the user now asks literally "What's new of interest to me?" The "new" could be presented as the user wishes—table of contents, abstracts, authors, conclusions, or an almost unlimited number of combinations. Access is at the user's convenience, and as the user wishes, as much as they want of the "new" can be stored away in his or her computer files.

Throughout this paper it should have been apparent that I have assumed author–publisher relationships remain unchanged from the present pattern. We must consider that the test of the marketplace, that is, actual usage of on-line full-text services, may change that relationship. With a network of millions of personal computers it is not unthinkable that methods different from the traditional procedures of publishing the scientific literature may evolve. As a guess, I would look to some form of networking arrangement involving author, user, and publisher nodes. It is also conceivable that the publisher node would be quite different from that we know today. However, it is another indication that on-line full-text capability holds the prospect for some innovative developments.

As Lerner and her co-workers stated recently:[10]

> "It seems certain that within the next five years more authors will be able to produce machine-readable manuscripts and will have access to computer networks to distribute these manuscripts. Traditionally, the role of the publisher is to safeguard the quality of the archival literature as well as ensuring the widest possible distribution. If control over distribution, service, and pricing is lost to others, such groups may no longer be entitled to call themselves publishers."

To those who say it will never happen, as many told us 25 years ago; consider these thoughts of one who has spent a considerable part of those 25 years in studying the development of information handling, Vincent E. Giuliano:[11]

> "By the year 2000 [only 15 years away] memory and processing power should be so cheap that they will no longer be limiting factors in the cost of information handling: they will be available as needed anywhere in the organization. The next 20 years will also see the continuing extension of high-capacity communications, of networks for the exchange of information between work stations and other computers and of centralized data banks. Together these developments will provide access to information, to processing capacity, and to communications facilities no matter where the worker is or what time it is."

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Copyright: Past, Present, and Future

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Papers and comments on copyright issues have appeared in the *Journal of Chemical Information and Computer Sciences* as early as 1962, when the journal was known as the *Journal of Chemical Documentation*. Through the years, the American Chemical Society's Joint Board-Council Committee on Copyrights has cosponsored, with various ACS divisions, symposiums on copyright. Papers presented in these forums and later published in the journal have focused on the developments and controversial issues of copyright, as well as their impacts on the chemical community. In this paper, copyright basics are presented, followed by summarizations of copyright concerns that have appeared in the journal. A brief discussion of the future of copyright concludes the paper; copyright will prevail.

In his editorial in the January 1961 issue of the *Journal of Chemical Documentation*, Herman Skolnik, then editor of the journal, described the history of this publication, which later became the *Journal of Chemical Information and Computer Sciences*. He said that even more important than having the journal play a role in the recognition of chemical documentation as a discipline of chemistry was the "objective for the journal to be the forum for a continuing body of literature which contributes to the art and sciences of chemical documentation and to its understanding and advancement." Fortunately for all of us in the information field, copyright has been and continues to be included in this important body of literature.

Papers on copyright that have been published in the *Journal of Chemical Information and Computer Sciences* (hereafter referred to as JCICS) during the last 25 years have provided a focused overview of the important impacts of copyright developments on chemical-information transmission and use.

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Ben H. Weil is an information consultant specializing in copyright compliance and technical-communications systems. A chemical engineer, he has managed four industrial information centers and has been active in professional and scientific societies. He was a founding member and past chairman of the ACS Division of Chemical Information. He has chaired and/or served on the ACS Committee on Copyrights, the National Federation of Abstracting and Information Services' Copyrights Committee, and the Information Industry Association Proprietary Rights Committee. In 1977, he designed the Copyright Clearance Center; he still serves on its board. He has received the 1977 Patterson-Crane award, the 1978 Miles Conrad award, the 1980 Information Manager of the Year Award, and the 1981 Herman Skolnik Award. He has written or edited numerous books and papers.

