

UIC John Marshall Journal of Information Technology & Privacy Law

Volume 4
Issue 1 *Computer/Law Journal - Summer 1983*

Article 7

Summer 1983

Software Piracy and the Personal Computer: Is the 1980 Software Copyright Act Effective?, 4 Computer L.J. 171 (1983)

Mickey T. Mihm

Follow this and additional works at: <https://repository.law.uic.edu/jitpl>



Part of the [Computer Law Commons](#), [Intellectual Property Law Commons](#), [Internet Law Commons](#), [Privacy Law Commons](#), and the [Science and Technology Law Commons](#)

Recommended Citation

Mickey T. Mihm, Software Piracy and the Personal Computer: Is the 1980 Software Copyright Act Effective?, 4 Computer L.J. 171 (1983)

<https://repository.law.uic.edu/jitpl/vol4/iss1/7>

This Comments is brought to you for free and open access by UIC Law Open Access Repository. It has been accepted for inclusion in UIC John Marshall Journal of Information Technology & Privacy Law by an authorized administrator of UIC Law Open Access Repository. For more information, please contact repository@jmls.edu.

NOTES

SOFTWARE PIRACY AND THE PERSONAL COMPUTER: IS THE 1980 SOFTWARE COPYRIGHT ACT EFFECTIVE?

Copyright law came into being because of technological innovation.¹ Through the years it has stretched and changed and adapted itself to the new methods by which men have chosen to express themselves. The copyright doctrine initially protected only written works, but legislative bodies and courts expanded the doctrine to include tangible expressions in music, photography, art, and choreography, among other things.² In the last one hundred years, it has extended protection to sound recordings,³ movies,⁴ and audiovisual recordings.⁵ Recently, the United States Congress, acting upon the recommendations of the National Commission on New Technological Uses of Copyrighted Works (CONTU),⁶ enacted the Computer Software Copyright Act of 1980.⁷ The Act extends copyright protection to the newest technological innovations in human expression—computer programs.

It is the purpose of this Note to examine the Computer Software Copyright Act of 1980 (hereinafter, the "Software Act") and to assess its effectiveness in protecting the software industry and the proprietary rights of software manufacturers with respect to the development of the personal computer. This Note will suggest actions that Congress and the software industry should take to increase the

1. NATIONAL COMM'N ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS, FINAL REPORT 9 (1978) [hereinafter cited as CONTU REPORT].

2. 17 U.S.C. § 102 (Supp. IV 1980).

3. *Id.*

4. *Id.*

5. *Id.*

6. See CONTU REPORT, *supra* note 1.

7. 17 U.S.C. §§ 101, 117 (Supp. IV 1980), *as amended by* the Computer Software Copyright Act of 1980, Pub. L. No. 96-517, 94 Stat. 3015.

effectiveness of the Software Act and to prevent widespread, unauthorized duplication of personal computer software.

I. HISTORY OF THE PIRACY PROBLEM

Software piracy was not a problem when computers were a novelty and were available only to researchers and government officials who worked for institutions with sufficient financial resources to purchase and maintain the machines.⁸ Scientists who were anxious to advance computer technology freely shared information among their colleagues.

The successes of these pioneers, however, reduced the price of computers dramatically. During the past thirty years, the successive inventions of the transistor circuit, the integrated circuit, and the silicon microchip decreased the size and price of computers, and the United States has become extremely dependent on computers and, therefore, on computer software.⁹ Computer software is a valuable and marketable consumer product. The economic value of many computer programs and the relatively low risk of penalty have created a powerful incentive to steal other people's work. With the technological sophistication of even the smallest computers, and the negligible duplication costs, there are few practical or legal barriers inhibiting or preventing a "pirate" from copying a computer program.

The losses caused by program piracy are potentially enormous. Programs may cost millions of dollars to create and may be worth millions of dollars to the owners. For example, twenty years ago American Airlines spent \$30 million developing a program for a passenger reservation system.¹⁰ For obvious financial and competitive reasons, a corporation such as American Airlines would not wish its program to be pirated by a rival airline. Programs involving secret, industrial processes or confidential marketing or business planning strategies are also often extremely valuable. Firms have strong monetary incentives, therefore, to prevent piracy and the duplication of costly computer programs. Furthermore, there is little dispute that it is in our national and economic interests to protect an author/owner's rights in computer programs.¹¹ To neglect to pro-

8. Comment, *The Protection of Property Rights in Computer Software*, 14 AKRON L. REV. 85, 87-88 (1980). See Nimtz, *Development of the Law of Computer Software Protection*, 61 J. PAT. OFF. SOC'Y 3 (1979).

9. *Id.* at 4-7.

10. M. GEMIGNANI, *LAW AND THE COMPUTER* 81 (1981).

11. Ringer, *The Unfinished Business of Copyright Revision*, 24 U.C.L.A. L. REV. 951, 976 (1977).

vide necessary protections provides a powerful disincentive to create new computer works and inhibits the advancement of the computer sciences.¹²

In 1976, the personal computer was developed. The development of the personal computer enabled individuals and small businesses to purchase powerful computers at relatively low prices.¹³ Since then, an estimated \$1.5 billion in computers have been sold,¹⁴ and market analysts predict that sales will reach \$5 billion per year by 1985.¹⁵

A whole new software industry has developed around the personal computer. Instead of programs being customized for individual users, the marketed programs tend to be standardized and designed to meet common purchaser needs. The computer programs that are currently marketed are varied and include programs for video games, programs for automatic flight systems, and programs for business planning. The basic idea is to allow a computer owner who has neither the time nor the skill nor the inclination to write or pay for his or her own customized programs to obtain sophisticated, easy to operate programming at a relatively low price. In other words, personal computer and software manufacturers are doing for computerization today what Henry Ford did for automobiles 70 years ago.

The miniaturization and proliferation of computers created, however, a whole new set of software protection problems unforeseen by early software protective devices and ineffectively dealt with by the Software Act.

