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National and International Copyright Liability for Electronic System Operators

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I. INTRODUCTION

There is a revolution in progress that is creating unprecedented global access to information, literature, and software over electronic media collectively referred to as the “information superhighway.” Today, individuals, corporations, and institutions have instant access to resources from around the world at the touch of a button. From electronic bulletin boards, to software archives and online libraries, a person with a minimal computer setup can see and use the creations of others around the world. Many of these creations are protected by copyright, but the laws in this area are imprecise and difficult to enforce.

The United States and other countries have domestic laws to govern copyright, but copyright infringement is a problem of international scope. In order to provide for and protect copyrights, there needs to be a uniform international system of rules and standards by which people around the world can operate. The need of users for access must be balanced against the need to protect creators’ rights in order to maximize the benefits of creation and access for society.

II. THE PROBLEM

The information superhighway provides computer users with access to resources that range from small, privately-run bulletin boards and computer systems to the sprawling worldwide network called the Internet. Sysop (system operator) is the name given to people who run these computer systems. These sysops are trying to strike a balance between the conflicting goals of creating access to information and providing for copyright protection.

When access is created by putting materials online, potential copyright problems abound. Before the invention of the computer and online access, it was difficult to use another's copyrighted work without spending time and money. Now it can be accomplished with a few keystrokes on a computer keyboard. One or two commands can copy an entire book, article, or piece of software. A few more commands can modify the material by erasing any references to previous creators, allowing use without proper creator credit or compensation.

These problems were aptly demonstrated in the case of *Playboy Enterprises v. Frena.* An electronic bulletin board operator was held liable for copyright infringement of magazine pictures that had been put online. The operator did not know that the pictures were online and deleted them as soon as he became aware of the infringement. Other people had loaded the pictures onto the system, but the operator was held liable.

If authors cannot get proper compensation, they only have a few alternatives. They may decide to restrict access, to refuse to allow electronic transcription, or to not create at all. This would defeat the entire purpose of copyright protection, which is to give authors an incentive to produce and publish for society. The government created the original copyright laws to provide this incentive. With changes in technology and increasing ease of infringement, the copyright laws must be reworked to continue to provide these incentives to authors while adjusting to the new, global methods of access.

III. BASICS OF COPYRIGHT

Ownership of a copyright gives an author control over the content and form of a work, and grants a monopoly for a period of time. There are eight subjects to which copyright can be applied: (1) literary works (including scientific works and software); (2) musical works; (3) dramatic works; (4) pantomimes and choreographic works; (5) pictorial, graphic, and sculptural works; (6) motion pictures; (7) sound recordings; and (8)
architectural works.\textsuperscript{4} In order to be copyrightable, a work must be original\textsuperscript{5} and in a tangible medium.\textsuperscript{6}

Copyright protection provides a property interest in original intellectual creations. It gives the author control of the creation he has contributed to society. In return for this contribution, the author is given a monopoly for a set period of time. Copyright infringement occurs when someone violates that monopoly by copying the work or taking credit for the creation without giving the author credit or rewards.\textsuperscript{7} Infringement arises from direct copying, a derivative work,\textsuperscript{8} substantial similarity, or non-independent creation. Infringement is a violation of the author's right to recognition of authorship and/or the author's right to benefits.

Authors have various goals, which usually fall into the categories of reputational or financial gain. Authors who want a reputational benefits are not concerned with multiple use and copies of their works, but want to be given credit. Authors who want financial benefits are much more concerned with reducing illegal use of their works and receiving appropriate payments.

The purpose of the copyright laws is to balance society's need for access to and use of these creations for growth against the author's rights to credit and payment. In the United States, copyright protection is codified in Title 17 of the United States Code. Internationally, copyright protection is recognized in the multilateral treaties of the Berne Convention,\textsuperscript{9} the

\begin{flushright}
\textsuperscript{5} Id. Original, as the term is used in copyright law, means only that the work was independently created by the author (as opposed to being copied from other works), and that it possesses at least some minimal creativity. Feist Publications v. Rural Telephone Service Co., 499 U.S. 340, 358 (1991). Originality merely requires independent creation and at least some expressive choice in composing the work. RAYMOND T. NIMMER, THE LAW OF COMPUTER TECHNOLOGY § 1.03[3][a], at S1-20 (1992 Cum. Supp. No. 2).
\textsuperscript{6} Copyrightable works must be "fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device." 17 U.S.C. § 102 (1988).
\textsuperscript{7} "Anyone who violates any of the exclusive rights of the copyright owner . . . is an infringer of the copyright." 17 U.S.C. § 501(a) (1988).\textsuperscript{15}
\textsuperscript{8} "A 'derivative work' is a work based upon one or more preexisting works." 17 U.S.C. § 101 (1988).
\end{flushright}
Universal Copyright Convention (UCC),\textsuperscript{10} and in various bilateral treaties.\textsuperscript{11}

IV. RESOURCES ON THE COMPUTER

A. Reasons to Place Material Online

The overriding reason material is put online is to improve access. A computer can search for, locate, and process information faster than can be done manually. When information is added to databases, storage centers, and archives, the improved access enhances the efficiency and productivity of researchers and other workers.

Scientific research was the original motivation behind the movement to put materials online.\textsuperscript{12} Electronic communication has enabled scientists around the world to cooperate on research and share ideas in ways that were never feasible before, thus increasing their efficiency and reducing duplication. Electronic communication has since spread to other areas of academia, which have utilized this new speed and access to create public forums where a diversity of views can be heard and discussed. For example, philosophers discuss metaphysics and artists debate symbolism over the computer. More and more academic institutions are making resources available online so that they can be used by people elsewhere. Since many documents are now created in electronic form, and with the proliferation of paper scanners, it is now much easier and cheaper to put information online.

Other uses of online information are entertainment, communication with others, and profit. People can tailor their uses to reflect their tastes and to find the news and resources in which they are interested. Online electronic bulletin boards allow people to discuss topics from shortcuts in the video game Mortal Kombat to the flaws in the most recent attempt to prove Fermat's Last Theorem.\textsuperscript{13} “Libraries without walls” allow people to use

\begin{footnotesize}
\begin{enumerate}
\item See, e.g., Copyright: Agreement Between the United States of America and Indonesia, Mar. 22, 1989, U.S.-Indon., T.I.A.S. No. 11,608.
\item Electronic bulletin boards have different “rooms” that are devoted to discussions of various
\end{enumerate}
\end{footnotesize}
materials such as magazines, journals, or newspapers; search card catalogs; or read books via their home computers. Corporations have taken advantage of the ability to offer materials electronically through popular services such as Prodigy and LEXIS.

B. Types of Access

The network of computers called the Internet connects information centers around the world. The amount of information on the Internet is astounding. Over 22,000 networks are connected to the Internet in 137 countries, and estimates of the number of people using the Internet are as high as 30 million. The National Science Foundation logs eight terabytes of information transferred per month. Access and use of the Internet is estimated to be growing at a rate of up to fifteen percent per month. It has grown from a project that was begun to promote research among scientists in the U.S. Department of Defense to a network of institutions, governments, corporations, and individuals around the world.

