Chemical Abstracts Service, Columbus, Ohio, 1974.
(3) M. H. Graham, "On-Line Systems in Perspective—Their Place in the Total Spectrum of Information Services", paper presented at the 66th Annual Conference of the Special Libraries Association, Chicago, Ill., June 1975.
(4) S. Myers and D. G. Marquis, "Successful Industrial Innovations", NSF 69-17, National Science Foundation, Washington, D.C., 1969.
(5) W. G. Stanley, "Coming of Age of Computerized Information Sciences—What's In It For You?", paper presented at the 170th National Meeting of the American Chemical Society, Division of Industrial and Engineering Chemistry, Chicago, Ill., Sept 1975.
(6) B. H. Weil, "Document Access", *J. Chem. Doc.*, **11**, 178-85 (1971).
(7) B. H. Weil, "Private Information Center Aspects (of Copyright)", *IEEE Trans. Prof. Commun.*, **PC-18** (3), 222-24 (1975).