

Copyright—High-Tech Catch-Up

High-tech revolution creates legal issues law, courts are scrambling to catch up

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I shall discuss a fascinating area of the law—law attempting to catch up with technology. More particularly, the application of U.S. copyright law to cover legal issues arising from our high-technology revolution.

The term "revolution" is indeed appropriate. In the past seven years we have witnessed remarkable changes. What was startling to us and totally inconceivable to our fathers is taken for granted today.

—Nine year old children come home from school talking about their programming course. They sit down with their home computer to program, use its work-processing capability or simply play video games. (In my childhood, it was a big deal to listen to Superman on the radio). In a more sophisticated home computer setup, the youngster is able to tap huge resources of information via a modem connecting his computer via the telephone to centralized bodies of information.

—Digital watches, calculators and other common electronic products are the norm and well within everybody's budget.

—In industry, computer programs have been developed to cover a wide variety of business and technical problems. Record retrieval, calculating, computerized drafting, word processing, are all common.

—It has been estimated that there are presently over 3,000 software companies selling products valued at \$10 billion with an expected growth rate of 30% per year. Today there is a greater investment in software than hardware.

—Everybody readily accepts that a quarter-inch square of silicon called a "chip" has the electronic power of equipment which filled an entire room only a few decades ago. Such chips are not only found in computers, communications and office equipment, but are now commonplace as parts of motor vehicles, appliances, consumer products and the like.

There is a blurring of many traditional distinctions regarding knowledge and information.

(a) Printed versus nonprinted. Floppy disks allow us to move words off a screen onto paper and make a keyboard a miniature printing plant.

(b) Computers permit communications to go from voice

to electronics, or voice to electronics to print, or vice versa.

Clearly technology has been moving at a breakneck speed. As Yogi Berra would say, "Even the future is not what it used to be."

Has the law been able to keep up with the technology? Does it effectively protect the innovators and those investing in the technology? The law and the legal profession have the reputation of being a bit slow moving. A lawyer always likes new ideas, provided of course "they have withstood the test of time."

My talk today will address the emergence of copyright law as a key element in the protection of such new technology. I realize that this LES audience is a mixed group of business people, government and academic officials, and lawyers. You have a widely divergent spectrum of knowledge about copyright protection.

COPYRIGHTS VS. PATENTS

If one mentioned copyrights 10 years ago, most of the people in this room would have only thought of that C with a circle that appeared at the beginning of a book to protect its author. The more sophisticated probably realized that copyrights were used to protect motion pictures, recordings and the like. When it came to technology, one thought of patents rather than copyrights.

Constitutional basis—parallel reward system

Both the patent system and copyright system are based on the same constitutional provision, namely, Article 1 of Section 8 which reads:

"Congress shall have the 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."

The patent laws were intended to reward utilitarian contributions whereas copyrights typically were to protect artistic efforts such as writings, drawings and the like. Both provided a limited-term monopoly for someone making a contribution to the public it did not previously have—an invention in the case of patents; a new "writing" in the case of copyrights. The term "writing" under the copyright law has been broadly interpreted to mean *any expression having some form of permanence*. Thus, it covers a sound recording, a drawing, sculpture or as we shall see a program recorded on a disk or a semiconductor chip (ROM). Copyright protects the *form and not the idea*. Historically, there has been a reluctance to extend copyrights to functional features.

Key questions

Why have copyrights assumed increasing importance in the protection of today's technology? One reason is that

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the patent system has several important limitations.

Cases have held that "mental processes" (or methods of calculation) as well as "methods of doing business" are not patentable. These principals ultimately led to the Supreme Court holding that programs, per se, are not patentable.

A patent can, however, be granted for a process or apparatus utilizing a computer program provided that the patent claim as a whole is not merely a method of calculation. In the landmark Diehr case (Sup. Ct. 1981) a rubber-curing process that utilized a program relating temperatures and cure times to automatically open the rubber-molding press to obtain optimum cures was held patentable.

