

INTELLECTUAL PROPERTY RIGHTS AND COMPUTER SOFTWARE

Dawn E. Bowman
DawnSheree@AOL.COM
©1996

ABSTRACT/ EXECUTIVE SUMMARY

The three goals of computer security, namely secrecy, integrity, and availability, are most commonly achieved through physical and electronic measures. However, laws also exist whose intent is to protect the secrecy, integrity, and availability of computer hardware, software, and data. The laws referred to here which govern computer security fall under the domain of intellectual property. Unfortunately, current domestic laws governing intellectual property as they relate specifically to computer security and computer software lag far behind the technology these laws are intended to protect. Most notably glaring is the fact that domestic laws are more timely than many of the foreign counterparts. Advances have been and continue to be made in the creation of required legislation and in the prosecution of criminal offenders, but the battle is just beginning. In order for any progress to be made in this area of the law, the justice system will be obliged to change from a reactive mindset to a proactive mindset. When and if this transformation can occur remains to be seen.

INTRODUCTION AND OVERVIEW

As previously mentioned, the main goals of computer security are to ensure secrecy, integrity, and availability of hardware, software, and data. The focus of this analysis, however, will consider the effect of the elements of security afforded under the current system of intellectual property laws as the laws relate specifically to software.

The objectives of this paper are as follows:

- To discuss the various types of intellectual property including patents, trademarks, and copyrights,
- To discuss the legal hurdles surrounding computer software and its place in the intellectual property arena,
- To provide a brief legislative history of the various areas of intellectual property,
- To ascertain the impact the current intellectual property laws is having on the economic condition of the U.S.,
- To compare and contrast the intellectual property laws in foreign countries with the U.S. counterparts,
- To consider the impact of current intellectual property laws as they relate to computer security, and
- To analyze trends for the future in the area of intellectual property as they relate to computer software.

INTELLECTUAL PROPERTY - WHAT IS IT?

The U.S. "intellectual property system" contains elements of both Federal and State law. Laws related to copyright, patent, and trademark all fall under Federal jurisdiction while laws concerning trade secrets are covered under State jurisdictions. Computer software law is distinguished from most other intellectual creations protected by intellectual property law in that different aspects of the software is eligible for protection by patent, copyright and trade secret laws. Each type of protection has advantages and disadvantages under the current laws.¹

Patent Law

A patent is a grant of a property right by the Government to the inventor "to exclude others from making, using or selling the invention."² A patent protects the device or process for carrying out an idea, not the idea itself.³ Within the category of patents, there are three types of patents available: (1) Utility patent, (2) Design patent, and (3) Plant patent.

A Utility Patent is limited to a process, machine article of manufacture, or a composition of matter that meets the criteria of being (1) novel, (2) non-obvious, and (3) useful. The rights associated with a patent prevent others from making, using or selling the patented invention or component thereof. A patent also protects against independent creation so that the holder of the patent does not need to prove that their idea was copied by another inventor; the fact that the invention has been patented is proof enough. A U.S. utility patent typically allows for 17 years of protection, although there may be exceptions to

¹U.S. Congress, Office of Technology Assessment, *Finding a Balance: Computer Software, Intellectual Property, and the Challenge of Technological Change*, OTA-TCT-527 (Washington, DC: U.S. Government Printing Office, May 1992).

²U.S. Department of Commerce, Patent and Trademark Office, *Basic Facts about Patents*.

³Pfleeger, Charles P. Security in Computing. New Jersey; Prentice Hall PTR, 1989.

this term. Legislation enacted last year scheduled for 1996 implementation sought to change the patent term from 17 years from date of grant to 20 years from date of filing. This legislation brought so much outcry from independent inventors that two bills were introduced last year, HR 359 by Rep. Dana Rohrbacher (R-Calif.) and S 284 by Sen. Robert Dole (R-Kan.) which would set the patent term at 17 years from grant or 20 years from filing, whichever is greater. These bills would supposedly ensure maximum patent protection for inventors whose applications languish unduly in the Patent Office before being issued as patents.

A Design Patent is available for surface ornamentation, configuration, or a combination of the two. Patent protection for designs is granted for a period of 14 years.

Finally, a Plant Patent is granted to any person who has invented or discovered and asexually reproduced any distinct and new variety of plant, including cultivated spores, mutants, hybrids, and newly found seedlings other than tuber-propagated plant or a plant found in an uncultivated state.⁴

Copyright Law

Copyright law in the U.S. protects the right of an author to control the reproduction, adaptation, public distribution, public works display, and public performance of original works of authorship of every kind, ranging from books to sound recordings.⁵ Copyright law protects the expression of an idea, not the underlying idea itself. Current copyright law provides for copyright protection for unpublished as well as published works. This is important for computer software, because it facilitates simultaneous use of copyright and trade secret protections. The published version of the copyrighted program can be distributed as "object code" whereas the "source code" may remain unpublished so as to protect the program's logic. Copyright does not extend to any procedure, process, system, or method of operation, regardless of its form. Rather, copyright is said to protect the expression in the program---which may include such program elements as source code, object code screen displays, etc. Unlike patents, copyright does not protect against independent creation.⁶ A fundamental goal of U.S. copyright law is to promote the public interest and knowledge. Although copyright is a property interest, its primary purpose was not conceived of as the collection of royalties or the protection of property; rather, copyright was developed primarily for the promotion of intellectual pursuits and public knowledge. Therefore the congressionally mandated grant of a limited monopoly for authors is based upon dual interests: the belief that the public should benefit from the creativity of authors and the belief that a copyright monopoly is necessary to stimulate the greatest creativity of authors.