Types of resources available on the Internet include bulletin board systems (BBS), software archives, library archives, and card catalogs, as well as musical compositions, literary and scientific works, and government documents. A person can use a personal computer with a connection such as a modem to access these resources, send electronic mail (e-mail), talk to others in real time, or upload and download materials.

16. Cerf, supra note 14. Eight terabytes is 8,000,000,000,000 bytes.
18. Chapin, supra note 12.
19. A modem is the electronic hardware needed for a computer to communicate over a telephone line. A telecommunications software package is also needed to tell the computer how to use the modem.
20. Talking in real time is similar to using a telephone; the person on the other end of the line sees the information as it is typed. This enables simultaneous conversations and differs from e-mail, where a message is sent, received, and then answered.
21. Downloading is the process of transferring data or files from a remote system to a local (personal) computer. Uploading is the process of sending information or files to a remote system.
The Internet has not had controlled growth. As a result, in its basic form, it is difficult for the average person to use. Many tools are emerging to help people navigate the Internet and utilize its resources. People can use File Transfer Protocol (FTP) to anonymously log in to remote computers and copy materials that are made available. Other tools such as the World Wide Web (WWW) and Gopher are user-interface programs that provide maps and road signs for people to navigate the Internet and find, use, or copy what they want. These tools allow international access. It is just as easy for a person in Melbourne, Australia, to access resources in Kansas City, Missouri, as it is for a person in Kansas City. An operator in Hong Kong can access an FTP location in Scotland or Alaska, or a person in Costa Rica can copy Olympic statistics from Lillehammer, Norway, at the touch of a few buttons. For-profit online services such as Prodigy or LEXIS are easier for consumers to use, but cost more money. There are several networks similar to the Internet and numerous private bulletin boards to which people can subscribe.22

Most college students now have access to the Internet or other computer networks at their schools. In fact, many schools send news and assignments over e-mail, and a computer account is a necessity.23 Many corporations are connected to the networks, allowing employees to access these resources while sitting at their desks. Businesses are springing up to act as “servers” to let people subscribe and connect to networks such as the Internet.24

C. System Operators: Who Runs the Computers?

Systems can range from a small bulletin board run by a private individual with a personal computer and one modem, to massive numbers of online connections to supercomputers run by corporations, universities, or governments. Sysops are responsible for monitoring activity on their systems and for controlling the types of information present. The smaller

22. There are an estimated 45,000 private BBS nationally. Lynn Ford, So Near Yet So Far, INDIANAPOLIS STAR, Oct. 26, 1993, at D1-2. There are other networks that are less popular than the Internet such as ARPANET (now defunct), Bitnet, or UUCP. Many commentators think that these will soon be assimilated into the Internet.


24. Some of the more popular businesses that have their own systems and allow Internet access are Prodigy, CompuServe, and America Online. Ford, supra note 22, at D1.
the system, the easier it is to monitor. Most systems are interactive so that once someone has “logged in” to the system, the person has the ability to read information, write information, and upload or download material.

Sysops can limit copyright infringement by not allowing users to log into a system, but this conflicts with the original goal of creating access. It is almost impossible for a sysop to allow a user to see information and, at the same time, keep that user from copying the information. Once material appears on a screen, it can be copied.

Sysops operate different types of computer systems for various reasons. Some sysops are devoted exclusively to providing a forum for discussions, while others concentrate exclusively on exchanging software. There are different types of software, such as public domain software, shareware, and commercial software. Some systems give users access to government documents, literature, scientific documents, or news straight from the UPI newswire. With the large amount of information, users, and access, it is impractical for sysops to monitor everything on their system at all times. Consequently, even if a sysop does not want to infringe, it is difficult to keep copyrighted material from being added to even the most carefully monitored online collections. The sysop may not know of the addition, or, if aware of the addition, the copyright notice may have been removed so that the sysop believes the material to be in the public domain.

25. “Logging into” a computer is the process of connecting a local computer to a remote system. This may require identification and a password, but many systems are open to the public. Once a user has logged in, he can interact with the system.

26. Public domain software is software that either is not original enough to obtain a copyright or software that a programmer releases to gain a reputation. Shareware is software that is freely distributed on an honor system where a user is supposed to test a program and then send a payment to the author if use is continued. Commercial software is written by a company that seeks a profit from all sales of the software. See also the discussion of public domain materials in John Lautsch, American Standard Handbook of Software Law § 5.35 (1985).

27. The LEXIS service provides access to many court cases, government publications, journal articles, and magazine and newspaper stories for a fee. Similarly, but for free, people can read UPI bulletins as they are sent over the UPI system by using a system on the Internet called “Usenet.” Many research and academic services also give free access to court decisions or government documents over the Internet.
D. Copyright Problems on the Information Superhighway

The amount of information available over electronic media is phenomenal and is growing at an incredible rate. Much of the information is in the public domain because the author does not claim a copyright or one has expired. However, for items where a copyright is valid, providing access to a greater amount of information has led to a proportional increase in the problem of copyright infringement.28 Advances in personal computers and communications have simplified access, which has thus led to increased infringement through the uploading and downloading of information and software.

This new ease of copyright infringement is an extreme change from the historical difficulties involved in copyright infringement. Before the computer, in order to use another creator’s work, an infringer had to invest time, money, and effort. The original idea of infringement came from a person copying by hand or modifying material and using it elsewhere while claiming it as original work. With the emergence of the photocopy machine, copyright infringement became easier; this technological advance required an adaptation of the copyright laws.29 Now, the computer has further minimized what was before a disincentive: the investment in time and money needed to infringe.

In fact, the net gain from infringing on copyrighted works is higher than ever before. The ease of copying, combined with the speed and storage of computers, makes it easy for people to copy items at virtually no cost. Previously, the benefit a person received was balanced by the real cost of getting a copy of the work. Now, the benefit to the person greatly outweighs the minimal cost of making a copy. In addition, the lack of close supervision or a paper trail makes the risks of being punished, or even discovered, minimal. As with any free resource, use without cost leads to

over-exploitation. This incentive to infringe is not controlled by the current availability and enforcement of copyright protection.

Sysops have various goals in creating access for users. The obvious goal is financial gain by the operators who allow access for a fee. The goals of the sysops who do not charge are less obvious. These goals can range from the reputational benefits of others seeing the sysop's name and associating it with quality and experience (an academic writer or a computer expert), to the altruistic motive of serving others and benefitting society (a public library sysop). Still others have a mixed motive of providing service to others in the self-interest of having a forum for debate; trade of ideas, files, or information; or for social relaxation.

Many sysops and systems around the world allow anonymous access to their resources. Users can log in under the name "anonymous" or under fictitious names. Once a user has logged in, that user can explore the system and usually has the ability to use information or to upload and download items. This access to online resources serves the goal of the system operators in providing access to resources.