To be patentable, an invention must be new, useful and "unobvious to one skilled in the art." A detailed software program or electronic design may not have any one element which alone would be unobvious, but rather represent a compilation of individually known steps involving a great deal of effort. Such subject matter is not patentable.

Time and Cost

A patent requires a detailed specification which is examined by a Patent Examiner in Washington to determine whether it meets the standards of patentability. Typically, at least two years are required to obtain a patent—too long a period for many high-tech developments.

Enforcement before the federal courts is likely time consuming and expensive. Even if there clearly has been copying, the issue of whether the development truly was "unobvious" is likely to be litigated in spite of the Patent Office decision to issue the patent. Ultimate resolution will be time consuming and expensive.

While maintaining information confidential or secret does provide an alternative approach, it too has its limitations. It does not prevent copying of an article once it is sold since it is no longer confidential. A competitor can analyze the publicly available product and copy it. Moreover, inadvertent disclosure or publication destroys all rights.

Thus, there is a need for a form of protection that:

1. Can easily and promptly be secured.
2. Can be applied to mental processes or calculations as found in computer programs.
3. Protects substantial investment of time and energy even if no one element is truly unobvious to those skilled in the art.
4. Can be more quickly and cheaply enforced.

The copyright law has been modified to serve these requirements in our "high-tech revolution." The process of revising the copyright law to catch up with technology is indeed still occurring as witnessed by legislation which has just been passed protecting semiconductor chips.

PRIMER ON COPYRIGHT LAW

Copyright law before 1976

In order to obtain statutory protection one had to publish with copyright notice (1) the symbol © or the word "Copyright" or "Copr.," (2) the year of first publication and (3) the name of the copyright owner, e.g. © 1974 Acme Corporation. The prior law was not considered to

clearly cover computer programs due to their functional nature. It was not clearly a "writing" protected under classical copyright law.

1976 Copyright Act

The 1976 Act thoroughly revised the copyright law in general. It set the stage for its greater application to the protection of high technology. Key revisions included:

— Copyright takes effect on *creation* of the work rather than publication (as in European systems).

— The term of copyright protection was substantially revised from 28 years after death of the author to the life of the author plus 50 years, or 75 years from publication if copyrighting a work for hire.

Most importantly, the definition of the subject matter of copyright protection was substantially broadened to reflect developments in technology. Under §102(a) of the act, "Copyright protection subsists, in accordance with this title, in original works of authorship 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." (emphasis added)

As we will see, subsequent cases have held this language to cover:

— Images on a screen, provided there is some permanence (video game).

— Programs of any type.

— Programs imprinted on chips (ROM—read-only memory).

— Information not directly perceivable by humans so long as it is perceivable with the aid of a machine or device.

The 1976 Copyright Act had an interim provision concerning its application to computer programs that left program protection unresolved. Congress wished to have the recommendations of a National Commission on New Technology Uses of Copyright Works ("CONTU"). These recommendations were reflected in the 1980 Amendments to the Copyright Act clearly extending copyright protection to computer programs.

The Computer Software Copyright Act of 1980

The act added a definition of a "computer program" to the 1976 Copyright Law. It is defined in §101 as being "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result" and provided clear statutory copyright protection for computer programs.

While the owner of the copyright has the exclusive right to copy the program or transfer rights in it by sale or lease, newly introduced §117 allows the owner of a copy of a computer program the right to make or authorize the making of one backup copy for archival purposes, or copying the program as an essential step in its utilization in conjunction with a machine.

HOW TO SECURE COPYRIGHT PROTECTION

Under the 1976 Copyright Law, copyright arises upon creation. A work is "created" when fixed in tangible form of expression for the first time. Filing at the Copyright Office at the Library of Congress is not required, although it does offer the benefits of:

(a) The presumption of validity if made within five years of publication.

(b) It is ordinarily a necessary step before an infringement suit may be filed.

(c) Statutory damages and attorney fees are permitted if statutory copyright is obtained prior to infringement.

Marking

(a) Copyright notice should be fixed on all copies of the computer program including chips which may contain programs (ROMs).

(b) The preferred form of notice for international recognition is © year date of first publication (distribution) and owner. By way of example: © 1984 Acme Corp.