Copyright law is a balancing act between intellectual promotion and property rights. The concept of copyright appears to be a paradox when considered in the context of freedom of speech given by the first amendment. It may seem that copyright expression restricts the freedom of information, however others may argue that to the degree that copyright protection stimulates, the restrictions are worthwhile. Much of the balance achieved between these two underlying principles is that of the fair use doctrine. The doctrine was codified in 1976 to become a part of the Copyright Act.

A subset of the copyright laws is the **Semiconductor Chip Protection Act of 1984 (SCPA)**. This act extends legal protection to a new form of subject matter, namely semiconductor chip mask works. Semiconductor chips may be defined as integrated circuits containing transistors, resistors, capacitors and their interconnection, fabricated into a very small single piece of semiconductor material. A mask work is a set of images fixed or encoded at a later stage of manufacturing, that produces the circuitry of the final chip product.⁷ According to legislative history, the Semiconductor Chip Protection Act was intended to combat the problem of chip piracy, as Congress perceived that the existing law failed to address that problem. The Chip Act is a *sui generis* law (a law of its own kind or class), creating a statutory scheme to provide property protection for chip products separate from and independent of the Copyright Act.

Trade Secret Law

Trade secret law protects the information in a patent until the patent is actually granted. In addition, information that is beyond what is required for inclusion in the patent to meet the "enablement" and "best mode" requirements can also be reserved for trade secret protection. Trade secret law also protects confidential business information against unauthorized use or disclosure and is based on statutory and common law and contractual provisions. A classic example of a trade secret is the formula for the popular soda, Coca-Cola. Similar to patents, trade secret law can protect that underlying idea of an invention, rather than any particular expression of that idea.⁸ Trade Secret law is one of the most widely used forms of legal protection for intellectual property interests in computer software. Numerous courts of a variety of U.S. jurisdictions have ruled that trade secret properly protects computer software. When software is distributed to relatively few customers, licenses establishing the confidential relationship and obligations necessary for maintaining the trade secret can be obtained through signed written

⁴U.S. Congress, Office of Technology Assessment, *Finding a Balance: Computer Software, Intellectual Property, and the Challenge of Technological Change*, OTA-TCT-527 (Washington, DC: U.S. Government Printing Office, May 1992).

⁵*Finding a Balance* 56.

⁶*Finding a Balance* 60.

⁷*Finding a Balance* 75.

⁸*Finding a Balance* 13.

agreements. Developers of computer software have attempted to address the more difficult problem of maintaining trade secrecy in mass marketed software, extensive distribution of which might otherwise destroy requisite secrecy by what is known as a “shrink wrap” license. The shrink wrap license signals further secrecy, and is established by marketing software in a sealed package with a notice and a license agreement that is visible on the exterior of the package. The agreement generally provides that the user, by opening the package, is deemed to have accepted the license terms and conditions. The terms of such a license generally prohibit decompilation, disassembly or copying of a program for any reason except for use and backup purposes.⁹

One of the ways that trade secret law can be rendered ineffective is through the process of reverse engineering. This is a process whereby the finished object is studied to determine how the object is originally put together. Of course, the most obvious way to circumvent the protection of a trade secret is to expose the secret.

In summary, the U.S. intellectual property system is composed of several types of intellectual property, namely patents, copyrights, trade secrets, and trademarks. Trademark law does not particularly apply to protection of any aspect of computer software and is therefore beyond the scope of this discussion. The next section will address in more detail the various aspects of computer software in which each of these types of intellectual property has jurisdiction.

INTELLECTUAL PROPERTY AND COMPUTER SOFTWARE

There are intellectual property issues associated with four elements of a software program:

1. Program function - whether the algorithm is performed by the hardware or the software,
2. External design - the conventions for communication between the program and the user or other programs,
3. User interfaces - the interactions between the program and the user,
4. Program code - the implementation of the function and external design of the program.

Whether and to what extent software-related inventions are the subject of utility patent protection had been an issue for consideration by the courts since the early 1960s. The U.S. Supreme Court has examined the issue of patentability of software on a number of occasions, in the cases of *Gottschalk v. Benson*, *Parker v. Flook*, and *Diamond v. Diehr* attempting to delineate the limits of patentable subject matter with respect to “mathematical algorithms.”