In addition, the more people who use the resources, the better the exposure and returns for the sysops, which leads to more material being added to the system. The extreme growth in computer use and networks shows that there is an abundance of demand for access to information. As long as this demand exceeds supply and liability risk under the copyright laws remains low, it is not in the best interests or desires of sysops to limit access or to expend resources for more monitoring. The sysops serve their own self-interest by creating access as quickly as possible; satisfying the demand results in a gain for the sysops either monetarily or by enhancing their reputations.

The next step in balancing the needs of access for users with the rights of the creators is to consider the effects and costs to society. A rational user will spend the least amount of money to obtain the most access, while the rational creator will maximize the reputational and financial rewards. If too much user access and frequent copyright infringement deprive the creators of their rewards, they will stop creating and publishing, which means society will lose. On the other hand, the information superhighway is a revolutionary new way for society to benefit by lowering the access and search costs in order to enable people to use resources more efficiently than ever before. An overly restrictive copyright law would deprive society of the benefits this revolution allows.
V. COPYRIGHT LAW IN THE UNITED STATES

A. Copyright Statute

The Constitution empowers Congress to establish laws to protect intellectual property.30 In response to this empowerment, the first Congress established a copyright law.31 That law has been revised over time to become the current Title 17 of the U.S. Code. Major revisions of the copyright law in 1976 and 1988 brought the U.S. laws closer to conformity with the laws of other countries.32 Literary works, one of the eight classes of works that the United States protects,33 has been broadly interpreted to include scientific works and software.34 To be protected, a work must be original and fixed in a tangible form.35

Once a creator has a copyright in a work, the owner has the exclusive rights to reproduce the work, to adapt the work, to distribute copies by sale or otherwise, or to perform or display the work.36 In effect, the owner is granted a limited monopoly to control what is done with the work. Society is willing to grant this monopoly in consideration of the creator’s contribution to society. These monopoly rights are granted to the owner for a limited period of time. The duration of a copyright in material created on or after January 1, 1978, is the life of the author plus fifty years.37

30. “Congress shall have Power . . . to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.” U.S. CONST. art. 1, § 8, cl. 8.
31. “An Act for the encouragement of learning, by securing the copies of maps, charts, and books, to the authors and proprietors of such copies, during the times therein mentioned.” Act of May 31, 1790, ch. 15, 1 Stat. 124 (1790).
33. See 17 U.S.C § 102(a); see also supra text accompanying note 4.
35. See supra notes 3-6 and accompanying text.
37. 17 U.S.C. § 302(a) (1988). Material before the 1976 Act had to be published to have copyright protection, and the protection was only for 28 years, with a possible renewal for another 28
B. Infringement

An infringement of a copyright occurs when someone exercises the rights of the copyright owner without that owner's authorization. A copyright infringement is comprehensive when the entire work is copied, partial when only part of a work is used, or derivative when a later work is based on the copyrighted work. An infringement can be literal, using the author's exact words, or it can be non-literal, where the author's work is modified and claimed as a new creation.

A copyright infringement does not have to be intentional. All that an owner has to prove to show infringement is ownership of the copyright and copying by the defendant. Since direct evidence of copying is rare, an inference of copying is established if the infringer had access to the work, and there is a substantial similarity between the copyrighted work and the alleged infringing work. Unless the infringer has a defense or authorization, the person is liable for infringement.

Defenses to infringement of a copyright do exist. The first is fair use, discussed below. Certain institutions are also allowed to infringe copyrights for archival purposes. In other cases, the infringer can prove that the use was a normal use of the work, that he was an innocent infringer who did not know the work was copyrighted, or that he created the work independently.

Sysops run the risks of various types of infringement by allowing access to their resources. The most important is direct infringement, where an unauthorized work is added to an online collection. Sysops could also be held liable for vicarious or contributory infringement by allowing other people to add copyrighted works to the collection without the sysop's

41. Id. at 437.
43. The total defense of innocent infringement was deleted by the Copyright Act of 1976 by not requiring intent. A defense of innocent infringement can still be valid for a court to reduce damages. 17 U.S.C. § 504(c)(2) (1988).
knowledge of the copyright, or for allowing other people to violate the copyright by allowing use and copying without the owner's permission.\textsuperscript{44}

The Supreme Court explained the concepts of contributory and vicarious liability in \textit{Universal City Studios v. Sony Corporation of America}.\textsuperscript{45} Copyright owners sued to enjoin Sony from selling video recorders because the devices were being used to tape copyrighted material. The Court first held that a required element in a contributory infringement case was that the accused be in a position to control the use of copyrighted works by others.\textsuperscript{46} Sony was not in control of the recorders after purchase and therefore could not be held contributorily liable.\textsuperscript{47}

The plaintiffs then argued that Sony had constructive knowledge that customers would make unauthorized copies of material and should therefore be vicariously liable.\textsuperscript{48} The Court held that since there were substantial non-infringing uses or authorized fair uses, Sony could also not be held vicariously liable.\textsuperscript{49}

Computer systems are different from video recorders, but the same analysis applies. Problems of contributory and vicarious infringement are especially pervasive with bulletin boards, archive sites, and university computer systems. In contrast to the \textit{Sony} case, sysops are in control of their systems and have much closer interactions with the users. Sysops can control access and copying to an extent. It could easily be argued that the institution is or should be in control of the infringer and should therefore be held liable. As previously stated, no intent to infringe is necessary for infringement.\textsuperscript{50} Sysops allow users the opportunity to infringe easily and could therefore be held contributorily liable for encouraging, or at least knowing about, foreseeable infringement. The problem with this is that institutions cannot supervise everyone who has access all the time. There are no simple ways to prevent infringement; if material appears on a user's screen, it can be copied, and a sysop cannot prevent it. In this way, as in the \textit{Sony} case, a sysop is not in control of the end users.

\begin{itemize}
  \item \textsuperscript{44} See Latman et al., \textit{Copyright for the Nineties: Cases and Materials} 666-74 (3d ed. 1989).
  \item \textsuperscript{45} Universal City Studios v. Sony Corp. of America, 464 U.S. 417 (1984).
  \item \textsuperscript{46} Id. at 437.
  \item \textsuperscript{47} Id. at 437-38.
  \item \textsuperscript{48} Id. at 439.
  \item \textsuperscript{49} Id. at 444.
  \item \textsuperscript{50} Playboy Enterprises v. Frena, 839 F. Supp. 1552, 1559 (M.D. Fla. 1993).
\end{itemize}
Normally, to be held vicariously liable, a person must, in addition to being in control of the infringer, receive a financial benefit from the infringement.\(^{51}\) Any for-profit business that charges for access is receiving a direct financial benefit and must be especially careful to avoid vicarious liability. Though it would be hard to argue that a library or university receives a direct financial benefit from infringement, both measure their success by the use of their resources and receive an indirect benefit from increased traffic and reputation, thereby enhancing their status and financial income.