An apt analogy to the current piracy problem is made by comparing losses suffered from unauthorized duplication of personal computer software to losses motion picture and television producers suffer when their products are taped on home video machines. In the now famous "Betamax case," *Universal City Studios v. Sony*

12. CONTU REPORT, *supra* note 1, at 11.

13. Apple Computer, named after the fruitarian dietary habits of its founder, was the first to bring computer power to the common man. Apple's Chairman, Steve Jobs, reportedly has the motto, "Don't trust a computer you can't lift." He should have added, "or, that you can't afford." Apple's low prices and state-of-the-art innovations allowed the company to ship approximately \$350 million in personal computers to individuals and small businesses in fiscal 1981. See generally Uttal, *The Coming Struggle in Personal Computers*, FORTUNE, June 29, 1981, at 88.

14. *Id.* at 84. Sales of personal computers are expected to reach 3 million units in 1982. Some industry insiders predict, perhaps optimistically, that world-wide sales will reach 50 million units by 1985. See *To Each His Own Computer*, NEWSWEEK, Feb. 22, 1982, at 50.

15. *Id.*

Corp. of America,¹⁶ the Ninth Circuit Court of Appeals held that manufacturers of blank tapes and video recording equipment were liable to the motion picture industry for losses sustained from the use of home recording equipment.¹⁷ The problem arises when viewers tape movies or shows in which filmmakers have invested millions of dollars, and the broadcasters are therefore not sure how to set their advertising rates because no one is sure how many people will view the broadcast at any given time.¹⁸ Furthermore, the broadcaster loses residual profits when the show is rebroadcast because if people have the show on tape, they are assumed to be less likely to watch it at its rescheduled time.¹⁹ Since audiovisual equipment is capable of editing out commercials, advertisers are uncertain as to whether they are receiving a return on their investments, and the major source of income for the television industry is consequently threatened.²⁰ Perhaps the problem most closely analogous to the software piracy dilemma is that filmmakers lose potential sales of videotapes because customers are able to "steal" the film off the air for the price of a blank tape rather than pay the price of the authorized tape.²¹

The unauthorized duplication of computer programs results in similar losses for software manufacturers.²² The nearly ubiquitous personal computer²³ has created a tremendous market for software, but the sophisticated technology of these computers has also enabled personal computer owners to avoid paying the price of software. For the price of a blank disc, which is approximately four dollars,²⁴ a computer operator may copy a program retailing for hundreds of dollars on the open market.²⁵ One manufacturer of a popular financial management program selling for \$250 recently stated that three of his programs were copied illegally for every two he sold.²⁶ He had no accurate estimate on the amount of money his firm was losing, but he estimated it to be in the millions of dollars.²⁷ A loss from program piracy also comes from competing firms stealing one another's product and then distributing it on a mass scale.

16. 659 F.2d 963 (9th Cir. 1981), *cert. granted*, 50 U.S.L.W. 3982 (June 14, 1982).

17. *Id.*

18. *Id.*

19. *Id.*

20. *Id.*

21. *Id.*

22. Alexander, *Crackdown on Computer Capers*, TIME, Feb. 8, 1982, at 60-61.

23. See *supra* note 13 & 14.

24. See *supra* note 22, at 61.

25. *Id.* at 60.

26. *Id.* at 61.

27. *Id.*

And a potentially greater loss comes from individuals copying a program for their personal use and, thus, not purchasing the program from the copyright holder.

Any effective protection accorded software manufacturers must, then, address the needs of the software manufacturer to enjoin competitors from stealing programs and marketing them as their own, and to prevent potential purchasers from copying the program without compensating the manufacturer. It is not clear that the 1980 Act and other current legal devices are capable of effectively providing the protection that software manufacturers require.

II. CURRENT PROTECTION ACCORDED SOFTWARE MANUFACTURERS

As noted above, the current common law and legislative software protection has not been created with the personal computer and mass-marketed software in mind. The issue, then, is whether or not the 1980 Act and current common law protection will adequately protect software manufacturers.

Historically, three bodies of law have been used to protect software: patent, trade secret and contract, and copyright.²⁸ Of these, trade secret and contract protection have been most widely used. The software industry has long discussed patent protection for software, but Congress has never seen fit to resolve the issue of whether computer programs are patentable.²⁹

A. TRADE SECRET AND CONTRACT LAW

Trade secret protection under state trade secret acts provides program owners much more security than copyright law. The essence of trade secret protection is nondisclosure. The owners of programs protected by trade secret require that their employees not divulge protected information as a condition of employment.³⁰ Usually the program owner will also take additional security measures to limit access to the computer.³¹ If the owner/author sells the program or licenses it for use by another user, he will usually require a contractual agreement that the purchaser or licensee will not reveal

28. See Comment, *supra* note 8, at 88; Pope & Pope, *Protection of Proprietary Interests in Computer Software*, 30 ALA. L. REV. 527 (1979).

29. Much has been written on the appropriateness or inappropriateness of patent protection; this Note will not address that subject. See Comment, *supra* note 8, at 87-94.

30. Gemignani, *Legal Protection For Computer Software: The View From '79*, 7 RUTGERS J. OF COMPUTERS, TECH. & L. 269, 304 (1980).

31. *Id.* at 288.

information about the program, except as provided by the contract.³² Very often, the purchaser or licensee will not possess the trained personnel to program, "bring up", or service the computer.³³ Those services are often provided by the seller/licensor as part of the agreement,³⁴ and therefore, the author has direct control over the program and any misappropriation is hampered.³⁵ Trade secret protection is theoretically the most effective form of software protection.³⁶ Not only is any expression of the program protected, whether verbal, written, or recorded, but, unlike copyright or patent protections, the idea behind the program is protected by virtue of the owner/author's monopoly.³⁷

Trade secret protection is probably the method most often used by the owners of customized industrial or commercial computer programs. Trade secret protection does not, however, lend itself to protecting mass-marketed software. The very act of "publishing" the program for marketing purposes eliminates the element of secrecy that trade secret protection requires.³⁸ Furthermore, licensing each user of a home computer software as is often done with industrial users is impracticable.