In 1969, the American Chemical Society initiated a Joint Board-Council Committee on Copyrights. This Committee has since been studying and also reporting at its open meetings those phases of copyright that affect the Society and its members. On occasion, the Committee holds symposiums to help educate chemists about copyright. Its symposiums have provided many of the papers on copyright that JCICS has published.

The first symposium that was sponsored by the Copyright Committee, joint with the ACS's Division of Chemical Information, was held at the centennial meeting of the American Chemical Society, on April 5, 1976, in New York City. Papers presented at that symposium, which was entitled "Impacts of Copyright Developments on Chemical-Information Transmission and Use", were published in the May 1976 issue of JCICS. These papers dealt with aspects of the pending omnibus copyright revision bill, which was passed 6 months later.

The same concerns were voiced at the Copyright Committee's next symposium, which was held on August 27, 1981, in New York, and which was sponsored jointly with the ACS's Division of Chemical Information (Chemistry and the Law Subdivision) and the Division of Chemical Education. Some of the papers presented at this symposium were published in the May 1982 issue of JCICS.

The morning session of the 1982 symposium, entitled "The Copyright Law: Bane or Boon", was directed at information scientists and users of scientific information. The afternoon session, entitled "A Practical Approach to Copyright for Chemists", was designed primarily for educators. As Frederick H. Owens explained in his opening remarks, "We purposely chose authors with a divergence of opinion as to the meaning of the law, particularly with regard to photocopying. At the end of the symposium it appeared that we had reached an agreement to disagree. The Publishers have their position, and the librarians and their clients have another position vis a vis copying rights...."[1]

Before getting into the emotional effects of the Copyright Law on authors, publishers, librarians, and users, we will review the history of copyright and some copyright basics that are of continuing importance.

U.S. COPYRIGHT HISTORY

The original U.S. copyright statute was patterned after the 1710 British law known as the Statute of Anne, which was an "Act for the Encouragement of Learning by Vesting the Copies of Printed Books in Authors of Such Copies During the Times Therein Mentioned." In 1790, 3 years after the U.S. Constitution was approved, Congress enacted its first copyright statute. This protected books, maps, and charts, but subsequent 19th century versions broadened the areas of copyright protection to include prints, musical compositions, photographs, works of fine art, translation rights, public performance (first for drama, then for musical compositions), and the right to dramatize nondramatic literary works. Thus, Congress did not restrict "writings" to the printed word (Gutenberg technology) and laid the groundwork for such later, esoteric compositions as computer software.

The Copyright Law as well as the Patent Law are based on the same brief portion of the Constitution of the United States: Article I, Section 8. This portion states that "the Congress shall have the Power...to Promote the Progress of Science and the Useful Arts, by securing for limited Times to Authors and Inventors the exclusive Rights to their respective Writings and Discoveries...." While the Constitution speaks of "authors", this term in modern terminology has been broadened to include composers, artists, and even computer programmers, as well as the employers of creators.

The "new" U.S. Copyright Law that was enacted in October 1976 became effective January 1, 1978. It culminated well over 20 years of legislative study and debate on how best to modify and update the Copyright Law of 1909. The new Copyright Law, like the old one, is complex and far from unambiguous, and some aspects have proved to be quite controversial. Depending on who is speaking, copyright can be rated on a scale ranging from a boon to "authors" to a barrier to communication. It is therefore important that readers know the basics of copyright if they are really to understand the more complicated issues in which copyright

protection or the use of copyrighted material are involved.

U.S. COPYRIGHT BASICS

To receive copyright protection, a "writing" must be a fixed product of original or creative thought and work; unlike for a patentable invention, it need not be novel. "To be eligible for protection, however, the work must take some tangible form; ideas, plans, methods, and systems, as such, are not copyrightable, although the writing that expresses or describes them is subject to copyright. At present, words, names, titles and slogans are also not eligible for copyright, but Congress probably has the Constitutional authority to extend protection to these 'writings' if it should so elect. Facts, news, and other commonly held information are not protectable, since they do not met the requirements of 'originality'."[2]

The copyright statute, which is Title 17 of the U.S. Code, is divided into nine chapters, each of which has numbered sections and further subdivisions. Chapters include:

(1) Subject matter and scope of copyright
(2) Copyright ownership and transfer.
(3) Duration of copyright.
(4) Copyright notice, deposit, and registration.
(5) Copyright infringement and remedies
(6) Manufacturing requirements and importation.
(7) Copyright Office
(8) Copyright Royalty Tribunal.
(9) Protection of Semiconductor Chip Products.