Sysops could also be charged with constructive knowledge that users will infringe copyrights. Following the \textit{Sony} holding, the sysops can demonstrate that there is a substantial amount of non-infringing use for the material and therefore they should not be held vicariously liable. But, the \textit{Sony} Court also discussed the market effect in making its decision of what is a substantial non-infringing use.\(^{52}\) If the infringement causes too great an effect on the market, it would mean that there is substantial infringing use. This would detract from the case for substantial non-infringing use, and the Court could decide that sysops should be held vicariously liable.

\textbf{C. Exceptions to Infringement}

When the 1976 Copyright Law was in Congress, the library and academic lobbies were intensely concerned about academic freedom and educational use.\(^{53}\) In response, the 1976 Copyright Law codified the doctrine of fair use.\(^{54}\) Fair use is an equity doctrine that allows use of a work "for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship or research."\(^{55}\) Four factors should be considered in determining fair use:

1. the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit education;
2. the nature of the copyrighted work;

\(^{51}\) Frank H. Andorka, \textit{What is Copyright?} 1992 ABA SEC. PAT., TRADEMARK & COPYRIGHT LAW.

\(^{52}\) \textit{Sony Corp. of America}, 464 U.S. at 442-56.


\(^{55}\) \textit{Id.}
(3) the amount and substantiality 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.  

In applying these factors, courts consider the intent and motive of the person
in a context of "brevity, spontaneity and cumulative effect" to decide
whether a use is a fair use or an infringement.  Fair use is the doctrine
that educational and library sysops use to justify adding sources to online
collections. The institutions claim that the resources are being used for
educational purposes and that the online access has not affected the potential
market or value of the work.

In addition to fair use, a library or archive has statutory authorization to
reproduce one copy of a work for an archive if certain conditions are
met. In order to satisfy archival requirements, the copy must (1) not be
used for direct or indirect commercial advantage, (2) include a notice of
copyright, and (3) the library or archive must be open to the public or
outside researchers. Congress allowed archival use for "replacement of
a copy . . . that is damaged, deteriorating, lost or stolen." The library
must also have reasonably determined that a replacement cannot be found
at a fair price. One way of archiving these collections is to put them in
an electronic form. If users have access to these electronic archives, it is a
simple matter to violate the copyright, and the archive sysop could again be
held vicariously or contributorily liable.

Software is an especially easy target for electronic copyright
infringement because it is designed to be run on a computer. Industry
experts estimate that losses from software copyright infringement globally
run from twelve to fifteen billion dollars a year. A great deal of software
is not copyrighted, and sysops can have a difficult time telling the difference
between copyrighted and non-copyrighted software. However, Congress

56. Id.
59. Id.
61. Id.
62. The Software Publishers Association estimates 1990 software copying losses of $2.4 billion
in the United States and $10-$12 billion overseas. Patrick G. Marshall, Copying Computer Programs
Puts Byte on Software Firms, STAR TRIB. (Minneapolis), July 1, 1993, at 16E.
balanced the rights of users and creators by enacting a specific section of the copyright law to deal with software that is copyrighted.

Section 117 of the copyright law states that it is not an infringement for the owner of a copy of a computer program to make a separate copy, if needed to use the program, or for backup (archival) purposes. In order to allow users to make these copies, manufacturers write the programs to be copyable. It is therefore quite simple to violate the copyright on a program by either uploading to or downloading from another system. Software archives and bulletin boards can violate the law when people upload copyrighted software without the sysop's knowledge of the copy and/or the copyright, or download software to their own systems.

D. Enforcement in the United States

The copyright law states, "Anyone who violates any of the exclusive rights of the copyright owner ... or who imports copies ... into the United States ... is an infringer of the copyright." A copyrighted work must be registered with the Copyright Office in order for an owner to bring an infringement action. Once an infringement action is brought, there are several remedies that an owner can pursue.

An owner can recover actual damages that have been suffered from infringement as well as any profits that the infringer has made as a result of infringement. Perhaps more importantly, the owner can obtain an injunction against the infringer to restrain further infringements, and can impound infringing copies of the copyright. In some instances, the owner can recover litigation costs and attorney's fees.

Despite this array of seemingly impressive remedies available to copyright owners, enforcement against sysops in an electronic context is extremely difficult. With extensive computer networks such as the Internet or a database such as LEXIS, it is extremely simple for a person to violate

a copyright and to go undetected. The owner may not be aware that the work is online, much less that there has been a violation.

VI. INTERNATIONAL COPYRIGHT LAW

A. History

There is no general, *sui generis* copyright law between countries. The international law that exists is a result of multilateral and bilateral treaties. When countries have a copyright agreement, there are two types of protection that can be given: national treatment or reciprocal treatment. A country can treat the other country’s nationals and works the same way that the country treats its own nationals, or the country can give the other country’s nationals the protection those nationals would receive in their home country. For ease of applicability and uniformity within a country, most treaties give national protection.

There are two widely accepted multilateral treaties on copyright protection: the Berne Convention and the Universal Copyright Convention. In addition to the multilateral treaties, there are numerous bilateral treaties between countries. Before these treaties—and still for non-Member Countries—there was no international copyright protection. The lack of protection made it quite simple for someone to buy one copy of a work, take it out of the country, and then reap huge profits by selling cheap copies. This was especially troubling to authors and software creators who were unable to recover their development costs because people bought the cheaper copies.

The Berne Convention was created in 1886 but the United States did

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70. See M.M. Boguslavsky, Copyright in International Relations: International Protection of Literary and Scientific Works 19 (David Catterns ed. & N. Poulet trans., 1979).
71. See id. at 20.
72. See id. at 25-28.
73. See id. at 26.
75. UCC, supra note 10. There were 81 Contracting States to the UCC as of Jan. 1, 1990. Jones, supra note 74, at 264.
not accede to the Berne Convention until a century later (1987), largely because U.S. law had requirements such as mandatory deposit with the Library of Congress, mandatory copyright notice, printing in the United States, and shorter terms of copyright duration. Congress decided that the United States should not join the Berne Convention, so the United States initiated the development of the Universal Copyright Convention, which was signed in 1952 and entered into force in 1956. The United States has also concluded bilateral treaties with a number of countries, and now has confirmed copyright protection relations with 110 countries.