The scope of copyright protection for computer programs depends in part on the interpretation of Section 102(b) of the Copyright Act. There are a number of existing views of the application of existing law to user interfaces. One interpretation of the law is that user interfaces are inherently functional and therefore not copyrightable subject matter. The other view is that user interfaces may be protected by copyright because they could be thought to fall under the compilations or audio-visual works. Another approach to protecting user interfaces through copyright law is to consider the user interface as part of the program itself.¹⁰

Databases are protected under copyright law as compilations. Under the copyright law, a compilation is defined as a work formed by the collection and assembling of pre-existing materials of data that are selected, coordinated, or arranged in such a way that the resulting work as a whole constitutes an original work of authorship (17 USC Section 101). In April 1991, the Supreme Court “dropped a bomb” when it held in *Feist Publications Inc. v Rural Telephone Service Company, Inc.* that the white pages of a typical telephone directory were not copyrightable. The decision sent shockwaves throughout the computer industry because of the questions it raised about copyright protection for other fact-based compilations, such as computer databases. The Supreme Court effectively reaffirmed that copyright originality requires a minimum level of human creativity which some databases may not meet.¹¹

LEGISLATIVE HISTORY vs. ECONOMIC REALITY

Evolution of Patent Case Law

During the early 1960s, the Patent and Trademark Office (PTO) faced a large backlog of patent applications and an average pendency of 4 years. In 1965, the President’s Commission on the Patent System was established to address these problems and suggest revisions to the Patent Act. The PTO denied the patentability of computer programs in 1964, characterizing them as “creations in the area of thought.” In 1966, the PTO attempted to formulate standards in the patentability of software, however nothing came to fruition until the Supreme Court finally considered the issue of the patentability of computer software in the case of *Gottschalk v. Benson*¹². This case involved a request to patent a process for converting decimal numbers into binary. The case was rejected however by the High Court because it seemed to patent an algorithm or idea. In 1978, the Supreme Court again addressed the question of software patentability in the case of *Parker v.*

⁹*Finding a Balance* 75.

¹⁰*Finding a Balance* 75.

¹¹Patent Trademark and Copyright Journal 18 Apr. 1991.

¹²*Finding a Balance* 48.

*Flook*¹³. Although the Supreme Court ruled the subject in this case as not patentable, the decision left open the possibility that “a process is not unpatentable simply because it contains a law of nature or mathematical algorithm.” In 1981, the case of *Diamond v. Diehr* came to the Supreme Court. This case won a patent for a process that used computer software, a well-known algorithm, temperature sensors, and a computer to calculate the time it took to cure rubber seals¹⁴. The Court reversed the decision of the Patent Appeals Court on the basis that claims are not disqualified from patentability because of the use of a mathematical equation and programmed digital computer.

Evolution of Copyright Law

The Copyright Act was enacted in 1790, and has endured many revisions since then, with the most recent overhaul happening in 1976 with legislation that modified the term of copyright and codified the “fair-use” concept as a limitation on the exclusive rights of the holder. The fair use doctrine allows the unauthorized use of certain copyrighted material in comment and criticism, news reporting and classroom teaching. This doctrine allows the courts to bypass an inflexible application of copyright law when under certain circumstances it would impede the creative activity that the copyright law was supposed to stimulate. Congress has created statutory regulations of a list of factors that courts should consider in making their fair-use determination. The four factors set out in the statute are:

1. the purpose and character of the use, including whether such use is of a commercial nature or is for non-profit educational purposes;
2. the nature of the copyrighted work;
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 on the potential market and value of the copyrighted work (17 USC 107 (1988)).¹⁵

In the late 1970s, Congress established the National Commission on New Technological Uses of Copyrighted Works (CONTU) to make recommendations for computer copyright legislation specifically related to computer software or programs, databases, and works created by the use of computers. In 1980, following recommendations made by CONTU, legislation explicitly extended copyright protection to computer programs. Therefore computer programs became copyrightable as “literary works” as defined in 17 USC 101. The term “computer program” is also defined in section 101 as “a set of statements or instructions used directly or indirectly in a computer in order to bring about a certain result.”

Software Piracy

Gail Penner, who testified on behalf of the Software Publishers Association, said that in 1990 the U.S. software industry lost \$2.4 billion in revenues in the United States alone, and between \$10 and \$12 billion worldwide. “Civil remedies are not adequate to combat software piracy”, she declared, “because the pirates can easily go underground for a while and pop up again in another guise. Moreover, because counterfeiters rarely keep business records, civil discovery methods to secure information about infringers’ assets, for instance, do not work.”

Creators of commercial software are concerned about their profitability. An important rationale for creation and enforcement of intellectual property rights is to give commercial software developers adequate market incentives to invest time and resources needed to produce and disseminate innovative products. Illegal copying of software results in financial losses to U.S. software firms both directly, through loss of sales and or royalties, and indirectly, through loss of investment opportunities.