B. COPYRIGHT LAW AND COMPUTER PROGRAMS

The general consensus among those who have written on the subject is that copyright protection of computer programs, whatever a program's form, is well within the constitutional and doctrinal bounds of copyright law.³⁹ The consensus does not answer, however, the question of whether copyright protection for computer programs is effective, especially with respect to the marketing requirements of mass-produced software. It is possible that a computer program may appropriately fall under copyright protections,

32. See Wydick, *Trade Secrets: Federal Pre-emption in Light of Goldstein and Kewanee*, 55 J. PAT. OFF. SOC'Y 736 (1973) (pt. 1), 56 J. PAT. OFF. SOC'Y 4 (1974) (pt. 2); Comment, *supra* note 8, at 99.

33. Gemignani, *supra* note 30, at 309-10.

34. *Id.* at 310.

35. *Id.* at 309.

36. Comment, *supra* note 8, at 102.

37. See Bender, *Trade Secret Protection of Software*, 38 GEO. WASH. L. REV. 909 (1970).

38. *Id.* at 928 n.118.

39. See CONTU REPORT, *supra* note 1, at 20. See Comment, *Copyright Protection For Computer Programs*, 47 TENN. L. REV. 787 (1980); Gemignani, *supra* note 30, at 281-92 (articles approving copyright protection for computer software). But see Koenig, *Software Copyright: The Conflict Within CONTU*, 18 BULL. COPYRIGHT SOC'Y 340 (1980); CONTU REPORT, *supra* note 1, at 27-37 (Hersey dissent).

yet the author's property rights will not be effectively protected.⁴⁰

Any discussion concerning the effectiveness of copyright law and the 1980 Software Act must consider the nature of a computer program. This consideration is central to the question of whether the Software Act is or is not effective. One legal commentator states, "This question [of the nature of a computer program] is a profound and troubling one, embracing not merely science and law, but philosophy as well. What protection may be accorded a program is integrally bound up with what a program really is, and that is a matter of intense debate."⁴¹ Another commentator states that the issue of whether computer programs are "expressive copyrightable works or a mere machine control unit is at the heart of the software controversy."⁴² Writers on the subject of protections for software seem to agree that the key to developing effective protections is in understanding a program's intrinsic nature.

A definition of programs has been attempted. Section 101 of the Software Act, as recommended by the CONTU report, defines a computer program as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result."⁴³ One legal writer defined a program as "a set of instructions designed to perform a series of tasks of a rote nature, and while each step may not be original with the author, the sequence and arrangement of the steps may involve something more than the bare expression of an underlying idea."⁴⁴ Another writer calls a program a set of instructions for setting computer switches on or off.⁴⁵ Defining a program merely as a set of instructions, however, does not advance our understanding of what type of protections computer programs should receive. To further understand a program's nature, it is necessary to understand how a program is created.

When creating a computer program, an author begins with a specific objective in mind. Theoretically, he develops a "flowchart" of the steps that the computer must take to achieve that objective.⁴⁶ If the author wishes the computer to solve a specific problem, then

40. Most authorities who challenge copyright protection of computer software assert that patent, trade secret, or other forms of protection are more effective.

41. Gemignani, *supra* note 30, at 273.

42. Koenig, *supra* note 39, at 346.

43. 17 U.S.C. § 101 (Supp. IV 1980), as amended by the Computer Software Copyright Act of 1980, Pub. L. No. 96-517, § 10(a), 94 Stat. 3015, 3028.

44. Comment, *supra* note 39, at 796.

45. Gemignani, *supra* note 30, at 271.

46. See generally L. LEVENTHAL & I. STAFFORD, WHY DO YOU NEED A PERSONAL COMPUTER? 105-07 (1981) (The flowchart is sometimes written down, but more often, if the author is experienced, it exists only in his mind).

he may design an algorithm or formula for solving the problem.⁴⁷ The author then writes down a series of instructions to the computer in the "applications" language used to communicate with the computer; FORTRAN,⁴⁸ COBOL,⁴⁹ and BASIC⁵⁰ are the languages most widely used. The "words" of these languages instruct the computer as to what steps it must take in achieving the program's objectives or in incorporating the algorithm. The "words" may instruct the computer to repeat a process, perform a mathematical function, or locate a specific "address" in the memory banks.⁵¹ While the "words" themselves are not directly understandable by the computer's Central Processing Unit (CPU), they are the most practical form in which the program can be put for the author to communicate with the machine.⁵² The program, once in the correct programming language, may then be stored in the computer's memory banks if it has been keyboarded into the computer or it may be placed on a punchcard, magnetic tape, or disc similar to a taped sound recording.⁵³ These storage methods allow easy physical transportation and filing of the program.

Once the program is in a permanent form, the tape, disc, or punchcards may be inserted into an input device which "reads" the magnetized tape or disc or the punchcard code and enters the program into the computer's CPU.⁵⁴ At this preliminary stage, the program has not affected the computer's functions in any way.⁵⁵ If the user wishes, he may recall the program on the computer's output device (a video display terminal or printer) and read a visual representation of the program in its original programming language.⁵⁶ At this point, the recalled program is an exact copy of the author's original expression of ideas or commands. The original expression has merely been electronically recorded and reproduced in a manner similar to a videotape or sound recording.

Once the program has entered the CPU, the computer must translate the "higher" or "applications" language (FORTRAN, COBOL, or BASIC, for example) into a language that the computer

47. Gemignani, *supra* note 30, at 272.

48. This refers to *Formula Translation Language*.

49. This refers to *Common Business Oriented Language*.

50. This refers to *Beginners All-purpose Symbolic Instruction Code*.

51. See R. RUSCH, *COMPUTERS: THEIR HISTORY AND HOW THEY WORK* 36-55 (1969).

52. *Id.*

53. *Id.* at 38-39.

54. *Id.* at 39.