Chapter 9 was added to the Copyright Law in late 1984. This amendment is known as the Semiconductor Chip Protection Act of 1984.

Almost half of the Copyright Law deals with Chapter 1, which is divided into sections that address the subject matter and scope of copyright as well as definitions, exclusive rights, exceptions such as fair use, and library photocopying, etc.

Section 101 contains many definitions that are vital to a clear understanding of the Copyright Law, but too many to include all of them here. A few of definitions that are important to know deal with "copies", "fixed", and "publication". *Copies* are material objects, other than phonorecords, in which a work is fixed by any method now known or later developed and from which the work can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device. The term copies includes the material object, other than a phonorecord, in which the work was first fixed.

According to Section 101, "a work is '*fixed*' in a tangible medium of expression when its embodiment in a copy or phonorecord, by or under the authority of the author, is sufficiently permanent or stable to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration. A work consisting of sounds, images, or both that are being transmitted, is 'fixed'...if a fixation of the work is being made simultaneously with its transmission."

Publication is the distribution of copies or phonorecords of a work to the public by sale or other transfer of ownership, or by rental, lease, or lending. The offering to distribute copies or phonorecords to a group of persons for purposes of further distribution, public performance, or public display constitutes publication. A public performance or display of a work does not of itself constitute publication.

Section 102 states that "copyright protection subsists...in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be percieved, later reproduced, or otherwise communicated, either directly or with the aid of a machine or device." Works of authorship include (1) literary works, (2) musical works, including any accompanying works, (3) dramatic works, including any accompanying music, (4) pantomimes and choreographic works, (5) pictorial, graphic, and sculptural works, (6) motion pictures and other audiovisual works, and (7) sound recordings. However, copyright protection does not extend to "any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such works."[3]

Section 103 specifies that compilations and derivative works are covered under Section 102 as being the proper subject matter to be protected by copyright. However, the work must be used lawfully. Also, "copyright in a compilation or derivative work extends only to the material contributed by the author of such work, as distinguished from the preexisting material employed in the work, and does not imply any exclusive right in the preexisting material...."

Section 104 extends copyright protection to unpublished works without regard to nationality or domicile; however, protection of published works is limited to U.S. citizens and those of countries that are members of the Universal Copyright Convention (UCC) or other copyright treaties to which the U.S. is a party. Also, the work must be published in the U.S., in a country that is party to the UCC, by the United Nations or any of its agencies, or by the Organization of American States.

Section 105 denies copyright protection to "any work of the United States Government", which is "a work prepared by an officer or employee of the United States Government as part of that person's official duties." However, this does not preclude a U.S. Government employee from holding copyright if the work was not prepared as part of his or her official duties. Also, the U.S. Government may receive and hold copyrights that are transferred to it by assignment, bequest, or otherwise.

Exclusive Rights. Subject to limitations expressed in the remaining sections of Chapter 1, Section 106 states that the copyright owner "has the exclusive rights to do and to authorize any of the following:

(1) to reproduce the copyrighted work in copies or phonorecords;

(2) to prepare derivative works based upon the copyrighted work;

(3) to distribute copies of phonorecords of the copyrighted work by sale or other transfer of ownership, or by rental, lease, or lending;

(4) in the case of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works, to perform the copyrighted work publicly; and

(5) in the case of literary, musical, dramatic, and choreographic works, pantomimes, and pictorial, graphic, or sculptural works, including the individual images of a motion picture or other audiovisual work, to display the copyrighted work publicly."