B. Application of Berne and Universal Copyright Conventions

The Berne Convention and the UCC protect works in the literary, scientific, and artistic domain. This definition is expansive enough to include scientific research and computer software. The treaties extend protection of works that are protected in the country of origin to all other Member Countries. The works must be first published by a national of a Member Country or be first published in a Member Country. The Berne Convention leaves the matter of when a work is considered published,

Series No. 615(E), 1978).
80. The majority of copyright relations with the United States are via multilateral treaties. Bilateral treaty provisions are normally similar to those of the multilateral conventions. See, e.g., Copyright: Agreement Between the United States of America and Indonesia, Mar. 22, 1989, U.S.-Indon, T.I.A.S. No. 11,608. Most bilateral treaties are superseded by the multilateral treaties, but the United States is limited to solely bilateral treaties with China, Cuba, El Salvador, Indonesia, and Singapore. See U.S. COPYRIGHT OFF., CIRCULAR 38A, supra note 79.
81. U.S. COPYRIGHT OFF., CIRCULAR 38A, supra note 79.
82. Berne Convention, supra note 9, art. 2(1); UCC, supra note 10, art. 1, 25 U.S.T. at 1344, 943 U.N.T.S. at 195.
83. Berne Convention, supra note 9, art. 2(6); UCC, supra note 10, art. II(2), 25 U.S.T. at 1345, 943 U.N.T.S. at 195. Article 1 of the Berne Convention defines the countries as a "Union," but the UCC calls members "Contracting States."
84. Berne Convention, supra note 9, art. 3(1)(a) and (b); UCC, supra note 10, art. II(1), 25 U.S.T. at 1345, 943 U.N.T.S. at 195. Publication by a non-national in a Member Country is the so-called back door, where many U.S. authors simultaneously published in the United States and a Berne Union country to gain international protection when the United States was not a Berne Union member.
such as a requirement of tangible form or of general distribution, to legislation for each Member Country, while the UCC defines publication.\textsuperscript{85}

Once a work has been published in a Member Country, the owner of the copyright can enforce that copyright in other Member Countries without separate registrations or formalities.\textsuperscript{86} A Member can enforce in another country the same rights that the nationals of that country would enjoy if the work was first published there.\textsuperscript{87} In addition to the rights of nationals, owners of copyrights are guaranteed certain specific, minimum rights under the conventions.

Above the UCC minimums, the Berne Convention grants authors the rights of paternity and integrity, allowing the author to claim ownership and object to distortion of a work.\textsuperscript{88} As a general rule, the Berne Convention grants copyrights for the duration of the life of the author plus fifty years.\textsuperscript{89} In contrast, the UCC grants protection for the life of the author plus twenty-five years.\textsuperscript{90} These are minimum rights that countries are required to recognize; a country may grant more protection by legislation.\textsuperscript{91}

By becoming Members Countries, nations recognize the exclusive rights of authors to receive the benefits and proceeds of their works.\textsuperscript{92} These basic rights ensure the authors' economic\textsuperscript{93} and reputation interests. In general, the conventions also grant copyright owners the rights to reproduce and translate their works.\textsuperscript{94}

\begin{itemize}
\item 85. Berne Convention, \textit{supra} note 9, art. 2(2), 3(3). """\textit{Publication}, as used in this [UCC] Convention, means the reproduction in tangible form and the general distribution to the public of copies of a work from which it can be read or otherwise visually perceived.""" UCC, \textit{supra} note 10, art. VI, 25 U.S.T. at 1362, 943 U.N.T.S. at 203.
\item 86. See Berne Convention, \textit{supra} note 9, art. 5(2); UCC, \textit{supra} note 10, art. III, 25 U.S.T. at 1345-46, 943 U.N.T.S. at 195. The work must meet the UCC requirement that all copyrighted copies of the work bear the copyright symbol, along with the copyright owner's name and year of first publication, all placed so as to give reasonable notice of a claim of copyright.
\item 87. See Berne Convention, \textit{supra} note 9, art. 5; UCC, \textit{supra} note 10, art. II, 25 U.S.T. at 1345, 943 U.N.T.S. at 195.
\item 88. See Berne Convention, \textit{supra} note 9, art. 6 bis (1).
\item 89. Berne Convention, \textit{supra} note 9, art. 7(1).
\item 90. UCC, \textit{supra} note 10, art. IV(2)(a), 25 U.S.T. at 1347, 943 U.N.T.S. at 196.
\item 91. Berne Convention, \textit{supra} note 9, art. 7(6).
\item 92. See Berne Convention, \textit{supra} note 9, art. 5(1); UCC, \textit{supra} note 10, art. IV bis, 25 U.S.T. at 1349, 943 U.N.T.S. at 196-97.
\item 94. Berne Convention, \textit{supra} note 9, art. 8, 9; UCC, \textit{supra} note 10, art. IV bis, V, 25 U.S.T. at 1349-51, 943 U.N.T.S. at 196-98.
\end{itemize}
Like U.S. law, the conventions have exceptions that allow copyrighted works to be used in ways such as fair use and for archival purposes; these exceptions are governed by the separate countries. The exceptions are limited and must still provide reasonable protection to the copyright owner.

There is no international court with jurisdiction for copyright claims. The remedies that are available for an infringement of a copyright are governed and enforced by the country where protection is claimed. This means that the owner must go to each country where infringement occurs and sue in the local judicial system to enforce a copyright. Separately, the Berne Convention grants owners the right to seize infringing copies in all Member Countries. Berne Union countries have the additional right to retaliate and deny protection to the nationals of any country that does not recognize the rights of the Member's own nationals.

C. Comparison of Conventions to United States Copyright Law

Before the 1976 and 1988 revisions of U.S. copyright law, protections existing under the Berne and UCC Conventions were not given to foreign works in the United States. Foreign authors had to conform to all of the requirements of U.S. law to gain copyright protection. U.S. nationals did not have protection in other countries (unless there was a bilateral treaty). Although the United States was a founding Member and driving force behind the UCC, the protections granted under it were not as extensive as those of the Berne Convention. Similarly, the UCC is expressly written to not limit any rights granted by the Berne Convention.

With the new U.S. copyright law, copyright requirements began to reflect the requirements of the Berne Convention. In the revisions of 1976 and 1988, Congress amended the copyright laws with respect to formalities and deposit requirements, duration of copyrights, mandatory notice, and available remedies. On March 1, 1989, the United States finally

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95. See Berne Convention, supra note 9, art. 2 bis, 9, 10; UCC, supra note 10, art. IV bis (2), 25 U.S.T. at 1349, 943 U.N.T.S. at 197.
96. The UCC allows that in order to afford judicial relief a country may require formalities such as local counsel or deposit of a work, such as are required for nationals. UCC, supra note 10, art. III(3), 25 U.S.T. at 1346, 943 U.N.T.S. at 195.
97. Berne Convention, supra note 9, art. 16.
98. See Berne Convention, supra note 9, art. 6.
100. Copyright Act of 1976, supra note 32.
became a Member of the Berne Convention and granted foreign nationals copyright protection in the United States.101

The Berne Convention is not a self-executing treaty in the United States and therefore will not create or trump U.S. law.102 The Berne Convention is also not a law in the United States. The Berne Convention grants foreign, Treaty-Member nationals standing in the United States in reciprocation for U.S. citizens having standing in Member Countries. If a copyright owner wants to sue an infringer in U.S. courts, the owner can only use U.S. laws that are codified or judicially created. Congress has not codified certain rights that the Convention grants, such as the “moral” rights of paternity and integrity.103 Instead, in considering whether to adopt the Convention, Congress concluded that these moral rights were adequately protected by existing laws.104

D. International Sysop Treatment

Sysops within the United States are governed by the copyright laws of the United States, but with the globalization of the information superhighway, it is simple to be a sysop outside of the United States. Unfortunately, the jurisdiction of U.S. courts does not extend to sysops who operate in other countries. If a copyright owner wishes to enforce copyright protection against sysops in other countries, the owner must rely upon international agreements such as the Berne Convention and the UCC. No agreements deal specifically with copyright law in the electronic medium. In order to obtain protection, copyright owners must use the provisions of the existing conventions. It is widely recognized that software and other material on the computer is in a tangible form that can be protected by copyright.105 Therefore, authors of electronic works can own copyrights; the problems arise when the owners want to enforce their rights internationally.