Criminal Penalties for Copyright Infringement

In the early 1980s, according to Section 506(a) of the Copyright Act, willful infringement of the Copyright Act for commercial advantage or private financial gain was punishable according to the provisions of 18 USC 2319. In 1982, PL97-180 was enacted to toughen the criminal penalties under Title 18 for pirating and counterfeiting copyrighted sound recordings, motion pictures or other audiovisual works. This legislation was directed at commercial counterfeiting which had been only a misdemeanor rarely pursued by federal prosecutors. Section 2319 of Title 18 now provides maximum felony penalties of five years imprisonment of anyone who, within any 180 day period, illegally reproduces or distributes at least 1,000 copies of a copyrighted sound recording or at least 65 copies of a copyrighted motion picture or other audiovisual work. Where more than 100 and less than 1,000 copies of sound recordings are involved, or more than seven and less than 65 motion pictures or other audiovisual works are involved, the maximum prison time is two years and the fine is the same. For criminal infringement of other works, the maximum penalties are one year of imprisonment and/or \$25,000.¹⁶

¹³*Finding a Balance* 50.

¹⁴Pfleeger, Charles P. *Security in Computing*. New Jersey; Prentice Hall PTR, 1989.

¹⁵*Finding a Balance* 62.

¹⁶*Patent Trademark and Copyright Journal* 11 Jun. 1992.

Once the former Soviet Union disintegrated, global economic competition replaced military confrontations as the principal threat to national prosperity. This development coincided with the software industry's growing aggravation with widespread copying of computer programs. The industry saw the example the film and recording industry provided, where felony prosecutions had brought piracy under control, and asked Congress for the same protection. Hearings were held in the Senate first and the Senate Report candidly acknowledged that the bill was motivated by concerns for the global competitive position of the U.S. To put the global position of the U.S. in perspective, note that the world market for computer software is currently estimated at \$70 billion per year. U.S. companies now hold a 70 percent share of the world software market, generating about \$50 billion in sales.¹⁷

In April 1992, Senator Orrin Hatch (R-Utah) introduced a bill (Section 893) to add computer programs to the list of works that are the subject of criminal penalties under 18 USC 2319. Thus, under Senator Hatch's proposal, Section 2319(b)(1) of Title 18 would be amended to provide fines of up to \$250,000 and imprisonment of up to five years for willful infringement for commercial advantage or private financial gain "that involves the reproduction and distribution, during any 180 day period, of at least 50 copies infringing the copyright in any one or more computer program (including any tape, disk, or other medium embodying such programs)." For infringements involving more than 10 but less than 49 copies, an amended Section 2319(b)(2) would provide fines of up to \$25,000 and imprisonment of up to one year.¹⁸ These harsher punishments match those provided under similar legislation enacted in 1982 to deter counterfeiting of records, tapes and films.¹⁹

An amendment to the Senate Bill 893 was proposed in September 1992 by Subcommittee Chair Representative William J. Hughes (D-New Jersey). His substitute amendment proposed to make the felony/misdemeanor turn on the retail value of the copies, rather than on the number of copies made. The threshold retail value for a felony offense would be \$5,000. The felony penalty would be two years of prison, and repeat offenders would be subject to a maximum of five years imprisonment.²⁰

The Clinton Administration has also made attempts to address the shortcomings of current legislation as it relates to information technology. The Working Group on Intellectual Property Rights, the Clinton Administration's Information Infrastructure Task Force, released a report in July 1994 on Intellectual Property and the National Information Infrastructure (NII). The report included recommended changes to existing copyright law to accommodate advances in information technology.²¹ If these recommendations are approved by Congress there may be new restrictions on what one can and cannot do on the Information Superhighway.

Mr. Bruce A. Lehman, Assistant Secretary of Commerce as well as the Commissioner of the Patent and Trademark Office, heads the intellectual property working group that prepared the report as part of the Clinton Administration's NII Task Force, which is seeking to establish a blueprint for the Information Superhighway. Experts, such as Gail Penner of the Software Business Alliance, an 1100-member trade association, say that the copyright law has not kept pace with technology especially in the area of digitization. This technology allows for the creation of an innumerable number of copies of a particular work that are virtually identical to the original. Lehman's plan is to change the Copyright Act to include digital transmissions, making it clear that on-line distribution rights are held by the copyright owner the same way they are on paper. It would also become a crime to disable anti-copying technology.²²

Other recommendations contained in the report propose that the U.S. copyright law be amended to explicitly protect electronic information and its transmission. In addition, the term "publication" would be given a broader definition to include distribution by transmission and the first-sale doctrine (which allows the owner of a lawfully made copy to sell or dispose of that one copy) would be rewritten to exclude electronic transmission. Although some of the changes recommended in the report are clearly needed, a number of groups (libraries and educational groups) have expressed concerns in public hearings that there must be a balance between "fair use" and protecting the copyright holders needs. Otherwise, first amendment rights may be seriously jeopardized in cyberspace. Publishers, in general, have been supportive of the recommendations. Clearly, the proposed changes to the copyright law could have broad consequences.²³ Various industry groups have said there is a pressing need for such measures in light of the growing use of computers and computer networks that can easily copy and disseminate text, pictures, sound and video images that exist in digital form.