Fair-Use Exceptions. Section 107 of the Copyright Law deals with fair-use exceptions to the aforementioned exclusive rights. It codifies what had previously been judicial doctrine. This section was not intended to change, narrow, or enlarge the fair-use doctrine in any way. According to Section 107, "the fair use of a copyrighted work, including such use by reproduction in copies or purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright. In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include: (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; (2) the nature of the copyrighted work; (3) the amount and substantially of the portion used in relation to the copyrighted work as a whole; and (4)

the effect of the use upon the potential market for or value of the copyrighted work."

These criteria are not necessarily the sole ones to consider in determining fair use. The doctrine was intended to provide an equitable rule of reason. As stated in the House of Representatives Report 94-1476, dated September 3, 1976, "...no generally applicable definition is possible, and each case raising the question [of fair use] must be decided on its own facts."

Some groups that were concerned about acceptable copying for teacher and classroom use were successful in working out fair-use guidelines. Although these guidelines are not included in the copyright statute, they were published in the House of Representatives' Report.

Reproduction by Libraries and Archives. Section 108 of the Copyright Law has been described in some detail in our aforementioned JCICS feature article.[3] However, for the purposes of this article, here is a brief overview of this section on limitations on exclusive rights for library copying.

Section 108 permits a library or archives to produce or distribute a single copy of a work in its collection if this is done "without any purpose of direct or indirect commercial advantage," if its collections are "open to the public" or available "to persons doing research in a specialized field" as well as to affilitated researchers, and if the copy "includes a notice of copyright." A damaged, lost, or stolen copy may be duplicated in facsimile form "if the library or archives has, after a reasonable effort, determined that an unused replacement cannot be obtained at a fair price."

A library or archives may make for a user, or may request on his or her behalf from another library or archives "no more than one article or other contribution to a copyrighted collection or periodical issue...or a small part of any other copyrighted work." However, the copy must become the property of the user, and the library or archives may prepare or obtain it only when it "has had no notice that the copy or phonorecord would be used for any other purpose than private study, scholarship, or research" and when "a warning of copyright...is displayed where orders are accepted."

Library copying is further restricted to "isolated and unrelated reproduction of a single copy or phonorecord of the same material on separate occasions." The right to do such copying "does not extend to cases where the library...or its employee—(1) is aware or has substantial reason to believe that it is engaging in related or concerted reproduction or distribution of multiple copies or phonorecords of the same material, whether made on one occasion or over a period of time, and whether intended for aggregate use by one or more individuals or for separate use by the individual members of a group; or (2) engages in the systematic reproduction or distribution of a single or multiple copies or phonorecords...*Provided*, that nothing in this clause prevents a library or archive from participating in interlibrary arrangements that do not have, as their purpose or effect, that the library or archives receiving such copies or phonorecords for distribution does so in such aggregate quantities as to substitute for a subscription to or purchase of such work."

In 1976, the National Commission on New Technological Uses of Copyrighted Works, better known as CONTU, developed guidelines on "Photocopying—Interlibrary Arrangements", which were included in the House and Senate's September 29, 1976, "Conference Report" (H.R. 94-1733) on the Copyright Law. Under these guidelines, libraries or archives are permitted to request from other libraries or archives up to five copies per year of an article or articles published in the last 5 years in a given periodical, as long as they maintain proper records of such requests.

Even with all these guidelines, libraries and publishers still disagree on whether Congress balanced the rights of authors with the needs of users and what is meant by many of the provisions in the statute.

Use of Computer Programs. Section 117, which was amended in 1980, allows "the owner of a copy of a computer program to make or authorize the making of another copy of adaptation...," provided that such action is essential to use of the computer program; also, the new copy may not be used in any other manner, or the new copy or adaptation may be made for archival purposes only. When the owner of the computer program no longer has the right to possess it, all archival copies must be destroyed.

