

COPYRIGHT PROTECTION FOR COMPUTER SOFTWARE: AN INTERNATIONAL VIEW

I. INTRODUCTION

The best method for protection of computer software¹ has been a topic of debate and considerable controversy² during the past few decades both in the United States,³ and in technologically advanced countries throughout the world.⁴ Current legal theories of protection include patent, trade secret and copyright law. Although each theory has its particular merits,⁵ this Note will focus on the growing trend toward copyright protection for computer software.⁶

The United States is the only nation that explicitly protects computer programs by copyright law.⁷ However, copyright laws

1. "Software" can have various meanings. This survey equates software with the definition of computer programs given in the U.S. Copyright Act, 17 U.S.C. § 101 (1982). Computer programs are described in the Act as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." *Id.*

2. Kolle, *Computer Software Protection—Present Situation and Future Prospects*, 13 COPYRIGHT 70 (1977). Kolle notes the world wide confusion over the protection for computer software.

The debate on both the possibilities and appropriate form for protection of software has now been continuing for nigh on fifteen years. . . . Despite the harmonization of national legislation . . . we are still faced with a whole gamut of divergent solutions ranging from the full recognition of the patentability of software and its protection under copyright, through various intermediary solutions, to a radical refusal of any protection under intangible property law.

Id. at 70.

3. For a bibliography of articles from 1958 to 1978, see Nimtz, *Development of the Law of Computer Software Protection*, 61 J. PAT. OFF. SOC'Y 3, 26-43 (1979); see also Goldberg, *Software, Copyright and Trade Secrets: The Question of Preemption of State Laws by the Copyright Law*, in *Practising Law Institute*, Pub. No. 159, 1 SOFTWARE PROTECTION AND MARKETING 608-15 (1983) (citing 68 articles); Gemignani, *Legal Protection For Computer Software: The View From '79*, 7 RUTGERS J. COMPUTERS & THE L. 269 n.1 (1980) (citing 9 articles).

4. Each monthly issue of COPYRIGHT contains a list of articles received by the World Intellectual Property Organization from scholars throughout the world that deal with software protection.

5. See Bender, *Computer Software Protection*, in *COMPUTER LAW: EVIDENCE AND PROCEDURE*, 4A-1 (Bender, 1982). Bender recites an exhaustive list of the advantages and disadvantages of patent, copyright, and trade secret protection for computer software. See also *infra* text accompanying notes 24.

6. See *infra* notes 84-115 and accompanying text.

7. The United States implicitly extended copyright protection to computer software in the Copyright Act of 1976, 17 U.S.C. §§ 101-810 (1982) (effective Jan. 1, 1978). The National Commission on New Technological Uses of Copyrighted Works (CONTU), created by Congress to revise comprehensively the copyright laws of the United States, stated in its final report that "[i]t is clear that . . . those who have administered portions of the 1909 Act concur

have no extraterritorial operation.⁸ Thus, acts of infringement⁹ that occur outside of the jurisdiction of the United States are not

in the position that programs are copyrightable. Action either by Congress or the courts would be necessary to change this." FINAL REPORT OF THE NATIONAL COMMISSION ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS 16 (1978) [hereinafter cited as CONTU].

The Software Copyright Act of 1980, Pub. L. No. 96-517, § 10, 94 Stat. 3028-29 (Dec. 12, 1980), also did not expressly state that computer programs were copyrightable works. However, the Congressional intent to include computer programs as copyrightable works is demonstrated by the following amendments. Section 101 of the Act was amended by the addition of the word "computer program," and a definition of that term. Section 117 of the Act was amended by the addition of certain limitations on exclusive rights pertaining specifically to computer programs.

The courts have recognized the 1980 amendment as placing computer programs in that group of works that enjoys copyright protection. In *Williams Electronics, Inc. v. Artic International, Inc.*, 685 F.2d 870 (3d Cir. 1982), the court stated "copyrightability of computer programs is firmly established after the 1980 amendment to the Copyright Act, and . . . we need not consider the scope of prior Acts. . . ." *Id.* at 875.

8. 3 M. NIMMER, NIMMER ON COPYRIGHT § 17.02 (1984). This principle is subject to a number of qualifications. First, if an act of infringement occurs within the United States, although such act is completed in a foreign jurisdiction those parties that contributed to the act within the United States may be rendered liable under U.S. Copyright law. See *Ahbez v. Morris & Co.*, 548 F. Supp. 664 (S.D.N.Y. 1982); *Ricordi & Co. v. Columbia Graphophone Co.*, 270 F.2d 822 (S.D.N.Y. 1920); *Famous Music Corp. v. Seeco Records, Inc.*, 201 F. Supp. 560 (S.D.N.Y. 1961); *Abkco Music, Inc. v. Harrison's Music, Ltd.*, 508 F. Supp. 798 (S.D.N.Y. 1981).

Secondly, the finding of an "act" of infringement in one jurisdiction may constitute the basis for finding that another and subsequent "act" constitutes copyright infringement in another jurisdiction. See *Leo Feist, Inc. v. Debmar Publishing Co.*, 232 F. Supp. 623 (E.D. Pa. 1964). In *Feist*, the court found that the English court's judgment for defendants in a copyright infringement action was not *res judicata* in a subsequent copyright infringement action brought in the United States, for actions occurring within the United States. *Id.* at 623-24.

Finally, if copyright infringement does occur in the United States, the injured party may be entitled to recover the infringer's profits accruing from exploitation of the work anywhere in the world. See *Sheldon v. Metro-Goldwyn Pictures Corp.*, 106 F.2d 45 (2d Cir. 1939) *aff'd* 309 U.S. 390 (1940); *Robert Stigwood Group, Ltd. v. O'Reilly*, 530 F.2d 1096 (2d Cir. 1976). The recovery of profits is limited to those circumstances where the defendant has engaged in infringing conduct within the United States, by reproducing unauthorized infringing copies, and then exploiting the copies abroad. See 3 M. NIMMER, NIMMER ON COPYRIGHT § 14.05 (1984).

9. Infringement of a copyrighted work consists of the making of an unauthorized "copy" of that work. "'Copies' are material objects . . . in which a work is fixed by any method now known or later developed, and from which the work can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device." 17 U.S.C. § 101 (1982).

Permissible uses of copyrighted works solely in conjunction with a computer are contained in the 1980 amendment to section 117 of the Copyright Act and include the following: Section 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

actionable under the U.S. Copyright Act.¹⁰ Due to the territorial nature of copyright protection, and the obvious need for protection of computer programs outside U.S. jurisdiction,¹¹ this Note will

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 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.

Pub. L. No. 96-517, § 10, 94 Stat. 3028-29 (1980) (codified at 17 U.S.C. § 117 (1982)).

The determination of whether a copyright has been infringed has been left to the courts. A determination of whether infringement has occurred is probably the most difficult task for the judiciary. Examples of litigation of this issue are prevalent in the video game industry. Federal judges may be asked to view, compare and distinguish the characters, motions, colors, sounds and strategy of a multitude of competing machines. A good example of the problem of determining infringement, and the judicial subjectivity inherent in any decision, is the case of Atari, Inc. and Midway Mfg. Co. v. W. Am. Phillips Consumer Electronics Corp., 672 F.2d 607 (7th Cir. 1982). In *Atari*, the District Court found the defendant's "K.C. Munchkin" game was "different" than plaintiff's "Pac-Man" game because the "K.C. Munchkin" game offered a practically infinite number of mutating mazes, "spookier" chase figures, a central character with a "personality," novel strategic challenges, and sounds that were distinctive. The Seventh Circuit reversed the District Court's decision and granted a preliminary injunction, finding that "an ordinary observer could conclude only that North American copied plaintiff's PAC-MAN." *Id.* at 618. In finding an infringement of the "Pac-Man" game, the Seventh Circuit emphasized both what is viewed as needless copying of the central figures of "Pac-Man" by the "gobbler" and "ghost monsters" in the "K.C. Munchkin" game. *Id.*

As is common in most areas of law, clarification of theories and tests for identification of infringement of a computer program will develop through time.

10. 3 M. NIMMER, NIMMER ON COPYRIGHT § 17.02 (1984).

11. The creation of software requires a large investment of time and money. In 1977, it was estimated that the annual investment in the creation and maintenance of software systems on a worldwide scale was £ 7500 million (\$13 billion). REPORT OF THE COMMITTEE TO CONSIDER THE LAW ON COPYRIGHT AND DESIGNS LAW 125 (H.M.S.O. 1977) (normally referred to as the "Whitford Report"). The creation of software accounts for the greater part of the total cost of computer systems. The proportion of cost has been estimated at 70 percent and 30 percent for software and hardware, respectively. *International Bureau of the World Intellectual Property Organization, Model Provisions on the Protection of Computer Software* (Geneva 1978), reprinted in 14 COPYRIGHT 6,7 (1978) [hereinafter cited as Model Provisions]. The high economic value of many computer programs can be contrasted with their vulnerability:

[A]n operational program stored on magnetic tape or disk, on a diskette, or machine-internally, can be copied easily and quickly and without cost, and can then be utilized to the detriment of its author, directly and without particular adaptation.

Ulmer, Kolle, *Copyright Protection of Computer Programs*, 14 INT'L REV. INDUS. PROP. & COPYRIGHT L. 160 (1983) [hereinafter cited as Ulmer, Kolle].

attempt¹² to outline the existing scope of international copyright protection for computer programs. As a necessary corollary to existing protection, this survey will also examine the future prospects for conclusion and adoption of the World Intellectual Property Organization's Draft Treaty For the Protection of Computer Software.¹³

II. THE SUBJECT MATTER

A. COMPUTER PROGRAMS

Software is the generic name given to various forms of a programming idea before it becomes part of the internal organization of a computer.¹⁴ A computer program can best be described as a set of instructions that is created to solve problems or perform tasks.¹⁵ A program can be further divided into the categories of

12. The word "attempt" is used here to alert the reader that the scope of copyright protection for computer programs is not a static area of law. Many nations are presently studying the possibility of copyright protection for computer programs. See *infra* notes 84-115 and accompanying text. Thus, any present survey of international copyright protection will necessarily face an inevitable obsolescence in a short period of time.

13. In 1971, the World Intellectual Property Organization (WIPO) began to show an interest in computer programs. An Advisory Group of Non-Governmental Experts met in 1974 to study the subject. The Group of Experts recommended, in view of the large degree of uncertainty generally related to the existence and form of protection under copyright, that a special system of protection of software similar to copyright, should be set up at national and international levels. Model Provisions, *supra* note 11, at 6-8. In response to this request, the International Bureau of WIPO presented, in 1978, the draft of a model law for national protection of software and a draft treaty for the international protection and international deposit of software. *Id.* at 6. The Draft Treaty For the Protection of Computer Software, working Doc. LPCS/II/3 is reprinted in *Practising Law Institute*, Pub. No. 159, I SOFTWARE PROTECTION AND MARKETING 91 (1983) [hereinafter cited as Draft Treaty]. The Model Provisions and Draft Treaty include rules for the minimum protection of computer software that are closely related to the law of copyright and unfair competition. See Kolle, *supra* note 2, at 70.

14. Software is most often defined as a computer program. See 17 U.S.C. § 101 (1982). However, the term software is also used to encompass program descriptions and supporting materials. The definition of computer software in WIPO's Draft Treaty For the Protection of Computer Software includes computer programs, program descriptions and supporting material. Draft Treaty, *supra* note 13, at 93.

15. An analytic problem arises in any discussion of computer law because there are no uniform definitions for most terms. However, most definitions for "program" include the phrase "set" or "series of instructions." Examples include:

A program is a 'series of instructions which controls or conditions the operation of a data processing machine.'