102. Congress decided that the Berne Convention was not self-executing. This means that it may not be directly applied and that it does not create any rights. U.S. COPYRIGHT OFF., CIRCULAR 93A, THE UNITED STATES JOINS THE BERNE UNION 2 (Feb. 1989).
103. See Berne Convention, supra note 9, art. 6 bis.
104. See U.S. COPYRIGHT OFF., CIRCULAR 93A, supra note 102, at 3.
105. In fact, “computer program” is specifically defined in 17 U.S.C. § 101 (1988) and given copyright protection. The Berne Convention and the UCC do not define a “computer program,” but software and electronic files fall in the category of “literary works” and thus qualify for treaty protection.
The types of sysops in other countries are the same as those within the United States: libraries, universities, academics, corporations, and individuals. However, enforcing liability against a foreign sysop for copyright infringement is much more difficult because, as previously stated, no international court with global jurisdiction to pursue copyright claims exists.

A U.S. copyright owner has no ability to enforce a copyright if the sysop is in a country that does not have copyright relations with the United States. The copyright owner may try to enforce his rights by going to the country where the infringer is located and suing in local courts. Unfortunately, in addition to the cost and practical problems such a suit entails, there is no reason for the foreign court to recognize the standing of the owner or that a cause of action exists. The foreign country is under no duty to concede that the copyright is intellectual property.

The only hope of protection for copyright owners is if the country where the infringer is located is a Member of a multilateral convention or a bilateral treaty. If so, then the owner can claim "national rights." Making the foreign country recognize that the subject of the copyright is intellectual property is the threshold requirement. In parallel to the debate in the United States over whether software can be copyrighted or patented, the foreign country may not recognize the work as a copyrightable subject.

In most instances, recognition of literary works, scientific works, and software will be a simple issue because the subjects are defined in the relevant treaties. A more complex issue is the allowance of exceptions that each country may legislate and the variation in rights granted to nationals in the treaties. The conventions allow Member States to make variations in defining what is required for fixation, the standard for originality, special cases for reproduction, the remedies available for infringement, and other specifics in implementing convention provisions. A copyright owner who wishes to enforce rights must navigate the copyright rules and exceptions of each country.


107. Berne Convention, supra note 9, art. 2; UCC, supra note 10, art. 1.
Depending on the country where the computer system is located, a sysop could be vulnerable to various types of liability. Direct copyright infringement is the easiest to recognize and consequently the easiest to enforce. Depending on the development of a country's laws, theories of contributory and vicarious liability could also be brought into play.

A different and more complex problem created by computers and international ease of access is that sysops may not know that they are infringing a copyright. With the incredible amount of information that exists online and offline, it is impractical in terms of time and money for sysops to check the copyright status of all information. Even if a sysop has the best of intentions to protect the copyrights of others, a third person can simply remove a copyright notice or modify a work so that it seems not to have a copyright or to have a copyright that belongs to someone else. Thus, if a country requires knowledge for copyright infringement, a defense of innocent infringement may bar recovery against sysops in many foreign countries.

VII. The Future of Sysops and Copyright

The current extreme disparity between supply and demand guarantees that the amount of information available through online resources will continue to expand. The goal of gaining users will encourage sysops to continue adding resources. Sysops enter the field for the reputation growth or the financial benefits derived from access by users. When one sysop adds resources online, others are forced to add more resources to compete for the users' attention. If a particular sysop does not put information online, demand ensures that the competitive market will add the information elsewhere. The challenge that all sysops face is to balance protecting the interests of the creators with the demands for access.

Access to the so-called information superhighway is exploding, and it will not be stopped. The demand for access and the ease of using resources will continue to promote online growth in the public and private sectors. As this growth continues, a new level of copyright policy must be created to deal with new issues.

It will always be impossible to eliminate copyright infringement totally. Hackers, professionals, and other people willing to spend the time and

108. A hacker is a computer user who specializes in breaking into private areas of a computer. These people have computer skills much greater than those of the average user and can bypass many
money will always be able to bypass limitations and protections to access. The goal for the future should be to stop amateurs from infringing and to make the costs of infringing for hackers and other professionals outweigh the benefits. Widespread conformance with the copyright laws will only happen if it is the cheapest and easiest choice for users.

An ideal future copyright system must promote the same goals that previous copyright laws have: to balance the needs of users against the protection of creators' rights. The benefits that society receives from granting copyrights require that some form of protection be given. However, the phenomenal growth in the availability of online resources also proves that society demands increased ease of access.

A. An Ideal Copyright System

A sysop's dream for the future is that the growth of the information-online superhighway will result in instantaneous, global, personal access to a majority of the information on the planet. In the ideal system, only one copy of a resource would need to be placed online, and then anyone could use it. This total dissemination would allow the maximum amount of gain to society from access. If this access were free, however, the authors would gain no benefit from publishing and allowing online access. As a result, authors would respond by going to the opposite extreme and not creating or publishing at all, depriving society of continuing benefits.

The ultimate extreme of users' interests would be a decision to put all resources in the public domain. Public domain software, news, and creations whose copyrights have expired comprise a vast area of resources that already do not have protection. Having no copyright protection would eliminate society's enforcement costs, and would thus be a benefit to society. The problems that currently exist in international copyright protection rebut this idea by showing that a limited amount of protection only raises costs by sending copyright owners to other methods of protecting and gaining from their creations.

Putting all resources in the public domain is not the way to continue society’s growth. Creation of an idea is property in its most original form.\footnote{As Nathaniel Shaler has stated:} When an author creates a work, the author has combined personal experiences and training in a way that is impossible to duplicate. This unique combination is a gain to society that must be encouraged. It is in society’s best interests to retain incentives for creation and disclosure.

A copyright scheme for the future must balance these fundamental principles of allowing access while retaining incentives to produce. The growth of the information superhighway will turn the world into a library without walls. Online resources anywhere should be available to everyone. This global access will allow society the greatest possible growth from use of a creation. Simultaneously, the cost of this access must not reduce the benefits that the creator receives. This means that creators must receive their benefits either before online access, or online access must increase these benefits instead of detracting from them.

For those creators who produce for reputation benefits, global access will mean an increase in the market of users and will satisfy their desires by making them even more well known to others. Following the same shift in demand through global access, copyright owners who seek financial rewards will have access to the largest possible market. This larger market will enable those who want financial rewards to lower their prices and still reap the same or greater rewards; the cost of access will then parallel the true value of the resource.