Copyright Ownership and Transfer. Chapter 2 of the Copyright Law describes copyright ownership and transfer. Section 201 of the law makes it clear that the author of a work eligible for copyright protection is the initial owner, except that authors of a joint work are coowners. However, in the case of a "work made for hire, the employer or other person for whom the work was prepared is considered the author...[and] owns all of the rights...unless the parties have explicitly agreed otherwise" in writing.

Authors of scientific and engineering publications have long been accustomed to assigning copyright in their works to publishers. This has not always been the case for subsidiary rights to fiction stories, in which authors generally hold their own copyrights.

Before the new law became effective, the question of copyright ownership seldom arose in the scientific, technical, medical, or other such communities because it was normally assumed that copyright transfer to the publisher took place upon publication of papers in journals and other collective works. Also, it was assumed that the copyright in a collective work also held for the individual papers.

Now, however, copyright in each paper "is distinct from copyright in the collective work as a whole, and [not only] vests initially in the author of the [separate] contribution" but also continues to be his or hers "in the absence of express transfer [in writing] of the copyright or of any of the rights under it." Without such written transfer, the copyright owner of the collective work—usually the publisher—is "presumed to have acquired only the privilege of reproducing and distributing the contribution as part of that particular collective work, any revision of that collective work, and any later collective work in the same series [Section 201(c) of the Copyright Law].

Today, most publishers of scientific and engineering research papers require copyright transfers before publication. Without such transfers, these publishers are unable to grant even royalty-free permissions, much less licenses, for anyone to make photocopies of the papers, and they cannot make the papers available in digital form for full-text, on-line searching. In addition, requesters find it much easier to obtain permissions from a publisher than from a multitude of individual authors.

Duration of Copyright. Duration of copyright is covered in Chapter 3 of the copyright statute. For works created on or after January 1, 1978, copyright lasts for the life of the author plus 50 years. In the case of a joint work prepared by two or more authors, copyright endures for 50 years after the death of the last surviving author. For anonymous works, pseudononymous works, works made for hire, and works for which a publisher owns the copyright, the term is 75 years from first publication or 100 years from the work's creation, whichever is shorter.

For works that were published before January 1, 1978, and that were in their first term of copyright under the 1909 Copyright Law, copyright protection continues for the remainder of the original term of 28 years; the works are then eligible, upon application, for an extension of copyright for 47 more years. For works already in their second term of copyright on January 1, 1978, the duration of protection was

automatically extended to 75 years from the original date of copyright—the year of publication.

Copyright Notice, Deposit, and Registration. According to Section 401 of the Copyright Law, "whenever a work protected under this title is published in the United States or elsewhere by authority of the copyright owner, a notice of copyright as provided by this section shall be placed on all publicly distributed copies from which the work can be visually perceived, either directly or with the aid of a machine or device."

Section 401(b) further states, "the notice appearing on the copies shall consist of the following three elements: (1) the symbol © (the letter C in a circle), or the word 'Copyright', or the abbreviation 'Copr.'; and (2) the year of first publication of the work...and (3) the name of the owner of copyright in the work, or an abbreviation by which the name can be recognized, or by a generally known alternative designation of the owner."

The omission of the copyright notice from copies or phonorecords publicly distributed by authority of the copyright owners does not invalidate the copyright in the work if "(1) the notice has been omitted from no more than a relatively small number of copies or phonorecords distributed to the public; or (2) registration of the work has been made before or is made within five years after the publication without notice, and a reasonable effort is made to add notice to all copies or phonorecords that are distributed to the public in the United States after the omission has been discovered; or (3) the notice has been omitted in violation of an express requirement in writing that, as a condition of the copyright owner's authorization of the public distribution of copies or phonorecords, they bear the prescribed notice" (Section 405).

Chapter 4 of the Copyright Law also affords protection for innocent infringers if they can prove that they were misled by the omission of a copyright notice or by an error in the name or date of the notice. Such an omission or error does not affect the validity and ownership of copyright.