- (c) The notice should alternatively appear on
- The first page of the printout of the program,
 - The user's terminal at sign on or continuously, or
 - A durable label fixed to container for program.

While under the old law, failure to place notice on distributed items was fatal, the new statute offers some latitude in correcting for copyright notice omission.

Application to Copyright Office

As previously noted, application to the Copyright Office is not required for copyright protection. However, applications are being filed at the rate of about 10,000/year, and 85+% of such applications are for source code. One files Copyright Office application form TX (nondramatic literary work) together with \$10 and a copy of the identifying portion of the work.

Copyright registration is available for:

1. Computer programs, as literary works.
2. Electronic game graphics or other video displays, as audio-visual works.
3. Technical drawings, as graphics.

In the case of programs, only the first and last 25 pages need be deposited, reproduced in a form visually perceptible without the aid of a machine or device, either on paper (printout) or in microfilm form, together with the page or equivalent containing the copyright notice, if any.

Many companies are hesitant to deposit their source code, fearing possible loss of their proprietary technology. Source code describes the program basis in a manner understandable to an expert. It is the version the programmer writes. In contrast, object code is "compiled" from the source code and acts as the set of instructions (0s and 1s) to a machine. It is the language the machine understands. It is relatively easy to go from source code to object code, but not the reverse.

Clearly, source code when deposited as such as protected, as is object code when deposited. It is, however, less clear whether the deposit of object code is sufficient to protect both the source and object codes.

The Copyright Office takes the position that a printout in source-code format is the "best representation" of a program. Where only the object code is submitted, the Copyright Office will proceed with registration under a "rule of doubt" upon receipt of applicant's confirmation letter that the deposited work contains copyrightable authorship since it cannot really examine object code. Deposited copies are available in Copyright Office for inspection, but not for copying.

Preemption vs. trade secrets

Are copyright protection and trade secret protection mutually exclusive? Will marking a program with copyright notice automatically disqualify the program

from trade secret protection under preemption even if publication or distribution was under a confidentiality commitment?

Recent cases have held in the negative. (*Technicon Medical Information Systems Corp. v Green Bay Packaging, Inc. et al*, 687 F.2d 1032, 7th Cir., 1982, Cert. Denied 1983 (103 S.Ct. 732); *Warrington Associates Inc. v Real-Time Engineering Systems*, 522 F.Supp. 367, N. Dist. Ill., 1981.) One can have both copyright protection and trade secret protection, provided the program is maintained as a trade secret.

KEY RECENT DECISIONS

Apple Computer Litigation

In the *Apple Computer, Inc. v Franklin Computer Corporation* case (714 F.2d 1240, 3rd Cir., August 30, 1983) and *Apple v. Formula International* (725 F.2d 521, 9th Cir. California, Feb. 8, 1984), several key issues of law were decided at the Federal Appeals Court level (just below the Supreme Court).

Basically, all computer programs are copyrightable regardless of the function they perform and regardless of their tangible medium of expression. Thus, software incorporated on a chip (ROM) has been confirmed as being copyrightable. It had been argued that a chip was a utilitarian item and not copyrightable. While a chip, per se, might accordingly have not been copyrightable (absent new legislation), a program on a chip was copyrightable. The chip was merely the tangible medium of expression.

Both application programs (which interact with a computer user) and operating programs (which serve to control the operation of a machine) are copyrightable. The Copyright Law makes no distinction. The court rejected defendant's contention that an operating system is an idea, rather than an expression of an idea.

Further, the *Apple v. Franklin* decision held that there was no basis for treating object code differently than source code. Both fall under §102(a) of the Copyright Law even though object code communicates directly with the computer rather than with the user. In either form, the program is protectable as a "literary work."

Franklin Computer appealed to the Supreme Court, but the case was settled in January 1984, purportedly for \$2.5 million with Franklin being allowed to stay in business. The \$2.5 million apparently covered 100,000 computers or a royalty of \$25 per computer.