Bender, *Computer Programs: Should They Be Patentable?*, 68 COLUM. L. REV. 241 n.2 (1968) (citing THE REPORT OF THE PRESIDENT'S COMMISSION ON THE PATENT SYSTEM, TO PROMOTE THE PROGRESS OF . . . USEFUL ARTS IN AN AGE OF EXPLODING TECHNOLOGY 12 (1966)).

[C]omputer program means an instruction or statement or a series of instructions

source programs and object programs.¹⁶ Firmware is a hybrid, falling somewhere between software and hardware. Firmware can be defined as a form of object code storage that is ordinarily used to control the execution of program instructions.¹⁷ Program, for the purpose of this survey, will be taken to mean "source" program.¹⁸

or statements, in a form acceptable to a computer, which permits the functioning of a computer system in a manner designed to provide appropriate products from a computer system.

Federal Computer Systems Protection Act of 1979, S. 240, 96th Cong., 1st Sess. § 3(a) (1979), 125 CONG. REC. 5711 (1979) (proposed § 1028(c)(8) to be added to 18 U.S.C. ch. 47).

[A] set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result.

17 U.S.C. § 101 (1982).

'[C]omputer program' means a set of instructions capable, when incorporated in a machine readable medium, of causing a machine having information-processing capabilities to indicate, perform or achieve a particular function, task or result.

Model Provisions, *supra* note 11, at 12; the same definition is given in the Draft Treaty, *supra* note 13, at 93.

16. The creation of a program can simplistically be expressed in the following way: A programmer begins by formulating an issue, outlining a solution to that issue, and then expressing that solution in an algorithm. The algorithm is simply a mathematical formula that expresses the solution of the problem to be solved. The programmer sketches the algorithm in a flow chart, and uses the flow chart to express the algorithm in a language that the computer understands. At that point, a source program is created by coding the flow-chart into a higher level language such as BASIC or FORTRAN. The source program is fed into the computer and translated by the computer's operating system into machine language. The program expressed in machine language is the object program. See Gemignani, *Legal Protection For Computer Software: The View From '79*, 7 RUTGERS J. COMPUTERS, TECH. & L. 271-89 (1980), for a more technical and complete description of the formation of a computer program.

17. Firmware has been defined by the court as "hardware elements permanently programmed with a microcode." *In re Bradley*, 600 F.2d 807, 809 (C.C.P.A. 1979), *aff'd without opinion* 450 U.S. 381 (1981). The term normally applies to a small integrated circuit (a chip) that has been imprinted with a program or data, and incorporated into computer hardware. The microprogram, resident in the computer's control memory, is a "sequence of elementary steps which permits the computer hardware to carry out a program instruction." P. JORDAIN & M. BRESLAU, CONDENSED COMPUTER ENCYCLOPEDIA 319 (1969). See also Ross, *The Patentability of Computer "Firmware,"* 59 J. PAT. OFF. SOC'Y 731, 754 n. 138 (1977). Examples of firmware include: a ROM (read-only memory), a PROM (programmable ROM), EPROM (erasable PROM), EEPROM (electrically-erasable PROM). See generally Ross, *supra*.

18. There has been considerable debate concerning the copyrightability of programs expressed in object form code, and whether duplication of object form storage (firmware) is an infringement of program copyright. Although object code has been found copyrightable (*Williams Electronics, Inc. v. Artic International, Inc.*, 685 F.2d 870 (3rd Cir. 1982) and *Apple Computer, Inc. v. Franklin Computer Corp.*, 545 F. Supp. 812 (E.D. Pa. 1982), *rev'd*, 714 F.2d 1240 (3rd Cir. 1983)) and reproduction of a ROM has been found to be an infringement (*Tandy Corp. v. Personal Micro Computers, Inc.*, 524 F. Supp. 171 (N.D. Ca. 1981)), there are opinions that are contrary to those expressed above. See *In re Data General Corp.*, 529 F. Supp. 801, 816 (N.D. Cal. 1981); *Data Cash Systems, Inc. v. J.S. & A. Group, Inc.*, 480 F. Supp. 1063 (N.D. Ill. 1979), *aff'd*, 628 F. 2d 1038 (7th Cir. 1980). In *Data Cash*, the defendant's motion

International legal protection for computer software is desirable for a number of reasons. First, there is the obvious factor of the time and investment required to create a program.¹⁹ Second, there is the trend toward standardized software.²⁰ The standardization of software decreases the cost of software, and increases the likelihood that the program will be pirated.²¹ Finally, protec-

for summary judgment on plaintiff's copyright infringement claim was affirmed. However, the court of appeals affirmed because plaintiff failed to affix the copyright notice to their ROM. The district court's decision was granted on the ground that the ROM was not a "copy" under the copyright law so that reproduction of the ROM could not be an infringement. It is interesting to note that on appeal *neither* side defended the district court's position (that ROMs are not copyrightable), nor did they brief or argue the issue. *Id.* at 1041.

The most recent case decided by an appeals court cites to and confirms the Third Circuit's decision in *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240 (3rd Cir. 1983). The Ninth Circuit, in *Apple Computer, Inc. v. Formula International Inc.*, 52 U.S.L.W. 2464 (9th Cir. Feb. 8, 1984) (No. 83-5875), found that "operating system" computer programs that are embodied in ROMs and control the internal operations of a computer are copyrightable under 17 U.S.C. § 102(a) (1982). It thus appears the trend in the United States is toward a grant of recognition of copyright status for operational programs.

The final determination of this issue may be made by Congress. There is presently a bill pending before the House of Representatives that would amend Title 17 to include protection for semiconductor chips and masks. Semiconductor Chip Protection Act of 1983, H.R. 1028, 98th Cong., 1st Sess. (1983). A semiconductor chip is firmware. Semiconductor chips are converted to a mask (a type of photographic plate) and the mask is used as a master for successive reproduction. *Id.*

Protection of integrated circuits (chips) is also presently under study at the international level. WIPO, *Protection of Integrated Circuits*, Working Doc. LPSC/II/4 (Geneva 1983) reprinted in *Practising Law Institute*, Pub. No. 159, I SOFTWARE PROTECTION AND MARKETING 106 (1983). Integrated circuits include a broad range of electronic devices, including ROMs, PROMs, and EPROMs. For a detailed description of the integrated circuit process see Oxman, *Intellectual Property Protection and Integrated Circuit Masks*, 20 JURIMETRICS J. 405, 408-10 (1980). In connection with the initiation of this study, WIPO notes that,

[t]he legal protection of integrated circuits, for the time being, appears to be rather unsettled. It can only be stated that the issue is complex, possibly involving principles of patent, industrial design, copyright and unfair competition laws and that there exists probably no directly applicable legal provisions.

WIPO, *Protection of Integrated Circuits*, Working Doc. LPSC/II/4 (Geneva 1983) reprinted in *Practising Law Institute*, Pub. No. 159, I SOFTWARE PROTECTION AND MARKETING 107 (1983). For a general discussion from the Experts on Legal Protection, see 19 COPYRIGHT 277-78 (1983).

19. See *supra* note 11.

20. At the present time, the largest amount of expenditure on computer software appears to be devoted to the creation and maintenance of specific purpose programs that are not of general applicability. However, there is a trend towards the creation of computer programs that are of interest to more than one user or even of general and widespread utility. The trend towards standardized user software will increase as computers become more accessible to the public, and easier to operate. Model Provisions, *supra* note 11, at 7.

21. *Id.*

The cost of software will decrease when standardization of software increases for the

tion serves as an incentive to disclosure,²² and a basis for increased trade.²³

B. LEGAL FORMS OF PROTECTION

There are three basic forms of protection that are adaptable to computer programs. The forms are patent, trade secret, and copyright law. All forms have their respective advantages and disadvantages.²⁴ Each form of protection will be outlined in this section in light of the extent each form provides protection outside U.S. territory.

obvious reason that the cost of development of the software will be spread between more users.

Obvious as well, is the fact that pirating of software will increase due to the fact that standardized software will be more accessible to potential pirates because a larger number of copies will be in circulation. In addition, standardized software is of direct interest to potential third party pirates because it is not developed for the specific purpose user.

The Group of Experts on the Protection of Computer Programs note, in the context of increasing standardization and accessibility of computer software, two important developments:

[T]he creation of computer networks among nations aided by sophisticated telecommunications systems (a trend which highlights the need for *international* protection), and the move towards new programming techniques facilitating the use of computers by persons other than trained programmers.

Id.

22. The proprietors of rights that presently rely primarily on secrecy could instead rely on effective legal protection and disclose the software. *Id.*

In addition to proprietors, disclosure would aid developing countries' need for modern technology. See Tocups, *The Development of Special Provisions in International Copyright Law For the Benefit of Developing Countries*, 29 J. COPYRIGHT SOC'Y 402 (1982).

23. Model Provisions, *supra* note 11, at 7.

"Both the seller and the buyer of computer software are interested in legal protection because it increases the legal security of their relationship." *Id.* Adequate legal protection is advantageous to the seller because it ensures continued profit on the seller's capital investment. Legal protection is also desired by the buyer of software because the buyer's investment will be diminished if the software is pirated and sold at a lower cost on the market.

24. Bender, *Computer Software Protection* in 1 BENDER, COMPUTER LAW: EVIDENCE AND PROCEDURE § 4A (1984). Bender lists advantages and disadvantages of each type of protection. A summary of a portion of this list follows:

Patent: Advantages: (1) Protection of the algorithm, rather than simply the form of expression; (2) Reasonably long term; (3) Protection against independent creation; (4) Ease of licensing and maintaining the license.

Patent: Disadvantages: (1) Lack of effective preliminary relief; (2) Patent protection is clearly inapplicable to certain important elements of software (it applies only to the programmable process, not to the data base or documentation); (3) Patent protection may be inapplicable to many programmable processes or programmed machines; (4) Cost of securing patent protection is relatively high; (5) The time and cost of prosecution are very high; (6) The uncertainty of the applicability of patent law to computer software; and (7) Various problems generic to the U.S. patent system including the inability of the courts to agree on the

1. Patent

"The patent system is designed to protect the concept or idea, as opposed to expression or form."²⁵ An invention must meet three requirements to be patentable in the United States.²⁶ The statutory definition of patentable inventions includes "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof."²⁷ Patent protection for computer software in the United States is uncertain at the present time.²⁸

appropriate standard of obviousness, and the diminishing percentage of concluded lawsuits from which the patentee emerges victorious. *Id.* at § 4A.03[7].

Trade Secret: Advantages: (1) Good possibility of obtaining preliminary relief; (2) Clear applicability of trade secret to computer software (however, there is a possibility of preemption by the copyright law); (3) Wide range of subject matter; (4) Broad scope of protection (idea and expression); (5) No waiting period to secure protection; (6) Duration of protection can be lengthy (i.e. Coca-Cola).

Trade Secret: Disadvantages: (1) Possibility of preemption by the Copyright Act; (2) The cesspool of secrecy can be a bar to progress; (3) Not well suited to wide proliferation of software; (4) If secret becomes public then there is no remedy; (5) The maintenance is expensive both in terms of cost and time. *Id.* at § 4A.01[5].

Copyright: Advantages: (1) It is easy and inexpensive to obtain and maintain; (2) It is suitable for a work that may enjoy great proliferation; (3) The long duration of protection; and (4) The feasibility of obtaining preliminary relief.

Copyright: Disadvantages: (1) Uncertainty as to the precise subject matter (does protection extend to object programs?); (2) The uncertainty as to the scope of protection; and (3) The difficulty of policing. *Id.* at § 4.09[1 & 2].