Copyright registration is not required, although it is a prerequisite to an infringement suit and to certain legal remedies (statutory damages or attorney's fees) for infringement. Copyright registration in general may be made at any time during the subsistence of copyright in any published or unpublished work. The owner of copyright or of any of the exclusive rights may obtain registration of the copyright claim by delivering to the Copyright Office the deposit specified by Section 408 of the Copyright Law, together with the application and fee specified by Sections 409 and 708. Registration is not a condition of copyright protection. To find out the current registration fee and to obtain a copy of the required registration form, call the public information office of the U.S. Copyright Office at (202)287-8700.

While the remaining chapters of the statute are important, they are not included in this discussion on basics. Their titles are as follows: Chapter 5—Copyright Infringement and Remedies; Chapter 6—Manufacturing Requirements and Importation; Chapter 7—Copyright Office; Chapter 8—Copyright Royalty Tribunal; and the new Chapter 9—Protection of Semiconductor Chip Products.

If you are interested in reading more about the basics of copyright, we suggest that you read the Copyright Office's Circular R1 *Copyright Basics* or its *General Guide to the Copyright Act of 1976* or our recent JCICS feature article on "Copyright Basics and Consequences."[3]

COPYRIGHT CONCERNS THAT HAVE APPEARED IN JCICS

As mentioned earlier, there have been many papers that have appeared in JCICS over the past years. In honor of this silver anniversary issue, we are happy to list the symposiums' articles, titles, and authors, along with their reference citations and a brief statement about the authors' concerns. This series of excerpts affords a good review of the concerns voiced at the times the papers were presented. We will then present our views on what the future holds for copyright.

The 1976 symposium on "Impacts of Copyright Developments on Chemical-Information Transmission and Use" was introduced by its chairman, Ben H. Weil. This symposium was presented at a time when the omnibus revision of the U.S. Copyright Law was pending, so it seemed timely that a symposium be held to provide an intergrated overview of many of the impacts of copyright developments on chemical-information transfer and use.[4]

According to Robert W. Cairns, in his paper on "Copyright Impacts on Chemical Journals and Data Bases", "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'."[5]

C. G. Overberger's paper dealt with "Copyright Impacts on Chemical Education and Resource Libraries". In it he stated, "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 question of "Who pays?" is a serious dilemma. This problem "must be approached with less emotion and more rationale."[6]

Margaret H. Graham discussed "Copyright Impacts on Chemical-Industry Users and Information Centers". She stated, "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."[7]

Lee G. Burchinal, in his paper "Copyright Impacts of and on Government Programs", remarked that, "Except for library photocopying, [the Copyright Law has] relatively little impact on federal information-dissemination activities, but other policy, economic, and technological developments conceivably will have profound changes on practices."[8]

Madeline M. Henderson spoke about "Copyright Impacts of Future Technology". According to her, "Dynamic developments in computer communication technologies, and in reprography and micrographics, are yielding systems and equipment that render better and faster access to information that has been copyrighted in traditional formats. Procedures and mechanisms must be worked out to permit us to take advantage of these technologies without destroying our basic systems of information dissemination."[9]

Ben H. Weil concluded the 1976 symposium with "Where Do We Go from Here on Copyright Impacts and Solutions?". He said, "It seems evident that the traditional sources for journal revenues are becoming inadequate, because of inflation and the technological and financial temptations of library 'resource sharing'.... All concerned must consult and plan jointly for maximum cooperation and minimium confrontations—must join in the design of, evolution toward, and implementation of a dynamic, responsive communications system for the future."[10]

As mentioned earlier, in 1981 another "Symposium on The Copyright Law" was held in two sessions: "I: Bane or Boon?" and "II: A Practical Approach to Copyright for Chemists".