In September 1995, a bill was introduced in the House of Representatives which would amend Title 17 of the Copyright Act, to adapt the copyright law to the digital, networked environment of the National Information Infrastructure, and for other purposes. The short title of this Act may be cited as the "NII Copyright Protection Act of 1995."²⁴

Corporate executives are also showing their support for new information technology laws. Barbara A. Munder, Senior Vice President of the McGraw Hill Companies, Inc. testified on behalf of the Information Industry Association before the House Committee on the judiciary to provide support for the proposed House Bill HR 2441 NII Copyright Protection Act of 1995. Ms. Munder stated "We do not and cannot offer more because there is too great a risk to our valuable intellectual

¹⁷Spanner, Robert A. "The Brave New World of Criminal Software Infringement Prosecutions." The Computer Lawyer November 1995, Page 1.

¹⁸"Senate Passes Bill to Stiffen Criminal Penalties for Software Infringement." Patent Trademark and Copyright Journal 4 Jun. 1992: 121.

¹⁹"Legislation, Copyrights." Patent Trademark and Copyright Journal 9 Apr. 1992: 511.

²⁰"House Panel Amends Bill on Criminal Penalties for Software Infringement." Patent Trademark and Copyright Journal 17 Sept. 1992: 485.

²¹United States. Information Infrastructure Task Force, National Information Infrastructure Report, 172 D 128, 1995.

²²Kantowitz, Barbara. "My Info is NOT Your Info" Newsweek July 1994: 54.

²³"Free Speech and Copyright in Cyberspace: Legal Issues Surrounding the Internet." On-line Libraries and Microcomputers Mar. 1995.

²⁴Full Text of Bills, 104th Congress, 1st session, H.R. 2441, September 29, 1995.

property in an environment where the culture and technology offer so little protection for the rights of content producers.” “...without effective protection, we cannot risk our hard work and investment in cyberspace where it is so easy to copy, retransmit and alter our property without our permission, and often without our knowledge.”²⁵

An example of where the current system has failed the public is apparent in the case of *United States v. LaMacchia*. In the 1994 case of *United States v. LaMacchia*, an MIT student set up a computer bulletin board on the Internet and invited users to upload copies of popular software which could then be downloaded for free use by other users. Although LaMacchia’s scheme allegedly caused losses of over \$1 million to software copyright holders, he could not be sued for criminal copyright infringement because there was no evidence that he sought or derived any ‘commercial advantage or private financial gain.’ In response to this case, Sen. Patrick Leahy (D-Vt.) on August 4, 1995, introduced a bill (S 1122) to reinforce criminal copyright infringement provisions for infringement of works worth \$5,000 or more, even where the infringer neither sought nor derived any commercial advantage or financial gain. The bill which also expressly prohibits “assisting others” in the reproduction or distribution of an infringed work, would close a loophole in the law that became apparent in the 1994 case which involved software infringement on an Internet computer bulletin board.

The bill proposed by Sen. Leahy would also continue to encourage growth of the National Information Infrastructure by ensuring better protection of the creative works available on-line. The definition of “financial gain” would be changed to include the bartering for, and trading of pirated software. It would also amend Section 5-7(a) of Title 17 to extend the statute of limitations for criminal copyright infringement from three to five years, as is currently provided under Title 18 for sound recording and counterfeit tracking.

Criminal sanctions would attach under Section 506(a)(2) if only a single copy were made of a copyrighted works that meets the \$5,000 monetary threshold. For infringed works with a value between \$5,000 and \$10,000 the offense would be a misdemeanor; for works worth over \$10,000, the offense would be a felony. The penalty provisions at 18 USC 2319 would be amended to conform with the proposed amendments to Section 506(a)(2). The new offense under Section 506(a)(2) of willfully infringing works worth \$10,000 or more would be punishable by a fine and up to five years imprisonment; for infringement of works worth between \$5,000 and \$10,000, the punishment would be up to one year in prison and a fine. Repeat offenders would be punished by up to ten years imprisonment and a fine. A new Subsection 2319(e) would be added requiring that victims of criminal copyright infringement be given the opportunity to provide a victim impact statement to the probation officer preparing the pre-sentence report.²⁶

All of these events, such as the National Information Infrastructure Task Force, pending bills in the House and Senate for increased penalties of infringement, and expert testimony by those individuals in the information technology industry are all good starts in the process of reforming the current intellectual property laws, specifically as these laws relate to information technology and computer software. However, a good start does not guarantee a good finish. It has taken many years for the ‘powers that be’ to realize the importance of up to date, timely information technology laws. The key to success lies in keeping ahead of the technology which will require an even greater commitment.

INTELLECTUAL PROPERTY ABROAD

Patent Law in Foreign Countries

The patent, trademark and copyright laws that are currently in place in the U.S. may differ substantially from the corresponding laws in foreign countries. Most of the European, Asian, and Latin American countries with established patent law systems do not offer protection for software programs. Some of the countries expressly exclude software from patentability such as Brazil, France, and Switzerland. In contrast, other countries are silent and therefore leave open the possibility of software patentability such as Japan, Taiwan, Korea, and Thailand.

Japan and Taiwan have granted patents for certain computer programs, especially if the computer program is described in conjunction with a method or computer in which the program is used in the specification of an application.