Bender concludes that copyright may be the optimum means of pragmatically protecting software. However, Bender warns that it is too early to make a prediction because the cases have not been uniform, the cases have not addressed all the issues, and case law has been hampered by the courts' unfamiliarity with technology. *Id.*

25. Bender, *Licensing and Protecting Computer Software via Patents and Trade Secrets*, reprinted in *Practising Law Institute*, Pub. No. 159, I SOFTWARE PROTECTION AND MARKETING 619, 634 (1983).

26. The invention must be:

(1) within the statutory class of patentable inventions; 35 U.S.C. § 101 (1982); (2) novel; 35 U.S.C. § 102 (1982) and; (3) nonobvious to one skilled in the art; 35 U.S.C. § 103 (1982).

27. 35 U.S.C. § 101 (1982).

28. See generally, Bender, *supra* note 24; Bender, *supra* note 25.

The issue is whether a programmable process, or a programmable computer, falls within the statutory subject matter of patent protection. (See *supra* text accompanying note 27, for a definition of the statutory subject matter). Two recent Supreme Court cases, *Diamond v. Diehr*, 450 U.S. 175 (1981) and *Diamond v. Bradley*, 450 U.S. 381 (1981), have given some guidance on this issue. The guidance was incorporated into guidelines, issued by the U.S. Patent and Trademark Office, shortly after the above cases were decided by the Supreme Court. The guidelines are reprinted in Bender, *supra* note 25, at 657.

Bender summarizes the proposed PTO guidelines as follows:

The test [embodied] in these guidelines is, first, to determine whether a mathematical algorithm is directly or indirectly recited in the claim, and if so, to ask if the claim merely recites a mathematical algorithm. If the answers to both

Even if computer software were patentable in the United States, a U.S. patent does not protect against infringement outside of U.S. territory.²⁹ It is usually necessary to obtain a patent in a foreign state to obtain protection in that state.³⁰ However, in many countries computer programs and other items of computer software, in particular algorithms, are not patentable.³¹ Moreover, in most countries the question of patentability cannot be answered with any degree of certainty.³²

2. Trade Secret

Trade Secret is the most common method for protection of computer software.³³ A trade secret is "any formula, pattern, device

questions are in the affirmative, the claim is nonstatutory; otherwise it is statutory. Bender, *supra* note 25, at 636.

Bender notes that "many types of programmable processes and programmed machines may ultimately prove not to be patentable subject matter" and that "most valuable programs will not qualify for patents, even if the subject matter is patentable, since they will run afoul of the novelty and non-obviousness requirements." *Id.* at 638.

29. *Dowagiac Mfg. Co. v. Minnesota Moline Plow Co.*, 235 U.S. 641 (1915).

30. The necessity of obtaining a patent in a foreign state is due to the nonexistence of international patent conventions. The introductory note to the European Patent Conventions emphasizes the fact that the European Patent Convention

constitutes a revolutionary breakthrough in the international patent system, in that it provides for the first time for the issuance, by a regional patent office (the European Patent Office), of a regional patent that will be legally effective within all European countries that sign and ratify the convention.

European Patent Convention, 13 I.L.M. 268 (1974).

31. The European Patent Convention expressly excludes computer programs from patentability. European Patent Convention, Art. 52(2)(c), *reprinted in* 13 I.L.M. 270, 285 (1974).

Kolle notes that in a number of countries current patent laws explicitly exclude computer programs from protection under a patent. Examples of these countries include France, Poland and Mexico. When there are no legislative provisions prohibiting patentability, courts and patent offices have refused the patentability of software because patent protection, by its very concept, is reserved for "technical" inventions. Examples of these countries include Australia, the Netherlands, Austria, Sweden, Switzerland, and the Federal Republic of Germany. Kolle, *supra* note 2, at 72.

Gotzen notes that protection under patent law is being refused in more and more countries because computer programs do not meet the prerequisite of patentability (the need for industrial applicability of the invention). He cites decisions from the following countries in support of this proposition: France, Netherlands, Austria, Switzerland, the United States and Germany. Gotzen, *Copyright and the Computer*, 13 COPYRIGHT 15, 16 (1977).

32. Model Provisions, *supra* note 11, at 8. The Expert Legal Group concludes that "even if patent protection were generally available, it would probably cover only a minute proportion of computer programs since it is considered that only in very few cases (perhaps 1%) would a program have sufficient inventiveness to satisfy the requirements of patent law . . ." *Id.* The CONTU report states similar conclusions. "Even if patents prove available in the United States, only the very few programs which survive the rigorous application and appeals procedure could be patented." CONTU Report, *supra* note 7, at 17.

33. For a discussion of trade secret protection of software, see Bender, *Trade Secret*

or compilation of information which is used in one's business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it."³⁴ A major difficulty that may become an obstacle to trade secret protection for software in the United States is the possibility that licensing of trade secrets is pre-empted by Section 301(a) of the new Copyright Act.³⁶

Protection of Software, 38 GEO. WASH. L. REV. 909 (1970); Bender, *Trade Secret Software Protection*, 5 AM. PAT. L.Q.J. 49 (1977).

34. RESTATEMENT OF TORTS, § 757, Comment b, at 5 (1939).

35. Nimitz, *Development of the Law of Computer Software Protection*, 61 J. PAT. OFF. SOC'Y 3, 19 (1979).

36. Section 301(a) states that:

On and after January 1, 1978, all legal or equitable rights that are equivalent to any of the exclusive rights within the general scope of copyright . . . are governed exclusively by this title. Thereafter, no person is entitled to any such right or equivalent right in any such work under the common law or statutes of any State.

17 U.S.C. § 301(a) (1982).

The issue of federal preemption of state trade secrecy law for computer software has not been explicitly decided by any court. However, there are decisions that indicate state trade secrecy law is not preempted by § 301(a). In *Technicon Medical Information Systems Corp. v. Green Bay Packaging, Inc.*, 687 F.2d 1032 (7th Cir. 1982), cert. denied 103 S. Ct. 732 (1983), the court held that marking computer software manuals with copyright notice was an election of federal copyright remedy, but that election does not present "an inherent conflict between the Federal Copyright Act and state trade secret law." *Id.* at 1038. In *BPI Systems, Inc. v. Leith*, 532 F. Supp. 208 (W.D. Tex. 1981), the court found that state trade secret protection of computer software systems was not pre-empted by federal copyright law where the material allegedly improperly used was "not copyrighted." *Id.* at 211. In *Warrington Assoc., Inc. v. Real-Time Engineering Systems, Inc.*, 522 F. Supp. 367 (N.D. Ill. 1981), the court held that, for the purposes of summary judgment, the Copyright Act does not pre-empt State trade secret protection of computer programs. However, the factual issue of Copyright Office registration was expressly left undetermined due to the fact that registration "might well affect the continued secrecy of the ideas in that manual for which Warrington seeks trade secret protection." *Id.* at 369.

For further elaboration of this issue, see Bender, *Licensing and Protecting Computer Software via Patents and Trade Secrets*, in *Practising Law Institute*, Pub. No. 159, I SOFTWARE PROTECTION AND MARKETING 644-46 (1983). See also Goldberg, *Software, Copyright and Trade Secrets: The Question of Preemption of State Laws By the Copyright Act* in *Id.* at 583. But see the CONTU Report, *supra* note 7, at 18. The Commission's position was that trade secrecy protection is not pre-empted by the Copyright Act. *Id.*

It appears that the concern surrounding the issue of pre-emption is not valid. Trade secret protection and copyright protection are not equivalent rights. While copyright law protects the expression of the author, trade secret law extends to the ideas of the author. As noted by the Commission:

[t]he availability of copyright for computer programs does not, of course, affect the availability of trade secrecy protection. Under the Act of 1976 only those state rights that are equivalent to the exclusive rights granted therein (generally, common law copyright) are preempted (footnote omitted). Any decline in use of trade secrecy might be based not upon preemption but on the rapid increase in the number of widely distributed programs in which trade secret protection could not be successfully asserted.

CONTU Report, *supra* note 7, at 18. The legislative history of the Copyright Act also sup-

Trade secret protection is generally available only in the industrialized nations of Western Europe.³⁷ In most of the world, trade secret law is relatively obscure, and even where trade secret protection is available, it usually punishes those who engage in unauthorized divulgence, rather than unauthorized use, of a trade secret.³⁸ Finally, there are no international conventions that specifically deal with trade secret law.³⁹

3. Copyright

Copyright protects the form of expression of the ideas, rather than the technical idea underlying an invention.⁴⁰ The majority of legal writings in numerous countries accept the proposition that computer programs are capable of protection under copyright law.⁴¹

ports the position that the Copyright act does not pre-empt state trade secrecy law. The House Committee Report states:

The evolving common law rights of "privacy," "publicity," and trade secrets, . . . would remain unaffected as long as the causes of action contain elements, such as an invasion of personal rights or breach of trust or confidentiality

H. REP. NO. 1476, 94th Cong., 2d Sess. 132, *reprinted in* 1976 U.S. CODE CONG. & AD. NEWS 5748.

37. 4 A. WISE, TRADE SECRETS AND KNOW-HOW THROUGHOUT THE WORLD, § 7.02(1) (1981). Each member state of the European Common Market recognizes "trade secret" as a legal concept in their national laws. However, there is no reference to the term trade secret or industrial or commercial trade secret in any article of the Rome Treaty. At this point in time, neither the European Court of Justice nor the EEC Commission or Council have defined "trade secret" in any case, regulation or announcement. Wise suggests that the European Court of Justice would be bound to apply legal principles common to the laws of the member states if presented with an action based on the unauthorized divulgence of a secret. "Presumably, a study would have to be made of the legislation, cases and commentary of the member states with a view to determining principles common to the national laws of those countries applicable to a tort action for damages for breach of secrecy." *Id.*

38. See 5 A. WISE, *supra* note 37, at § 1.04.

In most of the world there is little legislation or literature on trade secret protection, and in most cases even less case law. Latin America, for example, can be viewed as typical. *Id.* at § 1.01. Brazil punishes unauthorized divulgence or use of a trade secret. *Id.* at § 1.04[2]. Criminal law in Columbia, Mexico and Venezuela punishes unauthorized divulgence, but not unauthorized use of a trade secret. *Id.* at § 1.04[3],[4],[6]. Argentina and Brazil recognize almost no property rights in unpatented technology. *Id.* at § 1.03[2-3].

39. 4 A. WISE, *supra* note 37, at § 8.06[7]. Theoretically, an abuse of an industrial or commercial trade secret would be within the scope of article 10bis of the Paris Convention for the Protection of Industrial Property, done July 14, 1967, [1970] 21 U.S.T. 1583, 24 T.I.A.S. No. 6923 (effective Sept. 5, 1970, except for articles 1-12), [1973] 24 U.S.T. 2140, T.I.A.S. No. 7727 (effective Aug. 25, 1973 for articles 1-12). Article 10bis provides protection against unfair competition. However, there have been no trade secret cases based on article 10bis of the Paris Convention. *Id.*

40. CONTU Report, *supra* note 7, at 16; Model Provisions, *supra* note 11, at 8; 3 M. NIMMER, NIMMER ON COPYRIGHT § 17.06(A) (1983).

41. Kolle, *supra* note 2, at 73.

Kolle notes that the main problems in applying copyright to software, arise in connection with the concept of a work, the scope of protection and the extent

In addition, most nations have copyright laws similar to the U.S. Copyright Act,⁴² and, generally speaking, there should be no difficulty in introducing software into categories of works specified by national laws on copyright as being capable of protection.⁴³

The major advantage of copyright protection for computer programs on the international level is that there are existing conventions dealing with copyright.⁴⁴ In light of this fact, the balance of this Note will be concerned with the extent to which existing conventions include and protect programs, and the national treatment afforded to member nations under a variety of national copyright laws.