The simplest way to stop infringement is to create a system where there is no net benefit to infringing. This will be achieved when there is legitimate global access at prices equal to or below what people are willing to pay. If everyone has low-cost access to all resources, there will be no gain from infringement and, therefore, protection and enforcement of copyrights will not be needed. To do this, all countries must have uniform protection of creators’ rights. By consolidating the separate countries into

\footnote{109. As Nathaniel Shaler has stated:}
one global market, each country will benefit by the access to all other
countries and it will be simpler to grant creators their rewards.

Copyright owners currently have the right to control reproduction of
their works. Once there is global access to a resource anywhere, there will
not be any need or desire to reproduce a work. One copy will be enough.
Therefore, creators will not need to retain control over reproduction.
Creators' incentives must be retained by other methods.

Several methods could be used to ensure creators the financial benefits
from online access to their works. One possibility would be a flat tax on
everyone to allow total access. This would not discriminate on the basis of
the person’s demand for access and thus would be an unequal burden.
People who use the resources a great deal would pay comparatively little per
use, while the burden would be greater for people who rarely use the
resources. People who do not use the resources would object to subsidizing
the use by others. A proposal that would cure this problem would be to
require a use tax that each person must pay for using a resource. This is the
method that many for-profit information providers use now. A fee is paid
that is calculated by the amount of time spent online and the specific
resources accessed. Another proposal would be for governments to buy the
rights to creations. This proposal is flawed because of the high costs in
trying to value a creation. Some creators would be overpaid for relatively
small contributions to society, while others would be underpaid for valuable
contributions.

The benefits that a creator receives must be related to the significance
of the contribution to society. An ideal plan should value the benefits that
the user gains from access and then pass on part of that value to the creator.
This would be similar to a licensing agreement. Software and technology
exist, or can be developed, to monitor the users and use of resources.
Assuming that the amount of use is proportional to an item’s value, a
creator could estimate what a reasonable fee for use would be. The sysop
would then assess the user this fee and pay it to the creator. The user would
know the fee in advance, and would decide (consciously or intuitively)
whether his benefit is equal to or greater than the fee. Creators would have
an incentive to keep the fees as low as possible to induce the greatest
number of people to use the resource. Low prices would encourage people
whose benefit was greater than or equal to the price to use the resources.
This would not be an exact measure of the value contributed by the creator,
but the creators would have a net gain by large amounts of inexpensive
legitimate use instead of a few legitimate expensive users and many non-paying users.

The doctrines of fair use and archival reproduction are currently included in copyright protections to serve important societal policies. Fair use serves the policies of education and research, which in turn are investments for future creations and gains to society. Archival reproduction serves the equally important policy of retaining creations and preventing waste by allowing reproduction to prevent permanent loss of works. It is important to preserve these goals to keep society advancing and to keep track of society’s history.

This does not mean that the doctrines must remain. Once global, personal access has been achieved, there will be no educational need to copy resources. The resources will already be available. Similarly, it is important to keep backup copies of resources in case of accidents, but, since everyone has access, archival storage will not result in use by others. Ideally, unlimited copying should be allowed; because everyone already has legitimate access, there will be no market upon which to infringe.

In economic terms, demand currently exceeds supply. Only this current shortage induces infringement. Once global, personal access is achieved at low cost, the supply will be increased so that the legitimate demand will be satisfied and the demand for infringement will disappear.

B. Current Steps Toward An Ideal Global Copyright Law

Sysops will be on the cutting edge of creating and enforcing future copyright policies because they are the nexus between the authors and the users. Users are demanding more access, so sysops will provide it. Even so, the authors are essential to the sysops because without the creators of the material, the sysops would have nothing to put online. Rational sysops will maximize their own financial or reputational gain by maximizing the supply of resources for users, while assuring future opportunities from satisfied creators.

If creators do not receive the benefits of their creations, they will resort to known or later discovered forms of self-help, which include restricting access, making files difficult to duplicate, charging a premium, or requiring complex contracts before allowing access. If the cost to society from these measures exceeds the cost of societal protection, then the interest of society would demand that the protection be given.
The Berne Convention and the UCC are the first steps toward a global ability to balance the demands of users and creators. With the increasing globalization of information technology, copyright protection will only be meaningful if it is globally enforceable. The recognition of this need is one of the primary forces behind the Berne Convention and the UCC.

The Berne Convention and the UCC require and give minimum amounts of protection to foreign authors as well as to nationals. These standards are minimal because they vary widely from country to country. The Conventions fail because they only apply in Member Countries. Citizens of Member Countries can currently sidestep the treaties through loopholes and gaps, while citizens of non-Member Countries need not follow the guidelines at all. The increasing global interconnectivity of resources means that authors will demand global copyright protection and will take steps to procure it.

The most obvious self-help step that copyright owners have taken to protect their rights is to require a contract with each person to whom they allow access. Especially in the case of software, this has led to complex and restrictive contracts and licensing agreements that are hard to read and are of questionable legal validity.110 These contracts raise the price charged users desiring access to a resource; as a result, people decide not to buy the resource and instead choose to infringe. In addition to discouraging use and encouraging infringement, the enforcement costs, legal and otherwise, of the contracts consume resources that could be better used elsewhere. The costs to society of creating these complex contracts, the loss of access, and the costs of enforcement are a waste of resources that society could be using for growth.

Another self-help method that creators use is to keep physical control of their creations. For a limited time, software creators encrypted commands into the programs so that they could not be copied. This practice has been largely abandoned because of the complaints from legitimate users who needed to make copies according to the guidelines in § 117.111 The encoded commands were also not as effective at preventing copying as

110. These contracts can have complex clauses that are not always enforceable in courts for reasons ranging from illegality or unconscionability to lack of mutual assent. For criticism of these contracts, see Edward J. Valauskas, Copyright: Know Your Electronic Rights, 117 LIBR. J. 40 (Aug. 1992).

111. See 17 U.S.C. § 117 (1988); supra note 54 and accompanying text.
hoped. The difficulty actually created a new market for decryption programs.

A compromise system that exists in the United States is the Copyright Clearing Center (CCC). The CCC solicits authors for permission to license their copyrights to users, and in return pays a fee to the copyright owner each time their creation is used. This system works well because it lowers transaction costs, but it is not universally accepted. Many creators would rather incur the higher costs of negotiating their own contracts with users. The CCC does not currently work with electronic resources and is not adapted to administer or enforce copyright guidelines over online systems. A global equivalent of the CCC is needed for the future, but electronic systems pose problems, such as ease of copying without knowledge, that must be solved before an electronic clearinghouse system will work.

