Copyright Impacts on Chemical Journals and Data Bases†

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If the scholarly system of making scientific information generally available is to continue, a fair share of the "first-copy" costs for reviewing, editing, and basic composition will have to come from those libraries and individuals who would be inconvenienced by direct purchase of journals or related copies, yet who can obtain or access them through photocopying and other "resource sharing".

In the matter of copyright and the copying of scientific journals and data bases, we are dealing on one hand with the power of the U.S. Congress, granted by the Constitution, Article I, Section 8, "To promote the progress of science and the useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." On the other hand, we are dealing with the dynamic progress of a system for the dissemination of new scientific knowledge in the interest of the general welfare. That system is increasingly complex, and for viability, progress, and effectiveness depends upon the recognition of the necessity to serve the mutual interests of knowledge creators and users, who in some instances are the same. That system provides to the scientific public a constantly updated authoritative consensus of universally accepted knowledge in the field concerned,[6] and it provides guidance and access to that body of knowledge for retrieval purposes. It is and must continue to be responsive to impacts from authors, intermediaries (libraries and service centers), and direct users.

Before new knowledge is added to the record, it is reviewed, objectively criticized, and edited by authoritative scholars. Then, once published, it is available in the record for continued use, criticism, and refinement.

The journal provides the research scientist with a worldwide audience among scientists of his or her discipline. By exposure of his new results, his discussion of techniques, and his reasoning by which conclusions were reached, the author's achievements are presented for evaluation. The scientist's standing among his or her peers depends substantially upon journal articles published. In this process, moreover, the scientist is aided in the accuracy and clarity of his presentations by the reviewing process provided. He is also protected against misuse of his papers through the copyrights held by his publishers. For these reasons, scientific scholars are willing to give their time and effort to help to produce these evaluated records, and they have long been willing to leave the management of the copyright on their papers in the hands of the publishers. These scholars are rarely concerned with private income from their published papers, but they are vitally concerned with the preservation of the intrinsic value of the scientific publishing system.

A critical problem is provided by the costs of bringing the research journals through the process of collection and evaluation, composition, and other production steps, up to the point of being ready to print the first copy. These costs are what we call "first-copy costs". If our system of making scientific information generally available is to continue, we must continue to find ways to support these first-copy costs, as well as to pay the cost of the journal copies actually printed and delivered.

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Publishing costs have risen and are rising continuously, making the continuation of the scientific journal system increasingly difficult. This has been recognized by the U.S. government in acknowledging the philosophy that scientific research work is not complete until its results are published, and in establishing a policy which makes it proper that money may be used from funds for the federal support of research projects to help to pay the costs of journal publication. It is this policy which provides a part of the funds for paying page charges, charges originally designed to pay the first-copy costs. However, publishing costs are now so high that page charges no longer pay even for those initial parts of the publishing process. Also, the percentage of authors who pay page charges is decreasing. As costs have risen, it has thus been necessary to find additional financial support. In recent years, the American Chemical Society and other journal publishers have had to increase subscription charges quite substantially. As we have detailed to committees of the Congress,[1] it is quite likely that these increases have been at least partially responsible for decreases or a leveling off in the number of subscriptions.

Libraries and information centers have long subscribed to as many as possible of the chemical journals and data bases needed by their users. Individuals have also subscribed personally to the primary and secondary journals most pertinent to their work, and have turned to the libraries and information centers for the broader alerting and retrieval services. In recent years, however, this equilibrium has been unbalanced by several factors. The support for the greater volume of papers and inflated printing costs, combined with the relatively decreasing revenues from page charges, has had to be passed along through subscription charges, often more to libraries than to individual subscribers because the latter drop out far more readily. These have accelerated changes in library and user photocopying practices, detailed in other papers in this symposium. While new technological developments that aid dissemination should be encouraged, their copyright and cost implications must be clarified to yield commensurate publishing revenue. The alternative will be a cycle of rising subscription costs with consequent damage to the basic system and to the dissemination of scientific information.