Copyrights on audio-visual displays

Sights and sounds associated with playing of an electronic game are sufficiently fixed and original for copyright protection. The fact that an audio display will vary somewhat with the player is immaterial. Many aspects of game (size, shape, color, etc.) are constant. Images are sufficiently fixed to meet copyright requirements "fixed in any tangible medium of expression" (*Stern Electronics v. Kaufman*, 2 Cir., 1982; *Atari v. Amusement World*, Dist. of Maryland 1981, etc.). Bally (owner of Pacman, Space Invaders and Galaxion) filed some 65 suits.

COPYRIGHTS AND SEMICONDUCTOR CHIPS

This is an excellent example of today's topic: the attempt of law, particularly in the copyright area, to catch

up with technology. In spite of hundreds of millions of dollars spent to develop semiconductor chips, absent a patentable concept being reflected in the chip design, the law appeared to provide little in the way of effective coverage.

Trade secrecy is of little value. Chips are sold publicly. They can be photographically analyzed and reverse-engineered to produce the masks used for their manufacture from such as photographs. While masks, per se, were held copyrightable as technical drawings, the product of the mask, i.e., the semiconductor chip, was considered a utilitarian product not falling under the Copyright Law. Thus, a foreign company could escape any copyright problem since its masks were outside of U.S. territories, and its chips did not infringe the U.S. copyright on the mask.

Current legislation

In order to protect the very substantial investment in semiconductor chip design and particularly against off-shore copying, Congress has been considering protective legislation. While initial proposals related to amending the Copyright Law, the House of Representatives was convinced that, since semiconductors are utilitarian, the Copyright Law would be muddled by such an amendment. Rather than amending the definition of copyrightable subject matter, it passed legislation providing for a new form of protection for "mask works." The House bill H.R. 5525 called for compulsory registration within two years of first commercial exploitation. However, the House legislation would not be consistent with international copyright law regarding marking and limited the nationals who could apply for coverage.

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Status as of Presentation

Thus, as of October 1, 1984, we had the Senate passing S1201 amending the Copyright Law, whereas the House of Representatives had passed H.R.5525 providing a *sui generis* approach. Both provided a 10-year period of protection.

Legislation reflecting the *sui generis* approach was passed by Congress: (H.R.6163, Title III of which adds Chapter 9 to the Copyright Act, provides a 10-year term of protection for semiconductor chips. The bill reflects the *sui generis* approach of H.R.5525 rather making mask

works a new category of copyrightable subject matter. Title III sets up a registration system for "mask works" to be administered by the Copyright Office. The owner of a protected mask work has the exclusive right to reproduce it and, most importantly, to import and distribute the semiconductor chip product in which the mask work is embodied—the area of weakness of the prior law. Protection is provided for an innocent purchaser or reproduction of the mask solely for teaching or evaluation. The bill's legislative history indicates that it in no way reduces copyright protection for computer programs which may be embodied in a semiconductor chip (ROM). H.R.6163 is expected to become law under the title "The Semiconductor Chip Protection Act of 1984." (Editor's Note: President Reagan signed this bill into law on November 9.) Congress' action certainly reflects the theme of my presentation—modifying the law to catch up with today's technology.

FOREIGN PROTECTION

In most countries of the world:

1. Patents—programs, per se, are unpatentable.
2. Copyrights—recent decisions indicate that software is likely to be protectable under local copyright law in France, W. Germany, Japan, South Africa, Taiwan, Canada and the U.K. In Australia, Apple successfully appealed and reversed an initial opinion that programs were not protected under the former Australian copyright law. The Australian copyright law has now been amended to more clearly provide computer program protection.

However, older foreign copyright laws often are strained to apply to computer programs and today's high technology, which were never contemplated when passed. Problems arise in "transitory reproduction," automatic conversion of source code to object code; and reading into memory to perform a specific task, etc.

It is obvious that we are living in a fast-moving society—from a technological as well as legal perspective.

The very fact that Congress has passed the Semiconductor Bill for protecting the all-pervasive "chip" is eloquent testimony to the timing of today's subject - "The Copyright Law Marathon - Catching Up with High Tech?"