III. INTERNATIONAL AGREEMENTS

United States copyright relations with other countries are based on bilateral treaties, Presidential proclamations regarding copyright protection for nationals of other countries, and various international conventions.⁴⁵ The two major international copyright conventions will be the focus of this section.

of the prerogatives attaching to copyright, particularly the right of reproduction, the duration of protection and the question of dissemination of information.
Id. See also Ulmer, Kolle, *supra* note 11, at 180-87.

Although the scope of protection that copyright law grants a computer program is an interesting and important question, the multitude of issues involved are not within the scope of this Note.

42. 3 M. NIMMER, NIMMER ON COPYRIGHT, § 17.06(a) (1984). Nimmer states that "[t]he subject matter of copyright under most foreign copyright laws is largely the same as the subject matter under the United States Copyright Act." *Id.*

For a publication that contains English translations of copyright laws and treaties of all nations of the world, see UNESCO, COPYRIGHT LAWS & TREATIES OF THE WORLD (1982) [hereinafter cited as CLTW].

43. Kolle, *supra* note 2, at 73.

44. See *infra* notes 45-64 and accompanying text.

45. The copyright relations of the United States with specific countries are charted in Copyright Office Circular R38a at 2.

Currently the United States is a member of the Universal Copyright Convention, *done* Sept. 6, 1952, [1955] 6 U.S.T. 2731, T.I.A.S. No. 3324, 216 U.N.T.S. 132 (effective Sept. 16, 1955) (Geneva Act), *revised* July 24, 1971, [1974] 25 U.S.T. 1341, T.I.A.S. No. 7868, 943 U.N.T.S. 0 (effective July 10, 1974) (Paris Act); the Buenos Aires Convention, *done* August 11, 1910, 38 Stat. 1785, T.S. 593, 155 L.T.S. 179 (effective May 1, 1911), the Phonogram Convention, *done* Oct. 29, 1971, [1974] 25 U.S.T. 309, T.I.A.S. No. 7808, 866 U.N.T.S. 67 (effective Mar. 10, 1974); and the Mexico City Convention, *done* Jan. 27, 1902, 35 Stat. 1934 (effective June 30, 1908). In addition to the international copyright conventions to which the United States is a member, the United States also has entered into various bilateral and multilateral copyright treaties with other nations. See Copyright Office Circular R38a at 2. Finally, under both the 1909 Copyright Act, 17 U.S.C. § 9 (1982), and the New Copyright Act, 17 U.S.C. § 104(b)(4) (1982), the President, by proclamation, can extend the benefits of U.S. law to foreign

A. UNIVERSAL COPYRIGHT CONVENTION⁴⁶

The Universal Copyright Convention represents the most significant copyright protection for American nationals under foreign laws.⁴⁷ It is the result of a compromise between the European concept of copyright protection,⁴⁸ as expressed in the Berne Convention,⁴⁹ and the American view.⁵⁰ The Universal Copyright Convention protects "literary, scientific and artistic works, including writings, musical, dramatic and cinematographic works, and paintings, engravings and sculpture."⁵¹ Under the Universal Copyright Convention, works by nationals of the United States,

nationals of countries that accord substantially equal treatment to authors, copyright owners and proprietors who are citizens of the United States. 17 U.S.C. § 104(b)(4) (1982). Nineteen countries have been granted the protection of U.S. Copyright law by presidential proclamation. All agreements have been superceded by membership in the U.C.C. See OFFICE OF THE LEGAL ADVISOR, DEPT. OF STATE, TREATIES IN FORCE 309-19 (1983).

For a complete list of the bilateral arrangements entered into by the United States, see the section of CLTW, *supra* note 42, that pertains to the United States. A complete list of those nations of the world that accord copyright protection to works written by American authors are listed in 4 M. NIMMER, NIMMER ON COPYRIGHT, Appendix 20 (1984).

46. Universal Copyright Convention, *done* Sept. 6, 1952, [1955] 6 U.S.T. 2731, T.I.A.S. No. 3324, 216 U.N.T.S. 132 (effective Sept. 16, 1955) (Geneva Act), *revised* July 24, 1981, [1974] 25 U.S.T. 1341, T.I.A.S. No. 7868, 943 U.N.T.S. 0 (effective July 10, 1974) (Paris Act) [hereinafter UCC].

47. 3 M. NIMMER, NIMMER ON COPYRIGHT § 17.04 (B) (1984).

48. These two great compromises were the allowance of a requirement for formalities (UCC, *supra* note 46, art. III), and the reduction of the minimum term of protection from 50 years to 25 years from the death of the author or the date of first publication (UCC, *supra* note 46, art. IV). See Ringer, *The Role of the United States In International Copyright—Past, Present, and Future*, 56 GEO. L.J. 1051, 1061-62 (1968).

49. Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1886, as amended by the Paris Additional Act and Declaration (1896), the Berlin Convention (1908), the Berne Additional Protocol (1914), the Rome Convention (1928), the Brussels Convention (1948), and the Paris Convention (1971), 331 U.N.T.S. 217, T.S. No. 4757 (1948 text). For texts from 1886 to 1971, see CLTW, *supra* note 42.

50. PLOMAN & HAMILTON, COPYRIGHT 58 (1980).

The compromise was concluded, primarily to include the United States in an international convention on copyright. Prior to the Convention, American copyright owners were taking full advantage of the Berne Convention through the "back-door to Berne" (see *infra* notes 57-61, without any corresponding obligation on the United States to protect work from Berne countries. Ringer, *The Role of the United States in International Copyright—Past, Present and Future*, 56 GEO. L.J. 1051, 1059 (1968).

The major reasons for the U.S. non-adherence to Berne were: (1) the Berne abandonment of formalities, in view of the formalities of notice required under U.S. law; (2) the existence of the U.S. manufacture clauses in the U.S. law; (3) the provisions of differing terms of protection under U.S. law and under the Berne agreement, and; (4) objections in the United States to provisions in recent versions of Berne for the "moral rights" (*droit moral*) of authors. See generally BOGSCH, THE LAW OF COPYRIGHT UNDER THE UNIVERSAL CONVENTION (3rd Ed. 1968); PLOMAN & HAMILTON, COPYRIGHT 57-65 (1980).

51. UCC, *supra* note 46, at art. I (Geneva and Paris Acts).

wherever published, must be granted in each member country at least "the same copyright protection as that other [nation] accords to works of its nationals first published in its own territory."⁵²

Applying the "national treatment" requirement to computer programs, the following would be the result: if a national of a foreign member country published a computer program in the United States, that program would be afforded the degree of protection granted by the U.S. Copyright Act. The reverse of that situation would be a case where an American national published a program in a member nation, and that nation's copyright law did not afford protection for computer programs. In such a case, the published program would enter the public domain. Thus, the need to ascertain a member nation's copyright law becomes a prime consideration before publication of a computer program in a member nation. However, before discussing national laws on copyright, it is necessary to ascertain whether computer programs are within the subject matter of protected material under the Universal Copyright Convention.⁵³ Subsection "C" of this section will be devoted to this issue.

B. BERNE CONVENTION⁵⁴

Most nations of the world have acceded to the Berne Convention, either in its original form or with respect to one or more revisions of the Convention.⁵⁵ Two notable exceptions are the United States and the Soviet Union.⁵⁶ Even though the United States is not a member of Berne, American nationals can obtain Berne protection through the "back door to Berne," a device of simultaneous

52. UCC, *supra* note 46, at art. II(1). An unpublished work by an American national must be accorded "the same protection as [such] other state accords to unpublished works of its own nationals." *Id.* at art. II(2).

53. Categories of work protected by national copyright laws are not always covered by international conventions. For example, sound recordings are a category of works of authorship that are protected under U.S. copyright law (17 U.S.C. § 102(a)(7) (1982)), but are not protected under the UCC or the Berne Convention. This void has been, in part, filled by the Convention for the Protection of Producers of Phonograms Against Unauthorized Duplication of Their Phonograms, *done* October 29, 1971, [1974] 25 U.S.T. 309, T.I.A.S. No. 7808, 866 U.N.T.S. 67 (effective Mar. 10, 1974).

54. Berne Convention, *supra* note 49.

55. See CLTW, *supra* note 42. Because each member nation has not subscribed to every text, it is necessary to first determine the controlling text before basing a legal theory on a particular text.

56. The reasons for U.S. non-adherence are set forth in *supra* note 50.

publication.⁵⁷ Under the Berne Convention, an author who is a national of a non-Berne country is entitled to copyright protection for his work in all Berne countries if the work was either first published in a Berne country, or was published in any Berne country simultaneously with publication in a non-Berne country.⁵⁸ Simultaneous publication, according to the Rome Act, must occur on the same day.⁵⁹ The Brussels and Paris Acts of the Berne Convention provide that a second publication may be made within 30 days.⁶⁰ Many works by American nationals have achieved Berne protection through simultaneous publication in the United States and in a Berne country, such as Canada or the United Kingdom.⁶¹

Similar to the Universal Copyright Convention, the Berne Convention provides for national treatment.⁶² Under the Berne Convention, the following subject matter is protected: "every production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression."⁶³ Of notable exception to the list of protected materials in both the Universal Copyright and the Berne Conventions is the variety of new technical methods and forms of expression, particularly those associated with computer base technology.⁶⁴

C. SOFTWARE PROTECTION UNDER EXISTING CONVENTIONS

Even if a foreign nation's domestic law provides copyright protection for computer programs,⁶⁵ an American national would not

57. For a detailed explanation of the technical aspects of obtaining a protection through the "back door to Berne," see 3 M. NIMMER, NIMMER ON COPYRIGHT § 17.04(D) (1984).

58. Berne Convention, *supra* note 49, art. 6(1) (Brussels Act) and art. 3(1) (Paris Act).

59. See Berne Convention, *supra* note 49, at art. 4(3) (Rome Act).

60. See Berne Convention, *supra* note 49, at art 4(3) (Brussels Act) and art. 3(4) (Paris Act).

61. 3 M. NIMMER, NIMMER ON COPYRIGHT § 17.04(D)(2)(a)-(2)(b) (1984). Because Canada has not signed the Brussels or Paris Acts, publication would have to occur on the same day. *Id.*

62. Berne Convention, *supra* note 49, at art. 4(1). See *supra* text accompanying note 52.

63. Berne Convention, *supra* note 49, at art. 2(1) (Paris Act). The Convention proceeds to list a number of categories of work.

64. Art. 2(1) of the Berne Convention, *supra* note 49, lists examples of the types of works protected. The examples include books and other writings, photographic works and works produced by a process analogous to photography, works of an applied art, and plans and sketches pertaining to architecture or science. *Id.*

Art. 1 of the Universal Copyright Convention, *supra* note 46, lists similar works afforded protection under its rules. See *supra* text accompanying note 51.

65. The subject of a select group of nation's copyright laws will be examined in Section IV. See *infra* text accompanying notes 84-115.

be assured of protection in that nation if computer software was not protected by existing treaties.⁶⁶ In a recent study concerning the existing protection under international conventions,⁶⁷ the World Intellectual Property Organization conducted a survey of member nations and received replies from 26 countries,⁶⁸ two intergovernmental organizations,⁶⁹ and eight international and national non-governmental organizations.⁷⁰ The replies can be summarized into three categories as follows.⁷¹

The first group, representing the majority, indicated that computer software was not protected, or was insufficiently protected by existing treaties.⁷² In support of this position, the group indicated that due to the existing uncertainties of protection under present conventions, the relevant protection was insufficient.⁷³ The most

66. At the present time, there is no consensus among the nations that are members of the international conventions concerning the inclusion of computer programs in the list of works protected by the copyright conventions. Thus, a nation can assert the proposition that neither the Berne Convention, nor the Universal Copyright Convention, grants copyright protection to the category of works known as computer software.