55. See *id.* at 36-55.

56. But see Gemignani, *supra* note 30, at 280 ("The purpose of the computer, however, is generally not to play back the data, but to transform it.").

can use in performing its data processing.⁵⁷ This is accomplished by means of a "compiler" program.⁵⁸ The compiler program translates the higher language into a "binary language" which represents the electromagnetic impulses that actually operate the computer.⁵⁹ The binary language can be represented by two digits: "0" and "1."⁶⁰ The 1 represents the existence of an electromagnetic impulse, and the 0 represents the nonexistence of such an impulse.⁶¹ When an electromagnetic impulse exists, it turns on a switch to a circuit within the CPU. When an impulse does not exist, the switch remains off.⁶² Therefore, the binary language is a code that identifies switches to be turned on or off. The language is intelligible to the computer or to the sophisticated human reader only because each 0 or 1 carries one piece of information which is called a bit; the bit is arranged in a series of bits, called bytes.⁶³ Bits and bytes are intelligible only in terms of their relative positions in the series or among other series.⁶⁴ Thus, by translating the higher language via the compiler program into the binary language, the computer is "brought up" and is able to perform work.⁶⁵ The user, if he desires, may reproduce the binary translation of the computer program on the video display terminal or the printer.⁶⁶ If he is familiar with the internal language of the computer, he can read the program as he would if it were in the higher language or in prose.⁶⁷ If he desires, he may originally write the program in the binary language and bypass the applications language and the compiler program; but that is rarely practical.⁶⁸

The importance of examining the characteristics of a computer program is that it becomes clear that a program, in both its applica-

57. See R. RUSCH, *supra* note 51, at 36-55.

58. L. LEVENTHAL & I. STAFFORD, *supra* note 46, at 55.

59. *Id.*

60. R. RUSCH, *supra* note 51, at 42.

61. *Id.* at 52.

62. *Id.* at 47-52.

63. *Id.* at 44.

The memory consists of many storage places and the input/output section consists of many connections. The basic unit of storage in the memory is called a *word*; we identify a particular word by its address The basic (input/output) connection is called a *port*; each port has a number The internal connections that are used to move (data) from one part of the computer to another . . . are called *buses*.

L. LEVENTHAL & I. STAFFORD, *supra* note 46, at 13-14.

64. R. RUSCH, *supra* note 51, at 44-55.

65. Gemignani, *supra* note 30, at 271-73.

66. This procedure is sometimes necessary when "debugging" a program.

67. All that is required is practice and familiarity with the binary numerical system.

68. See *supra* note 67.

tions and in its binary forms, is a list of instructions. The question, then, is whether the list of instructions is part of the hardware or computer machinery and therefore ineffectively protected by copyright law. It is evident that the computer by itself is unable to perform any work. The instructions as the program are required. That list of instructions in a series of electromagnetic impulses is by its very nature "information." It represents the program author's ideas about how, among an infinite number of ways, the computer is to proceed. Therefore, the program cannot accurately be referred to as "hardware."⁶⁹ It is instead a form of expression.

Because a program is a form of expression, Congress has decided that programs deserve copyright protection.⁷⁰ Since a program is a list of instructions, whether expressed by a series of "0's" and "1's" or by a higher language, the program is protected in any form it might take at any given time.

Copyright thus provides protection for expressions that may be represented in a variety of ways. In the sense that copyright law provides broad protections for computer software, it is effective. In the sense that copyright law actually deters the theft of mass-marketed programs, however, it is not clear that it is effective, simply because the nature of a computer program renders it readily susceptible to theft. The following examines the forms of copyright protections.

Computer software was somewhat protected prior to the enactment of the Software Act. When the need for a program protection first became an issue in the early 1960's, the Copyright Office, receiving no direction from either Congress or the courts, took the initiative. The Copyright Office classified computer programs as "books" for their purposes and, in 1964, the Office extended protection to software.⁷¹

There was, however, no rush to register programs. In the thirteen years following the Copyright Office's invitation to register, only 1,205 programs were actually registered, and of these, 971 were registered by IBM and Burroughs, two of the leading manufacturers of business computers.⁷² During this time, millions of programs were created and distributed.

From the apparent lack of interest, one might reasonably assume that the industry was unconcerned with program protection.

69. See, e.g., Gemignani, *supra* note 30, at 279.

70. UNITED STATES COPYRIGHT OFFICE, COPYRIGHT REGISTRATION FOR COMPUTER PROGRAMS (1964), *reprinted in* 11 BULL. COPYRIGHT SOC'Y 361 (1964).

71. *Id.*

72. CONTU REPORT, *supra* note 1, at 34 (Hersey dissent).

Actually, the state of the technology was such that copyright was not viewed as an optimal protective device.⁷³ Because duplication costs were high⁷⁴ and programs were often unique to individual computers so that mass distribution was precluded, there was little publication and therefore little use for copyright protection.⁷⁵ Program authors often viewed trade secret or patent protections as more appropriate for their purposes.⁷⁶ When a program could be publicized, distributors often hedged their bets by placing a copyright insignia on each copy of the program, thus invoking a common law copyright.⁷⁷

By 1976, computer technology had advanced sufficiently so that computers were being used in every facet of commercial, industrial, and public life.⁷⁸ Standardized programs were common and a separate software industry existed which specialized in developing and distributing programs on a mass scale.⁷⁹ When CONTU published its final report in 1978, the computer industry was more than ready for definitive action by Congress.⁸⁰

III. THE COMPUTER SOFTWARE COPYRIGHT ACT OF 1980

A. EFFECT ON COMPUTER PROGRAMS

Upon receiving CONTU's report, Congress enacted without modification the Commission's recommendations as the Computer Software Copyright Act of 1980.⁸¹ The Act amended 17 U.S.C. § 101

73. During the 1950's and 1960's, software was not generally sold separately from the computer hardware. I.B.M. initiated the concept of "bundling," in which the company sold the main frame equipment and provided customized software for free. I.B.M.'s great success led other manufacturers to adopt the same marketing strategy. Groups of users were encouraged to pool software resources. The sharing of software reinforced the belief that software was not vested with property rights. The emergence of independent software industries in the early 1960's, however, soon ended the concept of sharing. See Nimtz, *supra* note 8, at 7-8.

74. *Id.* at 7-8.

75. *Id.* at 7.

76. *Id.* at 9.

77. *Id.* at 8-9.

78. *Id.* at 9. See Uttal, *supra* note 13.