The European Communities have agreed in their Software Directive that the prescribed protection of computer programs under copyright law does not prejudice the application of other forms of protection where appropriate. Computer software may be protected under patent law in addition to copyright in European Community members.²⁷

Copyright Law in Foreign Countries

The copyright laws in foreign countries are as varied as the nations themselves. A complete discussion of the nuances of the copyright laws of the major European, Asian, and Latin American countries is beyond the scope of this paper. However, Japan and Europe (as a whole) will be briefly discussed as the U.S. is involved in a great deal of trade with these countries.

²⁵“Prepared Testimony of Barbara A. Munder...” *Federal News Service* 7 Feb. 1996.

²⁶“Bill Would Strengthen Penalties for Criminal Infringement on Internet.” *Patent, Trademark and Copyright Journal* 10 Aug. 1995: 368.

²⁷ *Finding a Balance*

In Japan, to ensure inclusion of computer programs as protectable subject matter of copyright, the Japanese revised copyright law to define computer programs as “a set of instructions for a computer which are combined in order to function (sic) the computer so that one result can be obtained.” Under Japanese law, both source code and object code are copyrightable. Translation from source code to object code constitutes a reproduction of the source code. Japanese copyright law further provides that the author shall have the exclusive right to reproduce his work, as well as to translate, arrange, transform, dramatize, cinematize, or otherwise adapt his work. In principal, a person who possesses a copy of a program is prohibited from making another copy or adapting the original copy without the copyright owner’s consent. However, like U.S. law, Japanese copyright law limits the scope of the author’s exclusive right of reproduction regarding a program work, by allowing copies or adaptation to the extent deemed necessary for the purpose of using the work in a computer to be made by the owner of a program for his own use. The period of protection for computer software in Japan is life of the creator plus fifty years. For unpublished software, the copyright lasts fifty years after the creation of the work.

The European Communities have adopted a directive on the legal protection for computer software which must be implemented by each of the EC member states. This directive requires that software be protected by copyright as a literary work within the meaning of the Berne Convention.

Trade Secret Law in Foreign Countries

Japan is the only Pacific Rim nation whose law provides for trade secret protection. The Japanese law defines a trade secret as technological or business information useful for business activities, controlled as a secret, which is not publicly known art. Under the law, if a computer program properly qualifies as a trade secret, the owner of a computer program who is damaged or is likely to suffer damage by unauthorized use or disclosure of his program may require the offending party to stop the unauthorized use or disclosure of the program. The owner of a trade secret may request that the media on which the program is stored be destroyed. (However, since there are no “protective orders” in court proceedings, the secret may be lost as a result of bringing the litigation.) Unfair activity includes acquisition of a trade secret by stealing, deception, or threats, or acquisition from a third party while aware that the trade secret was originally acquired by an unfair activity.

The European Communities have agreed in their long debated Software Directive that the prescribed protection of computer programs under copyright does not prejudice the application of other forms of protection where appropriate. Thus, computer software is properly protected by trade secret in addition to copyright in European Communities member nations.

Foreign Treaties

In addition to the various analogous foreign patent, trade secret, and copyright laws discussed previously, there also exist several international treaties among various nations.

The Berne Convention for the Protection of Literary and Artistic Works is a multilateral, international copyright treaty. The purpose of the Berne convention is to bring nations together in an effort to protect, in as effective and uniform a manner as possible, the rights of authors in their literary and artistic works.

The General Agreement on Tariffs and Trade (GATT) is a multilateral trade agreement, entered into force in 1984, intended to promote freer trade among member countries. The GATT is the main instrument regulating trade among market economy nations of the world.

The World Intellectual Property Organization (WIPO) attempts to address and synchronize patent issues in foreign countries with those in the U.S. For example, legislation was recently introduced (February 1995) in both the House and the Senate to extend the term of copyright protection. House bill 989 and Senate bill 483 seek to extend the term of protection which is currently determined as the author’s life plus fifty years. The bills seek to extend this period to the author’s life plus seventy years. This increase in the term of copyright protection is designed to match the new European Union standard. Significantly, the increase in the copyright term protection would be applied retroactively, adding twenty years to the renewal terms of copyrights in their first term as of January 1, 1978.²⁸

Despite the international treaties currently in place, other laws exist which attempt to address those international situations where fairness may not be the name of the game. The 1988 Omnibus Trade and Competitiveness Act amended Section 182 of the Trade Act of 1974, to require that the U.S. Trade Representative annually identify countries that deny “adequate and effective” intellectual property protection and “fair and equitable” market access to U.S. businesses that depend on intellectual property protection. Countries deemed to have the most unacceptable standards are designated “priority foreign countries” and investigated for possible trade sanctions under the “Special 301” section of the Trade Act, 19 USC 2411.²⁹ The biggest offenders on the 1994 list were China, Argentina, and India, but particularly China. Robert Holleyman, president of the Business Software Alliance, indicated that the U.S. software industry lost \$322 million in China in 1993, adding that 94 percent of the packaged software in China is thought to be pirated.³⁰

²⁸“Copyright Term of Protection - Harmonized with European Union.” [LEXIS-NEXIS Hot Topics Intellectual Property Law](#) 4 Aug. 1995.