67. *World Intellectual Property Organization, Committee of Legal Experts on the Legal Protection of Computer Software* (Geneva 1983), Working Doc. LPCS/II/2, reprinted in *Practising Law Institute*, Pub. No. 159, I SOFTWARE PROTECTION AND MARKETING 79 (1983) [hereinafter cited as WIPO, LPCS/II/2].

68. *Id.* at 80.

Australia, Austria, Belgium, Bulgaria, Burundi, Canada, Cuba, Czechoslovakia, Finland, France, Germany (Federal Republic of), Hungary, Ireland, Israel, Italy, Ivory Coast, Mexico, Monaco, Netherlands, Norway, Peru, Spain, Sweden, Switzerland, United Kingdom, United States. *Id.* at 80 n.1.

69. *Id.* at 80.

European Patent Office, United Nations Educational, Scientific and Cultural Organization (UNESCO). *Id.* at 80 n.2.

70. *Id.* at 80.

The Chartered Institute of Patent Agents, International Federation of Operational Research Societies (IFORS), International Federation of Patent Agents (FICPI), International Group of Scientific, Technical and Medical Publishers (STM), International Publishers Association (IPA), Pacific Industrial Property Association (PIPA), Union of Industries of the European Community (UNICE), Union of European Practitioners in Industrial Property (UEPIP). *Id.* at 80 n.3.

71. Most replies stated that the views expressed were only provisional and thus could change as a result of further developments in the field of computer software. *Id.* at 80.

72. *Id.*

73. *Id.* at 81.

The comments indicated that both the Berne Convention and the Universal Copyright Convention did not ensure the desirable degree of international protection of computer software. *Id.* at 87. Apart from the fact that neither convention lists or defines computer software, or what constitutes infringement or unauthorized use of software, the group indicated that a number of provisions would have to be changed or added to ensure complete protection for computer software. *Id.* at 82-83.

The provisions of the Berne Convention that should be changed or added were out-

important deficiency was noted as the "absence of protection against use of the software as distinct from its reproduction."⁷⁴

lined by the Expert Group on the Legal Protection of Computer Software in 1979, and included the following:

(1) National Treatment: Art. 5(1) of the Berne Convention, *supra* note 49, should be changed to incorporate a situation where a person who is neither a national nor resident of a country of the Union nevertheless enjoys national protection if he has an effective industrial or commercial establishment in the territory of one of the countries of the Union.

(2) Acts that were not presently covered by the Berne Convention, *supra* note 49, for which protection should be granted included the following:

- a. disclosing computer software or allowing or facilitating access to any object storing or reproducing computer software;
- b. using a computer program to control the operation of a machine having information-processing capabilities;
- c. offering or stocking for the purpose of sale, hire or licensing, selling, importing, exporting, leasing or licensing computer software or objects storing or reproducing computer software.

(3) Lastly, a provision on freedom of international traffic should be incorporated to ensure that exclusive rights may not be exercised in the case of temporary or accidental entry of the "vehicle" into a country. In the case of computer software, entry would be made by means of an information network. Report of the Expert Group on the Legal Protection of Computer Software, WIPO (1979), *reprinted in* 6 COMPUTER L. SERVICE (Bigelow), §§ 9-4, art. 14, 383 (1981).

The Model Provisions on the Protection of Software, *supra* note 11, and the Draft Treaty, *supra* note 13, incorporate the suggestions of various countries and organizations participating in WIPO, and the committee of experts. For selected provisions *see infra* notes 121, 122, 124 and 130.

74. WIPO, LPCS/II/2, *supra* note 67, at 81.

The concern that the present copyright conventions do not cover the use of a computer program is explained in the following excerpt:

Although it seems generally accepted that computer software could enjoy copyright protection, provided that the conditions of copyright are fulfilled, such protection does not—or at least does not always—meet the specific need for protection of computer software. In particular a gap may exist with respect to the—probably most important—aspect of protection, namely, the protection against use of computer software in the control of the operations of a computer (Section 5(vi) of the Model Provisions).^{*} Copyright laws normally do not grant protection against any use of a literary or artistic work.

They protect only against reproduction and public performance and communication to the public. Thus the unauthorized use of computer software normally would be covered by copyright law only if it involves reproduction of the software but not in other cases.

Id. at 81 n.4.

^{*}Section 5(vi) of the Model Provisions, *supra* note 11, corresponds to Article 4(1) of the Draft Treaty, *supra* note 13.

The United States Copyright Act provides that "copies" are "material objects . . . in which a work is fixed . . ." A work is "fixed . . . when its embodiment in a copy . . . is sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration." 17 U.S.C. § 101 (1982). Thus, infringements of copyrighted programs would include both the placement of copyrighted work in the computer, and the output of information from the computer system whereby the information is copied into an external storage, printed on paper or a display screen.

The second group considered computer software to be presently protected (at least in part) by the existing treaties.⁷⁵ Pointing to the essential elements of protection, namely national treatment and the right to prevent unauthorized reproduction, the group noted that both the Berne Convention and the Universal Copyright Convention provided for these essential elements.⁷⁶ Thus, the existing treaties ensured a "relatively satisfactory protection of computer software."⁷⁷

The third group specified that the existing copyright conventions afforded sufficient protection to computer software.⁷⁸ In terms of protection under the Berne Convention, the replies indicated that computer software was protected under Articles 2(1), 1(3), 8, 9, 11 and 16.⁷⁹ Under the Universal Copyright Convention, Article I and IVbis were cited as providing adequate protection.⁸⁰

75. WIPO, LPCS/II/2, *supra* note 67, at 80.

76. Art. II(1) of the UCC, *supra* note 46, and Art. 4(1) of the Berne Convention, *supra* note 49, provide for national treatment.

Art. IVbis of the UCC, *supra* note 46, provides the author with the exclusive right to authorize reproduction by "any means." *Id.* Art. 9(1) of the Berne Convention, *supra* note 49, provides the proprietor with the exclusive right to authorize the reproduction of his work for any manner or form of reproduction. *Id.*

The issue concerning the first group, see *supra* note 74 and accompanying text, is whether the term "reproduction" would be interpreted to include the use of the computer program.

See Kindermann, *Computer Software and Copyright Conventions*, 3 EUR. INTELL. PROP. REV. 6 (1981) for a persuasive argument concerning the adequacy and applicability of current international copyright conventions to computer software. Kindermann states that the term "reproduction" must be interpreted broadly, and that "'reproduction' . . . includes every conceivable method of reproducing a fixation of the work in material form." *Id.* at 10.

77. WIPO, LPCS/II/2, *supra* note 67, at 81. Although no reasons are set forth for the second group's feeling that the present international copyright conventions protection is "relatively satisfactory," one can surmise that the attitude is a result of the general uncertainty surrounding the issue of protection for computer software.

78. WIPO, LPCS/II/2, *supra* note 67, at 80.

79. *Id.* at 82.

In terms of existing protection under Berne, the replies offered the following explanation:

Article 2(1) of the Berne Convention, which set out a non-exhaustive list of "literary and artistic works," included in the definition of such "works" every production in the scientific domain and, therefore, covered computer software. Article 2(3) protected translations, adaptations and other alterations of literary and artistic works which, as far as computer software was concerned, enabled conversions from one program language to another to be included, as well as adaptations and up-dating. Article 9 provided for the exclusive right to authorize reproduction. Article 16 authorized the copyright holder to have counterfeit copies of the software confiscated. . . .

Id.

80. *Id.*

It is clear from the replies to the survey that the participating nations and organizations disagree on the extent, or on the very existence, of protection under current copyright conventions.⁸¹ As a result of present disagreement, the future prospects for software protection may hinge on revisions of current conventions,⁸² or ratification of a new treaty explicitly protecting computer software.⁸³

IV. NATIONAL PROTECTION

In the event that software is presently protected, or will be protected by a revision of existing treaties or ratification of a new treaty, the next consideration is the extent software is protected under existing national law. Apart from revision of existing treaties or ratification of a new treaty, the issue is still of major significance because software protection can be afforded non-nationals even in the situation where no treaty incorporates the subject matter. Of course, treaty protection is clearly superior due to the positive duty treaties impose on signatories to afford protection to member states.

This section is partially based on positions taken by government representatives at the June 1983 meeting of the World

For quotations from art. 1, see *supra* note 51 and accompanying text. The group determined that Art. IVbis

covered the unauthorized use of computer software including the use of computer software to control the operations of a computer; the protection against reproduction took effect already when the data processing program was fixed without authorization on a machine-readable data carrier.

Id.

81. Although the nations and organizations present at the convention could not agree on whether there was protection under the existing conventions, the majority of participants favored the conclusion of a special treaty for the protection of computer software. WIPO, LPCS/II/2, *supra* note 67, at 86.

82. Particular provisions that would be necessary additions to existing copyright conventions included a provision defining computer software, and provisions safeguarding computer programs protection. Particular provisions noted include the following:

(a) *National treatment.* An additional treaty provision would be desirable in order to ensure that Contracting States have to grant national treatment in respect of the protection of computer software, whatever the form of such protection may be.

(b) *Minimum Protection.* In view of the uncertainty as to the extent of protection to be granted to computer software in accordance with Article 10bis of the Paris Convention, it appears desirable to ensure protection through treaty provisions, also with respect to other acts to which the Model Provisions refer.

(c) *Article 5ter* of the Paris Convention. In view of the interest in maintaining freedom of transportation and communication, it appears to be desirable to ensure through treaty provision the application of the principle contained in Article 5ter of the Paris Convention as included in the Model Provisions (Section 6(3)).

WIPO, LPCS/II/2, *supra* note 67, at 85 n.11.

83. Section V will discuss the Proposed Draft Treaty For the Protection of Computer Software.

Intellectual Property Organization's Committee of Experts on the Legal Protection of Computer Software.⁸⁴

A. UNITED KINGDOM

The Delegation of the United Kingdom noted that, although divergent opinions exist in various countries, there was a trend towards application of copyright laws to computer software.⁸⁵ In the United Kingdom, a special study had suggested that copyright law should apply to the protection of computer programs.⁸⁶

A reform of the existing Copyright Act has been under way in the United Kingdom for a number of years. A special committee, set up to study a revision of the Copyright Act, presented what is commonly known as the "Whitford Report" to Parliament in 1977.⁸⁷ The report did not recommend new legislation for protection of computer software. In the committee's opinion, the term "literary works" in the present copyright law was broad enough to encompass computer programs whether the programs were directly perceivable, or only perceivable with the aid of a device.⁸⁸ The Whitford Report was widely accepted.⁸⁹ In a further effort to clarify remaining issues, the British government presented a study in 1981 called the "Green Paper."⁹⁰ The Green Paper explicitly adopts the Whitford Report's recognition of computer programs' copyrightability. Both the Whitford Report and the Green Paper note that "it is probable that programs are already protected under the 1956 Act," however, "it is proposed to make explicit in new legislation that computer programs attract protection under the same conditions as literary works."⁹¹ At this point, no cases involving

84. World Intellectual Property Organization, *Committee of Experts on the Legal Protection of Computer Software*, 19 COPYRIGHT 271 (1983) [hereinafter cited as WIPO 1983].