79. Nimtz, *supra* note 8.

80. CONTU REPORT, *supra* note 1, at 11.

81. See *supra* note 7. See also CONTU REPORT, *supra* note 1, at 26-37 (Hersey dissent). Although Congress did not alter CONTU's recommendations when passing the 1980 Software Act, the Commission itself was not without dissenters. Commissioners Hersey and Karparkin both vigorously disputed the Commission's final recommendations. Commissioner Hersey, with Karparkin concurring, challenged the appropriateness of using copyright law to protect computer programs. He indicated his belief that a computer program was not a "writing," as required by copyright doctrine (at least a computer program was not a writing in the object phase), but was a "mechani-

by adding the following definition of a computer program to the list of existing statutory definitions: "A 'computer program' is a set of statements of instructions to be used directly or indirectly in a computer in order to bring about a certain result."⁸² The Act also repealed the "holding section" and substituted a new section 117 as follows:

§117 Limitations on exclusive rights: computer programs. Notwithstanding the provisions of section 106, it is not an infringement for the owner of a copy of a computer program to make or authorize the making of another copy or adaptation of that computer program provided:

(1) that such a new copy or adaptation is created as an essential step in the utilization of the computer program in conjunction with a machine and that it is used in no other manner, or

(2) that such new copy or adaptation is for archival purposes only and that all archival copies are destroyed in the event that continued possession of the computer program should cease to be rightful.

Any exact copies prepared in accordance with the provisions of this section may be leased, sold, or otherwise transferred, along with the copy from which such copies were prepared, only as part

cal device, which on constitutional grounds and for reasons of social policy ought not to be copyrighted." *Id.* at 27. Hersey also emphasized that even if a computer program is a writing, it is not copyrightable because it is addressed to and communicates with machines instead of human beings. He believes that a "society that accepts in any degree such equivalences of human beings and machines must become impoverished in the long run in those aspects of the human spirit which can never be fully quantified and which machines . . . will never be able to experience, never be able to bring to life, never be able therefore to communicate." *Id.* at 37. Hersey did not address the possible reply that humans are *capable* of reading the program. He retorted that human beings have the capability of reading a binary program in the same way that a "technician can 'read' the equally mechanical printed circuits of a television receiver." *Id.* at 30. Hersey's retort ignores the obvious practical distinction that a printed circuit actually performs work, i.e., it conducts electromagnetic impulses. A computer program does not itself conduct electromagnetic impulses; it merely sets up the circuit by providing the computer with information on what switches to open and close. The program, if anything, is the combinations and series of electromagnetic impulses themselves. Furthermore, if a printed circuit can be said to spell out a specific message to the reader (i.e., a repairman), there is no reason why the circuit itself could not be a writing in a different language. Hieroglyphics are not understandable to people other than experts trained in the language, yet if a linguist were to write an essay in hieroglyphics, there is currently nothing to prevent him from receiving copyright protection. That a writing be in a specific language is not currently a requirement of copyright law. Hersey's suggestion is that Congress not grant copyright protection to a computer program "in the form in which it is capable of being used to control computer operations." *Id.* at 37.

82. 17 U.S.C. §§ 101, 117 (Supp. IV 1980); See CONTU REPORT, *supra* note 1, at 26-37.

of the lease, sale, or other transfer of all rights in the program. Adaptations so prepared may be transferred only with the authorization of the copyright owner.⁸³

B. EFFECT ON PREVIOUSLY EXISTING PROTECTION

As noted above, software manufacturers need protection against two types of piracy: (1) competitors who steal programs and market them as their own; and (2) individuals who copy a program for personal use rather than purchase an authorized copy.

After investing thousands or millions of dollars in a program, firms are understandably distressed when a competitor introduces the identical program under a different title.⁸⁴ The firm stands to lose in profits whatever the competitor earns from sales of the pirated programs. Furthermore, the copyright holder stands to lose its investment in research and development.⁸⁵ The only major costs to the pirate are the costs of distribution and of duplication which are minimal.⁸⁶ This factual situation was the setting in *Data Cash Systems, Inc. v. JS&A Group, Inc.*,⁸⁷ and again in *Tandy Corp. v. Personal Micro Computers, Inc.*⁸⁸ It is likely, if a software firm may be presumed to watch its competitors' products closely, that because of the wide-scale distribution and resulting publicity, a firm will be able to detect copyright infringement.

Prior to the 1980 Software Act, however, protection was only given to the first situation—that of the competitor/pirate. The second situation had yet to become a serious problem. Most of the litigation up to the present dealt with the competitor/pirate problem.

In *Data Cash*, plaintiff Data Cash brought an action for copyright infringement and unfair competition against the defendants, JS&A, for misappropriating plaintiff's program for a computerized chess game, known as CompuChess.⁸⁹ The computer program was designed and developed for plaintiffs, and then placed onto a "Read Only Memory" (ROM) silicon chip incorporated within the computer's circuits.⁹⁰ No copyright notice was affixed on the ROM or the game itself, although copies of the source program were affixed with such a notice.⁹¹ Plaintiff claimed a common law copyright on

83. See *supra* note 7; see also CONTU REPORT, *supra* note 1, at 26-37.

84. Alexander, *supra* note 22, at 61.

85. *Id.*

86. *Id.*

87. 480 F. Supp. 1063 (N.D. Ill. 1979).

88. 524 F. Supp. 171 (N.D. Cal. 1981).

89. 480 F. Supp. at 1063.

90. *Id.* at 1066.

91. *Id.* at 1067.

the ROM.⁹² Although what followed was uncertain, the court indicated that there was reason to believe that plaintiff's ROM was removed from a CompuChess game in Hong Kong, connected with a computer interface, and decoded.⁹³ The plaintiff speculated that a computer printout was made and given to someone to produce an identical ROM or that the information obtained by the computer interface was dumped in a "programmable read only memory" (PROM) and provided to a ROM manufacturer.⁹⁴ Although the *Data Cash* court assumed that the defendant's ROM was a direct copy of the plaintiff's ROM, the court held that the defendant had a complete defense as a matter of law.⁹⁵ The court applied the law of section 117 of the 1976 Act as it stood prior to its being amended by the 1980 Software Act.⁹⁶ The court held that because the program embodied in the ROM was not in a form in which one could "see and read" it with the naked eye, the ROM was not a copy under the pre-1980 Software Act law.⁹⁷ The court instead held that a program in its "object phase" is a mechanical tool or machine part.⁹⁸

The *Data Cash* case was decided under the law as it existed in 1977, even though the decision was not given until 1979.⁹⁹ Some commentators regard the language of the 1980 Software Act as a legislative reversal of the *Data Cash* court's denial of protection to the object code.¹⁰⁰ It is doubtful that this is so since the language of the 1980 Software Act was enacted without change from the recommendations of the CONTU Report.¹⁰¹ This view regarding a legislative reversal is even less persuasive when it is noted that the *Data Cash* court was aware of the proposed language of the CONTU Report, which was published well before the court's decision.¹⁰² If the court had actually believed that Congress intended the object code to be protected by copyright law, then the court would likely have noted that intent in the *Data Cash* decision.