Frederick H. Owens, symposium chairman, said in his "Introductory Remarks", "In putting together the program we felt it was important to make the listener, and now the reader, aware of what the law says about copyrights and copying.... We purposely chose authors with a divergence of opinions to the meaning of the law, particularly with regard to photocopying.... The publishers have their position, and the librarians and their clients have another position vis a vis copying rights...."[1]

According to Allan Wittman, in his paper, "Copyright: Kill the Goose or Protect the Golden Egg?", copyright "protects the right of scientists and scholars as authors who wish to achieve the widest possible dissemination of their work and as researchers who require access to information.... The uncontrolled practice of photocopying without payment to the owner will surely spell the demise of science's most important medium for the exchange of current knowledge at the forefront of advancing research."[11]

Ben H. Weil echoed part of this thesis in his paper "Why Should Chemists Care about Copyright?". He said that he believes "firmly that chemists should care about copyright because, in the main, that means caring about the health and continuation of quality publishing. And for quality publishing, as for everything else in this life, there is no such thing as a free lunch."[12]

David P. Waite discussed the "Expanding Use of the Copyright Clearance Center". He said, "Not only is it important for organizations to comply with the newly revised Copyright Law, it is important that they recognize why it is ultimately in their own best interest to compensate the outside information sources used by paying authorization fees whenever secondary uses are made of copyrighted publications by making photocopies. The Copyright Clearance Center can help organizations do that with speed, convenience, and low cost."[13]

Dennis D. McDonald presented his and Colleen G. Bush's paper "A Status Report on a Study of Library Photocopying in the United States". King Research, Inc., of Rockville, MD, had been awarded a contract by the U.S. Copyright Office to prepare statistical "information on the current status of library photocopying in the United States from the perspectives of libraries, publishers, and library users." Their paper described the progress of the surveys as of October 1981 and discussed the major questions that were addressed during the analysis of the survey data.[14]

Barbara A. Friedman (now Barbara Friedman Polansky) discussed "Copyright from a Permissions Person's Point of View". She stated that, "In order for publishers to effectively and efficiently handle permission requests for further dissemination of information, it is necessary for them to have copyright to the material they publish. Some publishers require that, to the extent possible, copyright be transferred to them. In return, certain rights are generally returned to authors...." She described the ACS's copyright form and presented helpful copyright hints.[15]

J. J. Lagowski, in his paper "Journal Copyright Problems: An Editor's View", presented copyright considerations from the point of view of a journal editor. "The situation where authors hold the copyright usually involves considerable effort in the form of correspondence and record keeping and often leads to unnecessary delays.... If the Journal holds the copyright, requests, value judgements, and permissions can be handled expeditiously to the satisfaction of all concerned."[16]

Alexander C. Hoffman's paper was entitled "Facilitating Access to Copyrighted Works". In it he said, "While much...illegal copying reflects simple disregard of the [copyright] law, both conscious and unconscious, some of it also probably stems from frustration at the difficultly sometimes encountered in obtaining necessary permission to make copies under the law." Hoffman described one possible means of achieving the goal of expanding the services offered by the Copyright Clearance Center so that is would be a "single broadly based central permissions and licensing service to which users could turn."[17]

Patricia W. Berger described "Complying with Copyright in Scientific Libraries. The National Bureau of Standards Experience". She expressed her concerns from a library's viewpoint. "Applying a 'worst case' analysis of interlibrary borrowing the NBS library for the years 1976–1979 demonstrates that the dangers of interlibrary lending to the interests of authors and publishers is slight compared to the clerical burden imposed on libraries by Section 107 and 108 of the Copyright Law of 1976. Further, there is evidence of publisher, author, and library user dissatisfaction with the law as well as instances of abuse by publishers of charges for photocopies of materials under copyright."[18]

Janice W. Holladay presented "Educators/Copyright: The Academic Librarian's Viewpoint". In her paper, she explained that "educators and researchers required efficient, timely access to information and scholarly materials.... Since the [copyright] law was implemented, some inconvenience and confusion for users have occurred with no offsetting benefits for authors or publishers. Journal cancellations by academic libraries are occurring due to the soaring prices and increasing numbers and not due to photocopying. To be effective, solutions to the financial problems of publishers must be sought through avenues other than copyright legislation."[19]