²⁹“Industry Urges Firm U.S. Position.” [Patent, Trademark & Copyright Journal](#) 30 Jun. 1994: 217.

³⁰“Industry Urges Firm U.S. Position.” [Patent, Trademark & Copyright Journal](#) 30 Jun. 1994: 217.

On April 29 of last year, Japan was placed on the 1995 priority list. This leaves it open to possible targeting in the future as a Special 301 priority country. This switch was due in part to then current worries in the White House as well as in some American business circles that Tokyo might amend its copyright laws to allow decompilation or reverse engineering of computer programs. It also reflected mounting U.S. questions about Japan's willingness to crack down on software piracy and increasing domestic industry concerns about the competitive impact of that country's patent system. In response, the Japanese government promised to limit the time between the initial submission of a patent application and its acceptance or rejection to three years versus the typical five or six years, a major competitive handicap for high technology firms with their very short product life cycles. These and other changes notwithstanding, Clinton administration officials argue that Japan's patent system still works to the disadvantage of innovative American firms.³¹

CAN INTELLECTUAL PROPERTY LAWS PROVIDE SECURITY?

As discussed in the previous sections, there are a variety of ways to provide security for computer objects. One must bear in mind that no means of security is fail safe, and therefore additional precautions must be taken to assure the highest possible protection.

We have seen that for hardware, probably the most appropriate form of intellectual property protection is the patent. Hardware is, in a sense, an invention, and therefore may be patented.

Patents are not typically encouraged for software because software is seen as the representation of an algorithm or idea, which is not by definition, subject to a patent. Conversely, trade secret protection applies well to computer software because it protects the secrecy of the algorithm (the code), while still allowing distribution of the executable program. However, because trade secret protection does not protect against copying the program (i.e. source code), it does not apply any penalty to software pirates who copy the program and then sell it for commercial gain. Thus, copyright protection could be the most appropriate means of software protection.

Finally, protecting the data in a database is more of a gray area because data in and of itself is not patentable. Trade secret protection does not really seem appropriate because most of the time the underlying data is not secret. The remaining type of intellectual property protection currently on the law books is copyright, but as mentioned in the case of the white pages of a phone directory, a database must have some element of originality and creativity for its material to be copyrightable. Many databases may not meet these requirements, and therefore not fall under the protection of any of the available intellectual property laws.

Over time, many of these fuzzy areas of the law will become clear as additional legislation is made and additional court cases are heard. A hope of all those involved in this type of litigation is that the court systems will take a proactive stance on clarifying these issues. With the short life cycle of most of the hardware and software on the market today, a court decision could be yesterday's news before it is even decided.

TRENDS FOR THE FUTURE

Recently, the Supreme Court brought to a close a decade long search in court for the proper and best way to protect software. *Lotus Development Corp. v. Borland International*, the first case to reach the Supreme Court addressing the issue of copyright protection for computer software. At issue was whether the language used in command menus developed by Lotus for its 1-2-3 software program was a copyrightable work as defined by the Copyright Act. Lotus argued that the software's command menu was a literary work entitled to the same copyright protection as other literary works. Borland countered that the words in the command menu were more like basic English grammar and should not be afforded copyright protection.³² The Supreme Court's 4-4 tie vote affirmed the First Circuit's decision that Borland's copying the menu tree from Lotus' 1-2-3 spreadsheet program was not a copyright violation. But the unwritten decision has no precedential value and will give scant guidance on what aspects of software are copyrightable expression and what are uncopyrightable methods of operation. The 4-4 tie in the *Lotus v. Borland* case will likely encourage others to look to other forums.

In lieu of Supreme Court guidance, technology lawyers will have to turn to more than a half dozen similar software copyright cases pending in Federal courts around the country to determine the boundaries of protection. Nine copyright experts interviewed recently say that recent court decisions have leaned toward favoring defendants in software copyright disputes over command menus. They also say the courts appear to be recognizing the legitimacy of copying to achieve compatibility between computer programs. When the First Circuit Court ruled last year that the command menu of Lotus' 1-2-3 spreadsheet program, was not protected under copyright law, it reasoned that the menu was a "method of operation" rather than an expression of an idea. In other words, the 1-2-3 user interface was merely functional. Under Section 102(a) of Federal copyright law, computer programs appear to have protection as "literary works" which include works expressed in "numerical symbols" and "embodied" in "disks" or "cards." But another provision, Section 102(b) bars copyright protection for any "idea...process [or] method of

³¹05/26/95, Japan Economic Institute of America JEI Report, Section no 20 Vol. 199, [Washington Watchful on Tokyo's Protection of Intellectual Property Rights](#)

³²LEXIS-NEXIS Hot Topics Intellectual Property Law, Jan. 11 1996

operation.” The tension between those two provisions is at the heart of the debate over whether protection should be afforded to a program’s user interfaces as opposed to its underlying code, which is generally considered to be within the scope of copyright law.³³

Other trends in the intellectual property and computer software arena include a multi-year plan to revise the Uniform Commercial Code (UCC) in an effort to give more credibility to shrink wrap licenses. Companies have had limited success in court enforcing software licenses because the buyer is unable to bargain over terms and because some courts have found that the contracts are an impermissible trick of the Copyright Act.³⁴

Many companies are putting greater emphasis on protecting their products through patents rather than by or as a complement to, copyrights. This shift recognizes that courts have been loosening their restrictions over patents while tightening requirements for copyrights, and that patents have a greater certainty than copyright. It is generally easier to interpret a patent claim than to agree on copyright’s coverage in software.