Nevertheless, the *Data Cash* court was promptly challenged by

92. *Id.* at 1068.

93. *Id.* at 1071 n.14.

94. *Id.*

95. *Id.* at 1066.

96. *Id.* at 1066-67.

97. *Id.* at 1069.

98. *Id.*

99. *Id.* at 1066.

100. Stern, *Another Look at Copyright Protection of Software: Did the 1980 Act Do Anything for the Object Code?*, 3 COMPUTER/L.J. 9 (1982).

101. 17 U.S.C. §§ 101, 117 (Supp. IV 1980); See CONTU REPORT, *supra* note 1.

102. *Data Cash Sys., Inc. v. JS&A Group Inc.*, 480 F. Supp. 1063, 1067 n.5 (N.D. In. 1979).

the court in *Tandy*.¹⁰³ The facts of the *Tandy* case were similar to those in *Data Cash*.¹⁰⁴ Plaintiff Tandy alleged that defendant Personal Micro Computers had copied Tandy's ROM chip program, changing only those items which identified the program as a Tandy product.¹⁰⁵ There was no dispute between the parties that the defendant's program was identical to the plaintiff's.¹⁰⁶ The defendant contended, however, that ROM chips were not "copies of the original computer program within the meaning of the federal copyright laws" under the 1976 Act.¹⁰⁷ The *Tandy* court, in denying defendant's motion to dismiss, held that a silicon chip is a "tangible medium of expression" within the meaning of the 1976 Act.¹⁰⁸ It did not reach the question of whether a ROM chip was a copy within the meaning of the pre-1978 law¹⁰⁹ but held that the law prior to the 1980 Software Act was not intended "to provide a loophole by which someone could duplicate a computer program fixed on a silicon chip."¹¹⁰ The *Tandy* court took notice of the *Data Cash* decision, but it stated that it was "not compelled to follow the reasoning" of the *Data Cash* court and was not "convinced of the merits of the basis of that decision."¹¹¹

The *Tandy* court indicated its belief that making a copy of a visual display or printout was an unauthorized duplication of the source program and within the reach of copyright laws,¹¹² because there was evidence that the defendant had made the ROM copy by first taking a visual display or printout of the pirated program. The *Data Cash* court, admittedly having less evidence as to the procedure by which the ROM program was copied, ignored this latter possibility of infringement on *Data Cash*'s copyright.¹¹³

The *Tandy* decision reflects one court's willingness to extend copyright protection to computer programs in the object phase of the program.¹¹⁴ The *Data Cash* decision, which held to the contrary, was criticized severely, and that court's reasoning was even implic-

103. *Tandy Corp. v. Personal Micro Computers, Inc.*, 524 F. Supp. 171, 171 (N.D. Cal. 1981).

104. *Id.*

105. *Id.* at 173.

106. *Id.* at 172-73.

107. *Id.* at 173.

108. *Id.*

109. *Id.* at 174.

110. *Id.* at 175.

111. *Id.*

112. *Id.*

113. *Data Cash Sys., Inc., v. JS&A Group, Inc.*, 480 F. Supp. 1063 (N.D. Ill. 1979).

114. *Tandy Corp. v. Personal Micro Computers Inc.*, 524 F. Supp. 171 (N.D. Cal. 1981).

itly questioned by the federal court that affirmed the decision.¹¹⁵ In both cases, however, there was never any dispute that source programs visible to and readable by the naked eye were within the scope of federal copyright protection prior to the 1980 Software Act.

The 1980 Software Act provides Congressional approval of copyright protection for software. But since the Copyright Office granted that protection prior to Congress's enactment, and since copyright holders successfully invoked copyright protection under the prior law, it is not clear that anything has changed. In the competitor/pirate situation, copyright holders now have the assurance of Congressional approval. They do not have to fear that protections will be rescinded. While there are, however, additional *assurances*, there are no additional *protections*. The law remains essentially as it was before the 1980 Software Act. Copyright owners are subjected to the same advantages and disadvantages of copyright protection just as they were under the prior law.

The advantages of copyright protection are clear. Once a program is registered, anyone who copies, duplicates, redistributes, or otherwise infringes upon the copyright holder's interest in the program without the express permission of the holder may be held civilly or criminally liable for that infringement.¹¹⁶ This gives the copyright holder a limited monopoly on his product and an incentive to publish and distribute his work. He is assured of the availability of a remedy should someone infringe upon his rights.¹¹⁷

This doctrine works well with expressions that are in a written, audible, or visual form, such as printed matter or sound, audiovisual or film recordings. In those situations, it is relatively easy to detect when infringement has occurred.¹¹⁸ Once infringement is discovered, it is a relatively simple matter to prove that it exists. Assuming there are no evidentiary or procedural problems, one must only compare the protected expression with the disputed copy. The infringement will usually be obvious on its face. For example, if one were to compare a pirated recording of one's favorite musical group, say, Led Zeppelin, with an authorized copy, one could easily tell that the two recordings are copies of the same performance. Led Zeppelin's "Stairway to Heaven" will always sound like "Stairway to Heaven," and a court or jury making the comparison will have little difficulty concluding that there was an infringement if one recording is unauthorized. The only remaining problem is to show that one

115. *Data Cash Sys., Inc. v. JS&A Group, Inc.*, 628 F.2d 1038, 1041 (7th Cir. 1980).

116. 17 U.S.C. §§ 501-510 (Supp. IV 1980).

117. *Id.*

118. See Stern, *supra* note 100.

recording was in fact pirated. Similarly, as in *Universal City Studios v. Sony Corp. of America*,¹¹⁹ it is easy to compare the alleged pirated copy of a film or television show with the original.