85. *Id.* at 273.

86. *Id.*

87. "Copyright and Design Law, Report of the Committee to Consider the Law of Copyright and Designs," (HMSO, 1977) (Cmnd. 6732) (cited in Ulmer, Kollé, *supra* note 11, at 166 n.21).

88. *Id.* at 127.

89. Ulmer, Kollé, *supra* note 11, at 166.

90. "Reform of the Law Relating to Copyright, Designs, and Performers' Protection," (HMSO, 1981) (Cmnd. 8302), particularly Chapter 8, p. 33 *et seq* (cited in Ulmer, Kollé, *supra* note 11, at 166 n.23).

The Green Paper is to be the basis for the revision of the 1956 Copyright Act that is expected in the near future.

91. *Id.* at 33 n.2 (cited in Ulmer, Kollé, *supra* note 11, at 167).

See also Ulmer, Kollé, *supra* note 11, at 166-67; Tarnofsky, *Reform of United Kingdom Copyright*, 18 COPYRIGHT 367 (1982); C. TAPPER, *COMPUTER LAW*, 18-21 (1978).

the question whether or not computer programs are entitled to copyright protection has had to be decided by a United Kingdom court.⁹² Thus, it appears that computer programs, although presently not explicitly protected by law in the United Kingdom, will be granted copyright protection in the near future.

B. FEDERAL REPUBLIC OF GERMANY

The Delegation of the Federal Republic of Germany stated that, in its opinion, copyright protection was available to computer software.⁹³ In 1979, a special committee of the German Association for Industrial Property and Copyright Law recommended that the German copyright law should be applied, as it stands, to protect computer programs.⁹⁴ In late 1981, the Federal Ministry of Justice adopted a similar position.⁹⁵

Several recent decisions of courts of first instance in Germany arrive at different conclusions on the applicability of copyright to computer software.⁹⁶ However, the most recent decision on copyright protection of computer software,⁹⁷ a decision by a Chamber specializing in intellectual property matters, is of particular interest and importance.⁹⁸ The lawsuit was brought by a large American software house against a German competitor, based *inter alia* on infringement of the copyright in a computer program called "VISICALC," a program that was widely marketed by the plaintiff. Allowing the action for copyright infringement, the court con-

92. Ulmer, Kolle, *supra* note 11, at n.24.

93. WIPO 1983, *supra* note 84, at 272. See also *infra* text accompanying note 94.

94. Ulmer, Kolle, *supra* note 11, at 167-68.

95. *Id.* at 168.

96. *Id.*

Ulmer and Kolle cite the following decisions:

(a) Decision of May 21, 1981 (Serial No. 8 0 84/80 (unpublished)) in the Kassal District Court. The court held that the programs in question in the field of building statics enjoyed copyright protection.

(b) Decision of June 12, 1981 (1982 Betriebs-Berater 1543) in the Mannheim District Court. The court expressed the opinion that computer programs as a rule are not eligible for copyright protection.

(c) Judgment of July 13, 1982 (1982 Betriebs-Berater 1443) in Mosbash District Court. The court held that, contrary to the opinion of the Mannheim Court (above), computer programs are throughout susceptible of copyright protection. *Id.*

97. 1983 Betriebs-Berater 273 (not yet final), cited in Ulmer, Kolle, *supra* note 11, at 168 n.28 [hereinafter cited as 1983 Betriebs-Berater].

98. The decision is of particular importance as it was made by a Chamber of the Court that specialized in intellectual property matters. The decision is also of interest because it is a case in which copyright protection was extended to a foreign plaintiff for infringement of a computer program. Ulmer, Kolle, *supra* note 11, at 168.

cluded that computer programs are to be regarded as literary works and representations of a scientific or technical nature and thus, are unrestrictedly eligible for copyright protection.⁹⁹

In light of the positive opinions in German literature on copyright,¹⁰⁰ association and governmental views,¹⁰¹ and recent court decisions,¹⁰² it appears computer programs will enjoy copyright protection in the Federal Republic of Germany.

C. FRANCE

The Delegation of France indicated that computer software was a work protected by copyright.¹⁰³ In support of this position, the Delegation referred to the position taken by the Employer's Association and the Minister of Justice in France, which was in accord with the position that computer software enjoyed copyright protection.¹⁰⁴ A recent decision by a lower court in France, examining the issue for the first time, also indicates that computer programs are entitled to copyright protection in France.¹⁰⁵

D. JAPAN

The Delegation of Japan asserted that it was not yet possible to state Japan's uniform position with respect to the protection of computer software.¹⁰⁶ At the present time, the government of Japan has set up two committees to study the protection of computer software.¹⁰⁷

Although the committees have not presented their conclusions, an interim report by the Software Legal Protection Investigation Committee, presented to the Ministry of International Trade and

99. 1983 Betriebs-Berater, *supra* note 97.

100. Ulmer, Kolle, *supra* note 11, at 163.

101. *See supra* text at notes 93-95 and accompanying text.

102. *See supra* text at notes 96-97 and accompanying text.

103. WIPO 1983, *supra* note 84, at 273.

104. *Id.*

105. Ulmer, Kolle, *supra* note 11, at 167 n.24a.

Paris Court of Appeals. Decision of Nov. 2, 1982 PIBD III, p. 260.

The Court stated that the elaboration of an application program was an original work of authorship as to both its composition and expression, as the programmer, like the translator, had to make the choice between different ways of expressing such a program, that choice bearing the stamp of the programmer's personality. *Id.*

106. WIPO 1983, *supra* note 84, at 272.

107. *Id.*

One committee is set up under the auspices of the Ministry of International Trade and Industry. The second committee is set up under the auspices of the Agency for Cultural Affairs.

Industry, concluded that computer programs could be considered "literary works" within the scope of the Copyright Law.¹⁰⁸ In addition to this favorable report, two recent court decisions indicate a willingness to grant computer programs copyright protection.¹⁰⁹

E. REMAINING DELEGATIONS

For the purpose of brevity, the remaining nations will be summarized in three groups, based on positions taken at the 1983 WIPO meeting. The first group of delegations indicated that copyright protection was, or would be, granted to computer programs. Nations in this group included the Netherlands, Denmark and Hungary.¹¹⁰ In particular, the Denmark delegation indicated that foreign computer programs enjoyed national treatment in Denmark.¹¹¹

The position of the second group of delegations can be categorized as "uncertain." Nations in this group were Morocco, Austria, Italy, Finland and India.¹¹² In general, these delegations did not oppose copyright protection for computer programs. Their uncertainty, rather, was the result of continuing government studies concerning the most appropriate means to afford protection to computer software.¹¹³

The final "group," consisting of one nation, indicated that Australia had reservations concerning the use of copyright law to protect computer programs. The delegation from Australia expressed the opinion that "computer software was different from what is normally protected"¹¹⁴ under existing copyright laws and treaties. Pointing to a number of disadvantages of copyright law, the delegation expressed its opinion that a patent approach would provide a superior method of protection for computer software.¹¹⁵

108. Interim Report of the Software Legal Protection Investigation Committee of the Japanese Ministry of International Trade and Industry, *reprinted in* 6 *COMPUTER L. SERVICE REP.* (Bigelow), sec. 9-4, art. 3 (1973).

109. Ulmer, Kolle, *supra* note 11, at 167 n.24b.

Taito v. I.N.G. Enterprise, decision of December 6, 1982. The Tokyo District Court held that a microcomputer program for a video game was a work protected under the copyright law and that copying the program stored in a ROM constituted reproduction.

A similar holding was made in Decision of Osaka District Court, December 18, 1979, *reported in* 3 *EIPR D-61* (1981).

Id.

110. WIPO 1983, *supra* note 84, at 272-74.

111. *Id.* at 273.

112. *Id.* at 272-74.

113. *Id.*

114. *Id.* at 273.

115. *Id.* at 274.

V. DRAFT TREATY FOR THE
PROTECTION OF COMPUTER SOFTWARE

A. THE DRAFT TREATY

1. Structure

In addition to studies at the national level, the issue of the most appropriate method of protection for software has been pursued at the international level for the past decade. In 1970, the United Nations requested the International Bureau of the World Intellectual Property Organization to prepare a study on the appropriate form of legal protection for computer programs.¹¹⁶ The International Bureau of the World Intellectual Property Organization, with the help of an Advisory Group of Non-Governmental Experts on the Protection of Computer Programs, has prepared two drafts of a model law for national protection of software,¹¹⁷ and a treaty for international protection of computer software.¹¹⁸ The aims of the draft model law and the draft international convention are to alleviate the difficulties that have arisen in implementing national systems of protection, to subject software to uniform conditions, and to place a greater emphasis on the informational aspect.¹¹⁹

The Draft Treaty incorporates the basic approach of the Model Provisions prepared by the International Bureau and published in

116. Report of the United Nations Secretary General on the Application of Computer Technology for Development, UN Doc. E/4800, May 20, 1970, 202, cited in 14 COPYRIGHT 6 (1978).

117. Model provisions were drafted in 1976 and 1978. See *supra* note 11 (1978 Model Provisions).

118. Draft Treaty, *supra* note 13, at 93.

119. Model Provisions, *supra* note 11, at 11; Kollé, *supra* note 2, at 75.

The main purpose of the Model Provisions is to aid countries in complementing or introducing certainty into national laws applicable to computer software. Although the Model Provisions are written in a complete form that could serve as the basis for a special law, the committee drafting the provisions recognized that in many nations the principles would simply amount to clarifications or extensions of existing legal rules. Model Provisions, *supra* note 11, at 11.

Uniformity in national law was considered desirable due to the fact that the use of computer software frequently concerns more than one country. Given the fact that the operation of a machine that has informational processing capabilities can be used by a person in one nation while the machine that is performing certain functions is in another nation, uniform protection in each nation would be desirable. If effective protection existed only in one of the nations, it might be impossible to prove the unauthorized act was committed in the territory that granted protection. *Id.* at 11-12.

A final benefit of uniform and adequate protection is that it would provide an incentive to disclosure. Disclosure would aid developing countries in two ways. First, it would encourage dissemination to developing countries because protection would eliminate the uncertainty of enforcing a confidential disclosure contract. Second, greater disclosure in the

1978.¹²⁰ The major features of the draft treaty can be summarized as follows: States that are party to the agreement will constitute a Union for the protection of computer software. Protection of software is not granted under the agreement, but must be undertaken by contracting states through domestic legislation.¹²¹ As a minimum of protection, the domestic laws need only provide for protection against infringing acts listed in the agreement,¹²² that correspond to those in the Model Provisions.¹²³ Finally, the draft treaty provides for national treatment.¹²⁴ Each contracting state must provide the same protection that it grants to its own nationals with respect to software.¹²⁵

advertisement of software will help developing countries evaluate the alternatives on the international market. *Id.* at 7.

120. Draft Treaty, *supra* note 13, at 91.

121. *Id.* at Art. 2(1).

Article 2 provides the following principles of protection:

(1) The Contracting States undertake to ensure that computer software is protected on their respective territories in conformity with the provisions of this Treaty.
 (2) Subject to Article 6, the provisions of this Treaty shall not affect any more extensive protection provided for in national laws or in other international treaties.

122. *Id.* at Art. 4.