On its part, the American Chemical Society has taken several steps to increase the availability of material within institutions without massive increases in subscription costs. One of the most successful of these is the production of microfilms of the ACS journals, which are leased to organizations at a rate which includes a licensing fee allowing them to make photocopies for distribution within the premises of the licensee.[3] Additionally, the American Chemical Society has for some years provided a single article service.[5] This allows a subscriber to order specific papers desired from the collected tables of contents of the ACS journal system.

In secondary systems, immense strides have been made at

very great cost to provide in computer files data bases from which hard copy may be produced, as well as a great variety of computer-manipulable services.[2]

Experimental work with computer-assisted and fully computer-based composition also continues in the area of the primary journals, in the interest of greater cost effectiveness. An increasing number of ACS journals is now in regular production using such advanced technology.

Studies are now underway to examine the effectiveness and acceptability of a dual-journal system.[4] This would employ a summary journal to provide short versions of the papers, aimed at individual use, while an archival edition of the journal would contain the full text of the papers, including experimental results. With the development of such a system, it is likely that the full archival text of the individual papers may also be ordered on the basis of selection from reading the short papers in the summary journal.

While all of these forms of communication progress are giving us better services, we continue to be faced with the economic problem of maintaining the base of the system, the costs which we have described as those for the first copy. To help to support these, and yet also to serve individuals and libraries that would be inconvenienced by direct purchase of our journals or related services, we have proposed and continue to support the idea of a royalty clearinghouse for photocopying which would allow users to receive copies of the desired papers for a payment that would cover an appropriate share of the first-copy cost. For those getting hard copies from us, subscriber costs would pay their share of first-copy plus the cost of printing and delivering. This combination would provide for the support of the developing ACS communications system, and could be refined through experience to support future costs as the entire system becomes increasingly machine based and moves toward complete on-line service.

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Copyright Impacts on Chemical Education and Resource Libraries†

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Stringencies in library budgets and the increasing costs of both journals and books have caused funds to be shifted away from the latter, but not sufficiently for libraries to keep pace with the starts of new journals. Increased emphasis is being placed on interlibrary loans, chiefly photocopies for journal articles, and on the rapid development of library networks and some pooling of holdings. If lending libraries were to collect copying royalties for publishers, the borrowing libraries would very likely have to pass these on to users.

Section 108(g) (2) of the pending copyright-revision bill (S 22) proposes a prohibition of "systematic reproduction and distribution" without copyright-owner permission. The main source of contention is the following. Resource libraries of all types over the past ten years, and more, have utilized "fair-use" photocopying in interlibrary borrowing and lending under what appears to them to be a legal interpretation of the existing law. The interlibrary-loan networks that continue to develop are an integral part of the resource-library structure, and it can be argued on their part that these networks have provided and made more available to the citizens of the United States the resources of the research libraries.

Publishers, on the other hand, believe strongly that these network systems, that is, their use of photocopies in their loan system, should provide copyright payment whenever a copyrighted document is copied and sent to another library and thereby used by a user in or through that other library.

Copying in lieu of interlibrary loan presently involves almost exclusively journal articles. Libraries generally prefer to send a photocopy of a single article when it is needed by a scholar in another city whose library does not have it, because this is much more efficient than it would be to mail a bound volume of the journal containing a whole year's issues merely to satisfy a user's need for a few pages.

The use of interlibrary-loan systems has been accentuated by the rising cost of books and journals which libraries purchase. For-profit and nonprofit publishers both maintain that declining revenues have resulted, because of declining subscriptions, and furthermore that declining subscriptions are not solely a function of price, but are also due to the fact that interlibrary-loan systems will make material available to a user who otherwise might subscribe to the periodicals.

The real question is: Who pays? Should the publisher pay if his assertion is correct that he is losing income due to interlibrary loan? Should the libraries pay? If so, how should they pay? Should the user pay? Clearly there is no answer

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