Computer software, however, by its very nature does not subject itself to such easy comparisons with pirated copies. There may be few audio or visual comparisons to be made between an original and an unauthorized copy. Certainly, evidence of misappropriation is easily obtainable as at least one writer has demonstrated.¹²⁰ Comparisons between originals and copies, however, are not as easily made, although it is arguably true that pirated copies of programs, especially of personal computer software, are made as easily as one would tape a record album or videotape a television movie. Therefore, even though copyright protection for software is appropriate, it no more effectively protects a software manufacturer's property rights than it protects the rights of record companies or film studios.

The individual pirate may present a different problem. Certainly, if a software firm discovers that an individual has surreptitiously copied its program, it may file suit for copyright infringement against that individual.¹²¹ From a practical point of view, however, the firm has little to gain from pursuing such an action.¹²² Assuming a favorable judgment, the recovery probably would not be enough to cover legal costs.¹²³ The greatest benefit from suing an individual for copyright infringement would likely be publicity that might discourage potential customers from pirating programs instead of buying authorized copies. That is a premise yet to be supported by any tangible evidence.¹²⁴ It is quite possible that those persons owning personal computers are sophisticated enough to realize that the probability of being sued for copyright infringement is very low. The deterrent value of suing individuals is very suspect.¹²⁵

119. 659 F.2d 963 (9th Cir. 1981), *cert. granted*, 50 U.S.L.W. 3982 (June 14, 1982) (No. 81-1687).

120. Stern, *supra* note 100, at 11.

121. 17 U.S.C. § 501 (Supp. IV 1980).

122. In the similar circumstances of the *Betamax* case, however, an individual was named as a defendant, along with the corporate defendants. The purpose was simply to establish that individuals were in fact illegally videotaping copyrighted materials. No attempt was made to obtain damages from this individual, although he was joined to the action.

123. Piracy of phonorecords by individuals onto cassette tapes is so commonplace that the recording industry has long disregarded any notion of prosecuting individuals, despite the Sound Recording Act of 1971, Pub. L. No. 92-140, 85 Stat. 391 (1971). See Ladd, *Home Recording and Reproduction of Protected Works*, A.B.A. J. 42 (Jan. 1982).

124. *Id.*

125. *Id.* at 43.

Therefore, it is unlikely that a software firm will waste its resources on filing a suit.¹²⁶

Thus, it is apparent that with regard to surreptitious copying of computer programs by individuals, copyright law provides little *practical* protection. As recently stated by the current Register of Copyrights regarding unauthorized copying of protected audiovisual works, "[W]e must decide whether we can devise and use [a method for collecting payments], or whether we must throw up our hands and accept all home copying as lawless but uncontrollable, or lawful because it is uncontrollable."¹²⁷

Given the potential for the computer industry, piracy of software may, in terms of economic loss, prove to be a much more serious problem than piracy of videotapes. As suggested by the Register of Copyrights, the copyright problems might be unimaginable when homes have arrays of "wall-sized television screens with stereophonic sound and three-dimensional display, and computers with holographic display, plugged into external sources of programs and data bases delivered by direct broadcast satellite, multipoint distribution service, and cable."¹²⁸ Although the Computer Software Copyright Act provides a legal doctrine to protect against infringement, it falls woefully short of providing any practical protection from widespread program piracy.

IV. PROPOSAL

The Computer Software Copyright Act provides protections for computer software if infringement can be detected and proved.¹²⁹ Because enforcement of the Act is impractical, however, Congress should amend it. Criminal penalties for copyright infringement for "commercial advantage and financial gain" should be stiffened with respect to computer programs.

I suggest that section 506 of the 1976 Copyright Act be amended as follows:

(a) **Criminal Infringement.** Any person who infringes a copyright willfully and for purposes of commercial advantage or private financial gain shall be fined not more than \$10,000 or imprisoned for not more than one year, or both: provided, however, that any person who infringes willfully and for purposes of commercial advantage or private financial gain the copyright in a sound recording afforded by subsections (1), (2), or (3) of section 106 or the copyright in a mo-

126. *Id.*

127. *Id.* at 42.

128. *Id.* at 43.

129. See *supra* notes 116-20 and accompanying text.

tion picture afforded by subsections (1), (3), or (4) of section 106 or the copyright in a computer program afforded by subsection (1) of section 106 shall be fined not more than \$25,000 or imprisoned for not more than one year, or both, for the first such offense and shall be fined not more than \$50,000 or imprisoned for not more than two years, or both, for any subsequent offense (suggested amendment underscored).

The above proposal would strengthen the criminal deterrent. By increasing the penalties for willful copyright infringement of programs so as to correspond to the seriousness of the potential economic loss, Congress would firmly publicize the dangers of misappropriating programs. Assuming that stronger penalties provide a stronger deterrent, increased criminal sanctions should dampen the wholesale piracy that is now occurring.

Criminal sanctions alone, however, will not sufficiently protect the property interests of a copyright holder. In addition to criminal sanctions and standard civil remedies, the software industry must rely upon self-imposed measures. There is a need for computer users to be able to duplicate uncopyrighted programs and to be able to create their own. For these reasons, it is unwise to impose limitations on the technological copying abilities of computer hardware. Rather, it is better to ensure that copyrighted programs are less vulnerable to piracy.

Therefore, after discussion with members of the software industry, Congress should enact a new section for computer programs analogous to section 115 of the 1976 Act which requires compulsory licenses for making and distributing phonorecords.¹³⁰ This new section might read as follows:

§ _____. Scope of exclusive rights in computer programs: Compulsory license for making and distributing software.

In the case of computer programs, the exclusive rights provided by clause (1) of section 106, to make and to distribute copies of such works, are subject to compulsory licensing under the conditions specified by this section.

(a) Availability and Scope of Compulsory License.