Article 4 provides protection against the following unlawful acts:

(1) Subject to paragraph (3), the Contracting States undertake to grant protection to computer software against the following acts: (i) disclosing the computer software or facilitating its disclosure to any person before it is made accessible to the public with the consent of the proprietor; (ii) allowing or facilitating access by any person to any object storing or reproducing the computer software, before the computer software is made accessible to the public with the consent of the proprietor; (iii) copying by any means or in any form the computer software; (iv) using the computer program to produce the same or a substantially similar computer program or a program description of the computer program or of a substantially similar computer program; (v) using the program description to produce the same or substantially similar program description or to produce a corresponding computer program; (vi) using the computer program or a computer program produced as described in (iii), (iv) or (v) to control the operation of a machine having information-processing capabilities, or storing it in such a machine; (vii) offering or stocking for purpose of sale, hire or license, selling, importing, exporting, leasing or licensing the computer software or computer software produced as described in (iii), (iv) or (v); (viii) doing any of the acts described in (vii) in respect of objects storing or reproducing the computer software or computer software produced as described in (iii), (iv) or (v). (2) Paragraph (1) does not apply in respect of any act which has been authorized by the proprietor.

123. The corresponding provisions are found in Section 5, Model Provisions, *supra* note 11, at 12.

124. The Draft Treaty, *supra* note 13, art. 3.

Article 3 provides that:

Each Contracting State shall grant to nationals or residents of other Contracting States the same protection that it grants to its own nationals with respect to computer software.

125. *Id.*

2. Major Changes in Existing Conventions

The WIPO Draft Treaty was proposed in response to the perceived difficulty of adapting copyright, patent and unfair competition law to computer programs.¹²⁶ Although similar to copyright law, the Draft Treaty and Model Provisions are considered a *sui generis*,¹²⁷ or a special system of protection solely for computer programs.¹²⁸ The main problems in the application of existing copyright protection were regarded as arising in connection with the concept of a work, the scope of protection, and the duration of protection.¹²⁹

In regard to the concept of a work, the Draft Treaty clarifies existing copyright conventions by explicitly providing that computer programs and related documentation constitute a subject matter that is protected from infringement.¹³⁰ Prior debate on the applicability of copyright law to computer programs centered on the widely held view that computer software was "so foreign to the essence of traditional copyright and possesse[d] so little similarity to the traditionally protected intellectual works that it [could not] be made subject to copyright protection without destroying the very bases of copyright."¹³¹

The second modification¹³² of existing copyright conventions

126. See Kollé, *supra* note 2, at 70-71 for a brief history of the institutionalization of this debate on the international level.

127. *Sui generis* is defined as: "[o]f its own kind or class: i.e., the *only one* of its own kind; peculiar." BLACK'S LAW DICTIONARY 1288 (5th Ed. 1979).

128. Kollé, *supra* note 2, at 70-71.

129. *Id.* at 73. See also Ulmer, Kollé, *supra* note 11, at 181-89. The majority of literature that deals with the issue of copyrightability of computer software discusses one or more of these problems. For an explanation of the United States resolution of these issues, see generally, the CONTU Report, *supra* note 7.

130. Draft Treaty, *supra* note 13, art. 1. Art. 1 provides that computer software includes the computer program, program description and supporting materials. The relevant portion follows:

For the purposes of this Treaty (i) "computer program" means a set of instructions capable, when incorporated in a machine-readable medium, of causing a machine having information-processing capabilities to indicate, perform or achieve a particular function, task or result; (ii) "program description" means a complete procedural presentation in verbal, schematic or other form, in sufficient detail to determine a set of instructions constituting a corresponding computer program; (iii) "supporting material" means any material, other than a computer program or a program description, created for aiding the understanding or application of a computer program, for example problem descriptions and user instructions; (iv) "computer software" means any or several of the items referred to in (i) to (iii).

131. Kollé, *supra* note 2, at 73.

132. The second modification can also be viewed as a clarification because the infringing acts are similar to those protected against by existing copyright conventions.

is related to the scope of protection. The Draft Treaty lists eight acts that would constitute infringement of computer programs.¹³³ Although most forms of reproduction would be covered by existing copyright conventions,¹³⁴ Article 4(1)(vi) grants the proprietor a right that does not directly exist under copyright law.¹³⁵ Article 4(1)(vi) provides protection against the use of a computer program in a computer.¹³⁶

A final modification of existing copyright conventions is a change in the duration of protection. The long term of protection provided by both the U.C.C.¹³⁷ and the Berne Convention¹³⁸ was considered inappropriate to computer software. Opponents of a long period of protection argued that "the unrestricted exploitation of computer programs ought to be allowed as soon as possible to encourage the production of advanced programs."¹³⁹ In response to the perceived problem of a long term of protection under copyright conventions, the Draft Treaty provides a minimum protection of 20 years from the first use or commercialization of the program.¹⁴⁰

133. Draft Treaty, *supra* note 13, at art. 4. For text, see *supra* note 122.

134. Although this proposition may be the subject of some dispute, a number of authors concur on the position that the Berne Convention and the U.C.C. contain provisions broad enough to cover all forms of reproduction. See Kindermann, *supra* note 76, at 8-12. Ulmer, Kollé, *supra* note 11, at 180-89.

135. Draft Treaty, *supra* note 13, Art. 4(1)(iv). Although the use of software was not considered directly protected, the Advisory Group of Non-Governmental Experts on the Protection of Computer Software noted that:

although indirect protection under copyright law may be available in some countries since it would seem that, during the running of a computer program in the computer, each instruction will at some moment necessarily be copied.

Model Provisions, *supra* note 11, at 18.

136. Draft Treaty, *supra* note 13, Art. 4(1)(iv).

137. U.C.C., *supra* note 46, Art. IV(2).

Although duration of protection is regarded as a matter for the national laws of member nations, Art. IV(2) provides that protection shall not last for less than twenty-five years from either the death of the author or from the date of first publication. *Id.*

138. Berne Convention, *supra* note 49, Art. 7(1).

The Berne Convention also provides that the term of protection is governed by the national laws of the member nations. In addition, Berne provides for a longer minimum term of protection than the U.C.C., Art. 7(1) of the convention provides that "[t]he term of protection granted by this Convention shall be the life of the author and fifty years after his death." *Id.*

139. Ulmer, Kollé, *supra* note 11, at 188.

140. Draft Treaty, *supra* note 13, Art. 5.

Article 5 provides the following guidelines for duration of copyright protection: The protection under Article 4 shall begin at the time when the computer software was created and shall continue at least until the expiration of 20 years calculated from the earlier of the following dates:

- (i) the date when the computer program is, for purposes other than study, trial or research, first used in any country in controlling the operation of a machine

Although there may be some concern that existing copyright conventions do not adequately protect computer software, the modifications made by the Draft Treaty to existing copyright conventions appear to be minimal. In terms of the need for a *sui generis* system of protection for computer software, the following observations can be made.

As indicated in Section IV of this Note, many nations have, or will in the near future, accept the proposition that computer programs constitute a subject matter that is appropriate for copyright protection.¹⁴¹ In addition, the inclusion of a provision prohibiting the use of a computer program without authorization by the proprietor may not be essential in the future due to the increasing standardization of software.¹⁴² Finally, the debate concerning the duration of protection can apply to a multitude of works presently protected under copyright conventions including catalogues, business terms of contracts, contributions to calendars, yearbooks, and lectures.¹⁴³

3. Prospects For Ratification

A detailed examination of the Draft Treaty has not been undertaken by the Committee of Experts.¹⁴⁴ At this point, the prospects for adoption of a special treaty to protect software are extremely uncertain due to the following facts. The conclusions of the June 1983 Committee of Experts included the recommendation that "the consideration of the conclusion of a special treaty as presented to it should not be pursued for the time being."¹⁴⁵ This recommendation may stem, in part, from replies received by the WIPO survey concerning the desirability of a new treaty.¹⁴⁶ Replies to the issue varied considerably and indicated a direct relationship to comments

having information-processing capabilities, by the proprietor or with his consent; (ii) the date when the computer software is first sold, leased or licensed in any country or offered for those purposes.

141. See *supra* text accompanying notes 84-114.

142. See *supra* notes 20-21 and accompanying text.

143. See Kindermann, *supra* note 76, at 10 and 12 for a discussion on this point. See also Ulmer, Kelle, *supra* note 11, at 188 for a similar viewpoint.

144. WIPO 1983, *supra* note 84, at 275.

The committee examined a number of substantive questions concerning basic protection under the Draft Treaty, but decided that a detailed examination was not appropriate at this time. *Id.* at 275-79.

145. *Id.* at 278.

146. WIPO, LPCS/II/2, *supra* note 55, at 80-87.

concerning the adequacy of protection under existing treaties.¹⁴⁷ Although a majority of replies favored the conclusion of a new treaty, many replies stated one or more of the following comments: (1) existing treaties contained adequate protection; (2) existing treaties should be revised; (3) the issue required further study, or; (4) that there should be no revision of existing treaties and no conclusion of a new treaty.¹⁴⁸

The decision of the Committee of Legal Experts not to pursue further consideration of the Draft Treaty at this time is also due to the increasing trend at the national level in the number of countries granting protection under copyright law to computer software.¹⁴⁹ As noted by the Committee in its conclusions, as a consequence of this trend, "the need for international protection may, between such countries, be satisfied to a considerable extent by means of the international copyright conventions."¹⁵⁰

B. PROSPECTS FOR UNITED STATES ADHERENCE

The Draft Treaty for the Protection of Computer Software would provide U.S. software exporters with assured protection against infringement in nations that ratified the proposed treaty.¹⁵¹ However, if the United States failed to ratify the proposed Draft Treaty, and a majority of nations did ratify the Treaty, any copyright protection that presently exists or that would be recognized under existing international copyright conventions may be lost.¹⁵² Thus, the question of whether the United States would ratify the Draft Treaty is one of interest.

The fact that the United States presently protects computer

147. *Id.* at 86. See *supra* notes 72-83 and accompanying text.

148. WIPO, LPCS/II/2, *supra* note 55, at 86.

149. See *generally*, notes 45-83 and accompanying text.

150. WIPO 1983, *supra* note 84, at 278.

151. This section is based on the hypothetical situation that the Draft Treaty, as proposed, is ratified by a majority of nations.

152. The situation, as presented, may not be the result of a new treaty. However, if a special treaty for protection of computer software enters into force, it is likely that no specific protection for computer software would be granted under existing international conventions. (The term "specific" refers to the revision of current conventions to include a definition of computer software and protection against unlawful acts.) Of course, this does not encompass the situation where a country is willing to recognize that computer software is protected under the UCC or Berne Convention. The Draft Treaty, art. 2(2), *supra* note 13, at 94, allows member nations the right to grant "more extensive protection provided for in national laws or in other international treaties." *Id.*

software¹⁵³ would appear to tip the scale in favor of ratification. However, current protection of a specific category of "work," although important, would not be a decisive factor for United States adherence to a treaty protecting computer software. Indeed, if protection of a specific "work" was the primary factor, the United States would have adhered to the Berne Convention from its conception.¹⁵⁴

United States ratification of a treaty protecting computer software may hinge on prerequisites to protection, and the extent of

153. 17 U.S.C. §§ 101-810 (1982).

154. U.S. failure to adhere to Berne has been primarily due to prerequisites to copyright protection (formalities, manufacturing clause) and protection of the moral rights of authors, a concept not recognized by the United States.

As noted by one writer, the "history . . . of the combined legislative programs to obtain general revision of the copyright law and U.S. adherence to the Berne Convention makes painful reading (footnote omitted)." Ringer, *The Role of the United States In International Copyright—Past, Present, and Future*, 56 GEO. L.J. 1058 (1968). A portion of that history includes the following:

The first United States Copyright Statute in 1790, Act of May 31, 1790, ch. 15, 1 Stat. 124, denied any protection to published works of nonresident foreign authors. Over a century later, the International Copyright Act of March 3, 1891, ch. 565, 26 Stat. 1106, became law. However, the requirements of the "manufacturing clause" were so rigid that extension of copyright protection to foreigners was illusory. *Id.* at 1057. The Copyright Act of March 3, 1909, ch. 320, Stat. 1075, (the 1909 Act did not undergo substantial revision until 1976), liberalized the manufacturing clause, but retained rigid formality requirements. *Id.* Although the original Berne Convention of 1886, *supra* note 49, allowed certain formalities, the Berne Revision of 1908, required that rights shall not be subject to any formality.