James L. Wood described "The Chemical Abstracts Service Document Delivery Service". In his paper he said, "The Chemical Abstracts Service Document Delivery Service received nearly 25,000 document copy requests from over 13,000 organizations and individuals during the first 10 months of its operation. By combining photocopying with interlibrary lending, almost 80% of these requests were filled.... It is CAS's intention to continue to provide a Document Delivery Service that is reliable, economical, and responsive to [CAS'] customers' needs."[20]

Joseph H. Kuney discussed "Our Stake in Data Base Protection". He remarked, "Data bases, whether scientific, technical, or personal, are definitely a part of the future for all who generate, distribute, and use information. The trends of technological development, coupled with growing user satisfaction, point clearly toward the ability to use data bases in a variety of new applications. These must be regarded as opportunities to vendors and users as a basis for working out use and pricing arrangements acceptable to both."[21]

Jeanne G. Howard and Dick Van Der Helm's paper dealt with "The CONTU Guidelines and the Transfer of Scientific Information: Fair Use or Unfair Use?". According to them, "The CONTU (Final Report of the National Commission on New Technological Uses of Copyrighted Works, Library of Congress, Washington, [D.C.], 1979) guidelines and 'rule of five' limiting the photoreproduction of copyrighted works inhibit the transfer of scientific information from author to user and have adversely affected the service mission of the academic research library. The rule of five, essentially a ban on photocopying, has caused uncertainty and unneccessary costs and delay for users of scientific information and goes against the spirit of the U.S. Constitutional clause for the promotion of the arts and sciences...."[22]

JCICS has also published numerous editorials[23-25] and individual papers[26-31] that have dealt with various aspects of copyright. This will undoubtedly continue.

THE FUTURE OF COPYRIGHT

In our recent JCICS feature article on "Copyright Basics and Consequences", we went into great detail on the consequences of recent legislative developments, judicial decisions, technological developments, and proprietor/user interactions. We will not repeat these consequences here except to say that copyright is complex and its issues are controversial. "Frankly, this field is so complex that we see no other mechanism that presently could work better. We can only urge patience, good ethical practices, and cooperation instead of confrontation."[3]

The temptations of technology are increasing rapidly; photocopying may pale in comparison with new, better, faster, and cheaper methods of document access, replication, and delivery. Copyright-statute revision has always lagged behind technology developments, but never before have the latter been advancing so swiftly. When the advancements are combined with the popular clamor for free access to the fruits of creative endeavors and with the difficulties in detecting many of the statutory violations, copyright provisions are put to the test, and the need for statutory changes becomes evident, hard as it is to obtain them. Procedures, mechanisms, policies, and guidelines must all be worked out to allow us to take advantage of the new technologies while still protecting the rights of creators and copyright owners.

We will no doubt see further amendments to the current Copyright Law. We believe that "copyright"—protection for intellectual rights—will prevail over the forces arrayed against it. Meanwhile, copyright will continue to be analyzed and interpreted, and papers on the subject will fluorish in JCICS and the literature at large.[32] We predict that this subject will be on the agenda for JCICS' golden anniversary issue, although new and different issues will most likely have emerged from the ever-changing technology.

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Abstracts and Other Information Filters

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Abstracts originated in order to provide scholars with a method to keep up with the fast growing literature. While they continue to serve this need, they, together with indexes, are indispensable tools in retrospective access in either printed or computer formats. A good informative abstract serves as a filter; its use eliminates the large volume of nonpertinent documents and retains those of most interest to the searcher. Other possible information filters have been suggested, but none has yet demonstrated the usefulness provided by abstracts. The abstract, or a future suitable substitute, is essential and cannot be abandoned.

Abstracting as a process for selecting or ignoring information is a literary form that dates far back in history with no recorded beginning, according to Skolnik.[1] In the 20th century this literary form has been perfected as a cutting tool for both alerting and accessing purposes in many scientific disciplines. Today it is estimated there are more than 1500 abstracting/indexing publications throughout the world in all areas

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