Currently, some services such as LEXIS and Prodigy have systems analogous to the CCC. These databases have large amounts of copyrighted information online and have negotiated use fees with the copyright owners. In addition to posting prominent warnings and notices of copyright, these corporations make contracts with the users that only certain uses are allowed. The users pay fees depending on what and how much they use. This system is a crude method of protecting copyrights and makes it harder and more expensive for a person to infringe, but the opportunities for abuse are extensive. The monitoring and enforcement costs of these agreements mean that violations will only be prosecuted in the most egregious circumstances.

Another compromise solution, used in some European countries, is to allow anyone access and to recognize that copyright infringement will result. Therefore, the government charges everyone a photocopy tax and distributes the proceeds to the copyright owners. In effect, copyright owners are required to license their copyrights to the government. This licensing is an

113. Id.
114. "Various European countries have made the legislative decision to protect the interests of copyright owners by imposing a surcharge on photocopying. The fees for copying ultimately inure, directly or indirectly, to the benefit of authors or publishers." Gert Kolle, Reprography and Copyright Law: A Comparative Law Study Concerning the Role of Copyright Law in the Age of Information, 6 INT'L REV. INDUS. PROP. & COPYRIGHT L. 382 (1975), cited in Treece, supra note 29, at 418.
unfair burden on non-infringers, since it shifts the costs of infringement onto all of society, while the benefits are retained by a few infringers. This does not serve society's best interests because it causes a classic free-rider problem in that an infringer takes a personal benefit while society pays the majority of the costs.

A comparable solution to this approach would be to tax blank media such as paper, tapes, or diskettes. This would raise the cost of infringing, but it would still impose a penalty upon people who use the media for non-infringing purposes. Unless the costs were raised prohibitively, it would not work because of the proliferation and reusability of computer information and storage. This transfer of infringement costs to all buyers of blank media is unfair since it would maintain the benefits for copyright owners, while making those who do not infringe pay for the loss due to infringers.

Currently, the Berne Convention and the UCC represent the largest steps toward the future by recognizing and facilitating the global market. A growing number of countries recognize the need for a uniform system of copyright practices and have joined these conventions. These conventions benefit creators by avoiding the incentives for self-help and by increasing the legitimate market for creations. As sysops connect to ever-increasing numbers of foreign countries, the historical and practical barriers to copyright infringement disappear. These conventions move towards the ideal future solution by creating a system that can protect copyright owners in an environment of global access.

C. Future Steps Toward An Ideal Copyright Law

Copyright infringement will be greatly reduced when compliance with the laws is the easiest choice for the user. Once global, low-cost access is available, the demand will be satisfied and there will be no incentives to infringe. Until that time, society must try to minimize current infringement while working toward the long-term global goal.

One way to minimize current infringement would be to create an ethical code to define the rights of copyright owners and what is considered infringement.\footnote{115} When photocopying equipment came into common usage,
libraries and authors debated over the liability of having equipment that simplified infringement on library premises.\textsuperscript{116} The compromise from this debate was that a library is not required to monitor all photocopying, but was to post signs that reproduction of copyrighted material was illegal.\textsuperscript{117} The equivalent in the electronic environment is to post frequent and obvious notices where copyrights exist. An educational campaign to tell people of the costs of infringement and the possible penalties will help to decrease the incidence of infringement.

An honor system and a code of trust are necessary until a universal system is in place. Until enforcement is unnecessary, the practical limitations mean that such a code is necessary to protect authors. Education and an ethical code will make people realize the costs of infringement and will create an incentive to follow the law for the personal reward of being ethical. A prominent policy will deter people who are innocent infringers and will make other people consider the consequences of their actions. This code should make it harmful to a person's reputation if a person infringes or helps others to infringe. Until enforcement is unnecessary, sysops will have an incentive to ensure their own gain by educating users to know when they are copying and the results of doing so. As more people who use the resources know the consequences, they will use common sense and act in ways to protect their long-term interests by not depriving copyright holders.

Sysops can make a concerted effort to work for the future and to minimize current infringement by educating people and monitoring resources to make sure that all copyright notices remain in place. Sysops can also self-monitor the amount and number of users with access to materials by using current accounting software and internal auditing. These self-imposed controls will not eliminate copyright infringement, but they can be used to reduce the amount of uncontrolled copying so that reasonable benefits are conferred on copyright owners. This will retain the incentive for owners to continue to contribute original works.

Sysops currently have the power to reduce the amount of infringement on their systems by not allowing access to infringers. If a sysop is aware of infringement by a user, the sysop should eliminate that user's access

\textsuperscript{116} See supra note 29 and accompanying text.
rights. This is a minimal screen because infringement is so difficult to detect, but the possible punishment would deter some users.

The most important step toward a global copyright ideal will be for more countries to work together by joining conventions such as the Berne Convention and the UCC. Current Member Countries must solicit and welcome new members. As more countries work together, other countries will realize the benefits of membership and will also join. This circular effect will continue to increase the legitimate markets for resources and will lower the costs to creators. As the countries create more access and give rewards to the creators, the copyright owners will have incentives to allow access in order to take advantage of the expanded market. The owners will also be able to lower prices for use because protection costs will be less, and bulk sales will make up for the lower profit per user.

Sysops of the future must work to keep copyright owners from employing self-help methods. They can do this by assuring creators of the benefits of their work. The creation of an accurate method to reward creators according to the benefits of their contribution is key to the future of complete access. Companies are now experimenting with procedures of charging for access: these include charging purely for time, charging per resource accessed, or charging for the type of use such as copying versus merely reading. As new technology is created for monitoring and auditing, the ability to reward creators correctly will be enhanced.

Sysops must also take advantage of new technology to satisfy the demands of users. In conjunction with the growth of Member Countries will be the growth of potential users. Sysops must ensure that the demands of these new users are met. Sysops can demand and receive more resources as their ability to disseminate creations, while rewarding the creators, increases. By ensuring that access is widespread and inexpensive, sysops will be satisfying the demand for resources and will eliminate the shortage that is currently resulting in infringement.

A sysop lobby needs to be organized to press for reorganization of the copyright laws for the future. The new laws need to deal with the future reality of global, personal access to resources. The laws must support the organization and development of technology to deliver access and reward creators. The doctrines of fair use and archival copying can be eliminated, and the penalties for infringement can be reduced, because the gains from infringement will disappear as the supply of legitimate access satisfies the demand.
VIII. CONCLUSION

The use of copyrighted resources has undergone a revolution since the latest version of the copyright laws was enacted. Global growth in electronic media, resources, and available access is not going to stop or even slow in the near future. To keep pace with these changes, sysops of the future need to balance the interests of users for access against the demands of the copyright creators for a return on their contribution. This means that authors must get fair compensation while the users pay a fair price.

This balancing act will be complicated by the sheer proliferation of easy, global electronic communication. The problems of free-riders from countries that do not recognize copyrights and the problems of enforcement will make this a continuing problem until a global policy has been promulgated. The information superhighway is changing the world into a global village and a library without walls. Global, personal access is becoming a reality; this calls for a reassessment of the copyright laws and a new method of balancing interests to maximize the benefits of creation and access for everyone in society.