Since 1909, efforts to induce the United States to join the Berne Union have failed. In 1928, the Berne level of protection was raised again. However, the Rome Convention allowed non-members to adhere to the Berlin text until August 1, 1931. *See* Sherman, *The Universal Copyright Convention: Its Effect on United States Law*, 55 COLUM. L. REV. 1147-48 (1955). Although strenuous efforts were made to meet this deadline in Congress, the efforts were unsuccessful. Senate approval was prematurely obtained in 1939, 79 CONG. REC. 6032 (1935), but it was immediately withdrawn. *Id.* at 6099. Another major effort to introduce a bill in 1940, S. 3043, 76th Cong., 3rd Sess. (1940), made by an American committee related to the League of Nations, died in committee.

After World War II, a compromise solution was adopted, that compromise being the Universal Copyright Convention. *See* Wells, *The Universal Copyright Convention and the United States: A Study of Conflict and Compromise*, 8 COPYRIGHT L. SYMPOSIUM 69, 86 (ASCAP 1957). Since the UCC came into effect, continued effort has been made to induce the United States to adopt the Berne Convention. In 1978, the Director General of the World Intellectual Property Organization advanced the idea of a special protocol to the Berne Convention to facilitate U.S. adherence to Berne. WIPO, Memorandum by the Director General, Doc. B/EC/XIV/3, reprinted in *Practising Law Institute*, Pub. No. 115, CURRENT DEVELOPMENTS IN COPYRIGHT LAW 1980 921 (1980). The basic idea was to adopt a Protocol that would permit the U.S. to retain its copyright notice formality and take 20 years to change its domestic law to make it consistent with the Berne Convention, but meanwhile enjoy all of the rights and responsibilities of Berne membership. *Id.*

The Protocol idea met with a cool reception when it was discussed at the February

protection granted to proprietors of software.¹⁵⁵ The two major reasons for United States non-adherence to the Berne Convention were the abandonment by Berne of all formalities, and the preservation of the moral right of authors (*droit moral*).¹⁵⁶ Although the proposed Model Law and Draft Treaty do not mention formalities or *droit moral*, it is likely that one or both concepts would be incorporated.

In the initial proposed Model Law and Draft Treaty, the establishment of an optional system of deposit at the national or international level was contemplated as a formality to protection.¹⁵⁷ At this point, it appears that the system of deposit or registration will not be adopted "in view of the fact that most copyright laws grant automatic protection to works without formalities."¹⁵⁸ Moreover, in light of state practice, it is likely that a provision will be incorporated similar to that found in the Berne Convention: that the granting of protection may *not* be made subject to compliance with any formality.¹⁵⁹

Although the Copyright Act of 1976 relaxed some of the prerequisites for protection under prior law,¹⁶⁰ it has not reached the

1979 meeting of the Executive Committee of the Berne Convention. See Schrader, *Copyright Office; International Copyright Relations in Practising Law Institute*, Pub. No. 115, CURRENT DEVELOPMENTS IN COPYRIGHT LAW 1980 919 (1980). The major concern was "that [the protocol] could be viewed as a reduction of the level of protection in the Berne Convention. [More] seriously, the 'reduction' in protection would be a concession in favor of a major, if not *the* major copyright exporting country." *Id.* It appears at this point that the protocol provision is essentially dead. *Id.*

155. Prerequisites to protection would include a provision that granted a nation the right to require formalities such as notice or registration. The extent of protection refers to the inclusion of a provision that grants proprietor's moral rights.

156. See *supra* note 50.

157. See Model Provisions, *supra* note 11, at 9.

158. WIPO 1983, *supra* note 84, at 278.

159. Berne Convention, *supra* note 49, art. 4(2) (Rome Act), art. 5(2) (Paris Act).

For support of this proposition see Kolle, *supra* note 2, at 77. See also *supra* note 67, at 83 n.7 (discussion at the 1983 meeting, WIPO/LPCS/II/2). The statement that supports this proposition reads as follows:

The Model Provisions provide for protection against the acts referred to above regardless of any *formality*, in particular deposit or registration. The same should apply with respect to minimum protection under the treaty, which should expressly state that compliance with formalities may not be required. Of course, this provision would not affect any protection granted under national laws in excess of the minimum required by the Convention.

WIPO/LPCS/II/2, *supra* note 67, at 83 n.7.

160. The Copyright Act of 1976 substantially narrowed the divergencies between the U.S. copyright system and the Berne Convention system in the following ways:

(a) The term of protection is generally the life of the author plus 50 years. 17 U.S.C.

Berne standard, that the enjoyment and exercise of copyright shall not be subject to any formality.¹⁶¹ The U.S. Copyright Act of 1976 retained the notice formality,¹⁶² and requires registration of the copyright prior to the bringing of an infringement suit.¹⁶³ Thus, any provision incorporated in the Draft Treaty that prohibits compliance with any formality would be an obstacle to U.S. adherence.

A second major obstacle to U.S. adherence would be the inclusion of a provision protecting the moral right of authors.¹⁶⁴ The doctrine, which has found its strongest support in Europe, is provided for by Article 6bis of the Berne Convention.¹⁶⁵ In essence, the doctrine declares the author's right "to claim authorship of the work and to object to any distortion, mutilation of other modification of, or other derogatory action in relation to, the said work, which would be prejudicial to his honor or reputation."¹⁶⁶

U.S. copyright law extends no protection to the moral right of authors.¹⁶⁷ The reason that the United States has not granted statutory protection of moral rights has been due historically to the continuing conflict of interests between authors and users of works.¹⁶⁸ Although the addition of a statutory provision protecting

§ 302(a) (1982). This is a minimum protection set forth in the Berne Convention, *supra* note 49, art. 7(3).

(b) Federal copyright now subsists from creation. Although registration is still an important formality, under the 1976 Act it is not a condition of protection. It is only a prerequisite to the bringing of an infringement suit. 17 U.S.C. § 411 (1982).

Although divergencies have been narrowed in the areas of duration and registration, the "manufacturing clause" continues to remain a barrier to U.S. ratification of the Berne Convention. Beginning in 1965, serious efforts were made to narrow and eventually eliminate the manufacturing clause from U.S. Copyright Law. 17 U.S.C. § 601 (1982) (Historical and Revision Notes). Although the manufacturing clause was to be repealed in 1982, that date was extended to 1986. 17 U.S.C. § 601(a) (1982), *as amended by* Pub. L. 97-215 (1982).

161. Berne Convention, *supra* note 49, art. 4(2) (Rome Act), art. 5(2) (Paris Act).

162. 17 U.S.C. § 401(a) (1982).

Although the Copyright Act of 1976 retains the notice formality, the notice requirement has been liberalized. There are three exceptions to the requirement, and omission of notice does not invalidate copyright if registration is made within five years of publication without notice. 17 U.S.C. § 405(a)(b) (1982).

163. 17 U.S.C. § 411 (1982).

164. Although no specific provision exists protecting the moral rights of proprietors, several replies to the WIPO survey indicate that copyright protection "was the most suitable legal framework to safeguard both the economic interests and moral rights of creators of software." WIPO, LPCS/II/2, *supra* note 67, at 85.

165. Berne Convention, *supra* note 49, art. 6bis.

166. *Id.*

167. 1 M. NIMMER ON COPYRIGHT § 110.2 (1984).

168. See Amarnick, *American Recognition of the Moral Right: Issues and Options*, 29 COPYRIGHT L. SYMP. 31 (1979).

the author's moral rights has been repeatedly proposed, the proposals have not been adopted.¹⁶⁹

If the requirements of no formalities, and the protection of the moral right of authors are included in the Draft Treaty for Protection of Computer Software, the requirements will stand as major obstacles to U.S. adherence. In light of the historic and continuing U.S. resistance to adhere to the Berne Convention because of these two provisions, U.S. adherence to a treaty for the protection of computer software that contains these provisions will be an unlikely event.

VI. CONCLUSION

Various types of protection are available to protect computer software in the United States. The most common forms include patent, trade secret and copyright law. However, the market for U.S. software extends beyond the territorial borders of the United States. Thus, the need to determine if there is effective protection under foreign laws and international conventions for software is of the utmost concern to the proprietor of software.

Even if adequate patent and trade secret protection are available under U.S. law, patent and trade secret protection have no reliable extraterritorial effect. On the other hand, most nations have a copyright law, and an increasing number of nations recognize that computer software is capable of being, or is currently, protected by copyright law. An additional advantage to copyright protection is the existence of international copyright conventions that afford national treatment to member nations.

Although protection for computer programs is not assured by existing conventions, at least one U.S. software house has recently prevailed in a copyright infringement suit.¹⁷⁰ Moreover, if the

169. During the hearings held in the 1930's and 1940's on adherence to the Berne Convention, two bills that would incorporate a moral rights provision were discussed, but were never adopted. S. 3047, 74th Cong., 1st Sess., § 41(b) (1935); S. 3043, 76th Cong., 3rd Sess., § 5(1) (1940).

During the copyright revision hearings, William A. Strauss presented a report to Congress that concluded that no statutory enactment of moral rights was necessary because American courts employed "the same reasonable and equitable standards for the protection of authors' personal rights." Strauss, *The Moral Rights of the Author*, Study No. 4, in STUDIES PREPARED FOR THE SUBCOMM. ON PATENTS, TRADEMARKS AND COPYRIGHTS OF THE SENATE COMM. ON THE JUDICIARY, 86th Cong., 1st Sess., 142 (Comm. P. 1960). It appears the Congress adopted this view. The Copyright Act of 1976 grants no protection for the moral rights of authors.

170. See *supra* note 97 and accompanying text.

responses of delegations at the recent WIPO meeting prove to be a reliable indicator of national policy, the trend toward granting computer programs copyright protection will increase dramatically in the next few years. As a result of this trend, increasing pressure will be exerted at the international level to revise existing conventions, or to accept the proposition that existing conventions already protect computer programs.

It appears certain that the WIPO Draft Treaty will undergo amendment and considerable comment prior to a final conclusion or approval by diplomatic conference. Indeed, it is questionable whether there is a need of, or desire for, a new treaty. There are two points worthy of notation in this context. First, although uniformity may make life easier for lawyers, it is not necessarily in the interest of the people of various nations. For example, if a new treaty incorporates two European concepts, the requirements of *droit moral* and no formalities,¹⁷² the United States will not become a member of the proposed Union. Consequently, U.S. companies would not be able to obtain copyright protection under the existing conventions.¹⁷²

A second point concerning the desirability of further consideration of a new treaty is that further debate may draw attention away from the possibility of obtaining protection through existing treaties. As noted by one prominent expert, "[e]xperience has shown . . . that there is little chance for . . . creation of treaty law in the near future."¹⁷³ If effort is directed toward revision or accommodation of existing conventions, it is probable that reliable protection for existing and emerging computer technology will be available in the near future.

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171. See *supra* note 154 and accompanying text.

172. See *supra* note 152 and accompanying text.

173. Ulmer, Kolle, *supra* note 11, at 189.

One of the main difficulties noted is the "attitude of the developing countries calling for preferential treatment." *Id.*