Another trend that appears to be emerging is the acceptance of copying for the sake of computability, or interoperability between computer programs. Jonathan Band, a copyright lawyer in Morrison & Foerster’s Washington, D.C. office says that courts have come to recognize that compatibility between products has become a pervasive aspect of the computer industry. With a spreadsheet program, the operating system it is designed for is nearly as important as what the software’s basic purpose is. In its battle with Lotus, Borland argued that in part its adoption of the 1-2-3 menu command in its Quattro Pro spreadsheet sheet was crucial to obtaining compatibility with macros. However defendants should not be able to simply invoke compatibility as a pat defense against claims of infringement without showing functional constraints on how a program is defined for developing application software to be compatible with an industry standard.³⁵

CONCLUSIONS

This paper has attempted to show that the three goals of computer security, that is, secrecy, availability, and integrity, may allow various computer objects, specifically computer software, to be afforded some protection under the law in addition to the protection offered by physical devices and procedural methods. The security devices used by the law are the patent, the copyright and the trade secret. A discussion of the nature of each of these legal devices was presented, along with a brief legislative history. Recent legislation was presented concurrently with a discussion of the economic aspects of computer software piracy and the need for more stringent penalties. The legislation and the economic aspects are inseparable because one literally drives the other. In addition, an overview of the international arena was presented with the corresponding intellectual property laws in various nations. Finally, trends for the future of intellectual property rights and computer software were presented.

I believe that in recent years many advances have been made to address the challenges being faced by this industry. It is said that half the battle is recognizing and defining the problem. Unfortunately, however, this is not enough. In order to meet the future head on, the present is going to need a head start.

BIBLIOGRAPHY

1. Kantrowitz, Barbara. “My Info is NOT Your Info” Newsweek July 1994: 54.
2. Pfleeger, Charles P. Security in Computing. New Jersey; Prentice Hall PTR, 1989.
3. Spanner, Robert A. “The Brave New World of Criminal Software Infringement Prosecutions.” The Computer Lawyer November 1995, Page 1.
4. Walsh, Mark. “Copyright Experts Scan Horizon for Rules on Software.” The Recorder Feb. 1996.
5. Congress, Office of Technology Assessment, *Finding a Balance: Computer Software, Intellectual Property, and the Challenge of Technological Change*, OTA-TCT-527 (Washington. DC: U.S. Government Printing Office, May 1992).
6. Department of Commerce, Patent and Trademark Office, *Basic Facts about Patents*.
7. Patent Trademark and Copyright Journal 18 Apr. 1991.
8. Patent Trademark and Copyright Journal 11 Jun. 1992.
9. “Senate Passes Bill to Stiffen Criminal Penalties for Software Infringement.” Patent Trademark and Copyright Journal 4 Jun. 1992: 121.
10. “Legislation, Copyrights.” Patent Trademark and Copyright Journal 9 Apr. 1992: 511.
11. “House Panel Amends Bill on Criminal Penalties for Software Infringement.” Patent Trademark and Copyright Journal 17 Sept. 1992: 485.

³³Walsh, Mark. “Copyright Experts Scan Horizon for Rules on Software.” The Recorder Feb. 1996.

³⁴“End of an Era, Software Wars Are Over.” Information Law Alert: A Voorhees Report, 26 Jan. 1996.

³⁵Walsh, Mark. “Copyright Experts Scan Horizon for Rules on Software.” The Recorder Feb. 1996.

12. "Bill Would Strengthen Penalties for Criminal Infringement on Internet." Patent, Trademark and Copyright Journal 10 Aug. 1995: 368.
13. "Industry Urges Firm U.S. Position." Patent, Trademark & Copyright Journal 30 Jun. 1994: 217.
14. United States. Information Infrastructure Task Force, National Information Infrastructure Report, 172 D 128, 1995.
15. "Free Speech and Copyright in Cyberspace: Legal Issues Surrounding the Internet." On-line Libraries and Microcomputers Mar. 1995.
16. Full Text of Bills, 104th Congress, 1st session, H.R. 2441, September 29, 1995.
17. "Prepared Testimony of Barbara A. Munder..." Federal News Service 7 Feb. 1996.
18. "Copyright Term of Protection - Harmonized with European Union." LEXIS-NEXIS Hot Topics Intellectual Property Law 4 Aug. 1995.
19. LEXIS-NEXIS Hot Topics Intellectual Property Law. Jan. 11 1996
20. Japan Economic Institute of America JEI Report, Section no 20 Vol. 199, Washington Watchful on Tokyo's Protection of Intellectual Property Rights
21. "End of an Era, Software Wars Are Over." Information Law Alert: A Voorhees Report, 26 Jan. 1996.