(1) When copies of a computer program have been distributed to the public in the United States under the authority of the copyright owner, any other person may, by complying with the provisions of this section, obtain a compulsory license to make and distribute copies of the work. A person may obtain a compulsory license only if his or her primary purpose in making copies of a computer program is to distribute them to the public for private use. A person may not obtain a compulsory

130. 17 U.S.C. § 115 (Supp. IV 1980).

license for use of the work in the making of copies duplicating a computer program fixed by another, unless: (i) such computer program was fixed lawfully; (ii) the making of the copies of the program was authorized by the owner of copyright in the computer program or, if the computer program was fixed before _____ (date) _____, by any person who fixed the computer program pursuant to an express license from the owner of the copyright in the program or pursuant to a valid compulsory license for use of such work; (iii) where the computer program is protected by a "lock" code to prevent copying of the program, the person obtaining a compulsory license is first authorized by the express license of the copyright holder to use the code; and (iv) where the "lock" code or any portion of the computer program is protected by any "scrambling" device, the person obtaining the compulsory license is first authorized by express license by the copyright holder to "unscramble" that portion of the computer program.

(2) A compulsory license grants the holder the privilege to make alterations of the work to the extent necessary to conform to the specific requirements of the computer system involved, but the alterations shall not change the fundamental character of the work, and shall not be subject to protection as a derivative work under this title, except with the express consent of the copyright owner.

(b) Notice of Intention to Obtain Compulsory License.

(1) Any person who wishes to obtain a compulsory license under this section shall, before or within thirty days after making, and before distributing any copies of the computer program, serve notice of intention to do so on the copyright owner. If the registration or other public records of the Copyright Office do not identify the copyright owner and include an address at which notice can be served, it shall be sufficient to file the notice of intention in the Copyright Office. The notice shall comply, in form, content, and manner of service, with requirements that the Register of Copyrights shall prescribe by regulation.

(2) Failure to serve or file the notice required by clause (1) forecloses the possibility of obtaining a compulsory license and, in the absence of a negotiated license, renders the making and distribution of computer programs actionable as acts of infringement under section 501 and fully subject to the remedies provided by sections 502 through 506 and 509.

(c) Royalty Payable under Compulsory License.

(1) To be entitled to receive royalties under a compulsory license, the copyright owner must be identified in the registration or other public records of the Copyright Office. The owner

is entitled to royalties after being so identified, but is not entitled to recover for any copies previously made and distributed.

(2) Except as provided by clause (1), the royalty under a compulsory license shall be payable for every copy of the computer program made and distributed in accordance with the license. For this purpose, a copy of a computer program is considered "distributed" if the person exercising the compulsory license has voluntarily and permanently parted with its possession. With respect to each copy of a computer program, the royalty shall be \$_____.

(3) Royalty payments shall be made on or before the twentieth day of each month and shall include all royalties for the month next preceding. Each monthly payment shall be made under oath and shall comply with requirements that the Register of Copyrights shall prescribe by regulation. The Register shall also prescribe regulations under which detailed cumulative annual statement of account, certified by a certified public accountant, shall be filed for every compulsory license under this section. The regulations covering both the monthly and the annual statements of account shall prescribe the form, content, and manner of certification with respect to the number of copies of a computer program made and the number of copies distributed.

(4) If the copyright owner does not receive the monthly payment and the monthly and annual statements of account when due, the owner may give written notice to the licensee that, unless the default is remedied within thirty days from the date of the notice, the compulsory license will be terminated. Such termination renders either the making or the distribution, or both, of all copies of computer programs for which the royalty has not been paid, actionable as acts of infringement under sections 502 through 506 and 509.

Enactment of a new section similar to the one suggested above would require the general approval of the software industry. Many software firms currently include special coding schemes on their programs designed to stop copying.¹³¹ These "lockcodes" are, however, often broken by computer operators, many of whom are often mere hobbyists.¹³² Furthermore, as some programs are very expensive, and as the discs or tapes on which they are embodied are often easily damaged, the hardware manufacturers often include information instructing the operator how to make copies of programs for safe keeping.¹³³ Therefore, special codes alone do not appear to be preventing wholesale piracy. Software firms should continue to in-

131. See Alexander, *supra* note 22, at 61.

132. *Id.*

133. *Id.*

clude code schemes on their programs. The industry should, however, develop encryption devices that scramble the lock code into gibberish unless the duplicating computer has a corresponding decoder. Decoders should be supplied only to licensed software distributors, so that legitimate program purchasers would be able to obtain a duplicate of their new program, but would be unable to produce the duplicate themselves. If the above-suggested legislation is enacted, Congress would provide software firms and software distributors with a procedure to limit the availability of encryption and decoding devices. It would be illegal to unscramble the security code on the computer program without a license from the federal government and express permission from the copyright holder.

By providing security codes on the program, an operator is unable to duplicate the program unless he knows the code. As mentioned above, these codes are easily unraveled by computer buffs. These operators however, cannot, unscramble gibberish. By scrambling the code on the program and then using decoders to unscramble that specific portion of the program, the operator cannot copy the program unless he uses a decoding device. Software firms could place the scrambled code on their programs, and then they could limit use of the decoder to themselves or licensed distributors. This procedure would limit copying only to those people with authority to do so. Congress would provide the procedure for becoming a licensed distributor and duplicator much as it has authorized compulsory licenses to those persons wishing to reproduce and distribute phonorecords.¹³⁴

Naturally, a copyright holder will not go through the added expenses of encrypting his security code unless the program is potentially valuable. All other programs would rely on standard copyright protection if the author so chooses. The above suggestion would avoid the problem of being overbroad and of inhibiting the creation and duplication of programs in which the owner had little economic interest. It would save a software firm's important products from piracy, and it would not increase the price of a blank disc or of hardware, as has been suggested by the motion picture industry with respect to blank video tapes and videotape machines.¹³⁵

V. CONCLUSION

The Computer Software Copyright Act of 1980 provides appropriate copyright protection for computer programs. That protection however, is, neither effective nor practical. The process of detecting

134. 17 U.S.C. § 115 (Supp. IV 1980).

135. Ladd, *supra* note 123, at 45.

copyright infringement and then proving it and obtaining a recovery is too difficult and uncertain to be of great value, other than in limited circumstances. Software manufacturers might best be protected by increased criminal sanctions for unauthorized duplication and by using encryption to provide increased security for the duplication codes. Congress should provide a system of licensing persons authorized to duplicate and distribute programs much as it has provided a system for licensing persons wishing to duplicate and distribute sound recordings.

Mickey T. Mihm

