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Protections for Software under U.S. and Japanese Law: A Comparative Analysis

I. INTRODUCTION

The dramatic increase in computer use has created a corresponding growth in competition among computer manufacturers.¹ Accompanying that rivalry is an expanding need for better and more thorough forms of protection for computer software.² Three major powers, Japan, the United States, and Western Europe, have

1. The total number of companies, domestic and foreign, now competing for a share of that market in what could be called the digital information industry (i.e., computers, data communications, and data services) probably exceeds 1,500. *Pushing Harder to Keep Growth on Target*, ELECTRONICS, Jan. 13, 1983, 125, 133 [hereinafter cited as *World Markets Report 1983*]. ELECTRONICS further estimates the dollar value of data processing systems, peripherals, and office equipment sold in the United States in 1983 at \$63.353 billion, in Western Europe at \$22.185 billion, and in Japan at \$14.683 billion. *A Glowing Year Foreseen as Strong Growth Resumes*, ELECTRONICS, Jan. 12, 1984, 123, 126, 142, 148 [hereinafter cited as *World Markets Report 1984*]. These dollar amounts are up from 1982 figures of \$53.347 billion (U.S.); \$19.283 billion (Western Europe); and \$12.102 billion (Japan). *Id.* ELECTRONICS predicts 1984 figures to increase to \$79 billion (U.S.); \$25.558 billion (Western Europe); and \$17.326 billion (Japan). *Id.* See also Final Report of the National Commission on New Technological Use of Copyrighted Works 25-26 (July 31, 1978), reprinted in COPYRIGHT L. REP. (CCH) Extra Edition, No. 2, Aug. 31, 1978 [hereinafter cited as CONTU Report]; *Japan Electronic Firms like Matsushita, Sony Push Into Computers*, Wall St. J., March 8, 1983, at 1, col. 6 [hereinafter cited as *Japan Firms Push Into Computers*].

2. Takaishi, *Legal Protection of Software under Japanese Law*, 5 EUR. INTELL. PROP. REV. 131, 131 (1982); see also International Bureau of the World Intellectual Property Organization, *Model Provisions on the Protection of Computer Software*, reprinted in 11 LAW & COMPUTER TECH. 2, 3-4 (1978) [hereinafter cited as *Model Provisions*].

ELECTRONICS magazine put the value of the 1982 U.S. software market at \$5,001 million and the 1983 market at \$10,309 million. It predicts the 1984 market to be worth \$15,017 million. *World Markets Report 1984*, *supra* note 1, at 128.

A computer system configuration consists of hardware and software. Hardware is defined as the physical equipment used in data processing. Software, on the other hand, includes the programs, procedures, rules and documentation associated with data processing. INTERNATIONAL BUSINESS MACHINES CORP. VOCABULARY FOR DATA PROCESSING, TELECOMMUNICATIONS, OFFICE SYSTEMS 184, 190, 390 (1981).

Software development entails four steps. The first is the creation of a flow chart as a graphic representation of the fundamental idea or algorithm. The second is the development of the source program or code as an alphanumeric translation of the flow chart into a computer language such as Fortran, Cobol or Algol. The third step is the construction of an assembly program, a further translation of the flow chart into a computer-useable program. The fourth step is the development of an object program or code (often called microcode or microprogram) as the final translation of the flow chart into machine language. Pope, *Protection of Proprietary Interests in Computer Software*, 30 ALA. L. REV. 527, 530 (1979). Source code may thus be considered a human-understandable form of software, whereas object code is a machine-understandable form of software.

Object code may be embodied in a variety of forms, including floppy disks or read-only memories (ROMs). Floppy disks are flexible records onto which computer programs or data may be written or

emerged as the leaders in the world marketplace for data processing equipment.³ Given this situation, the problems associated with protecting computer software have become international in scope.

Despite the international compass of the problem, few international solutions exist or have been proposed for the protection of software. Among those in existence today are the Universal Copyright Convention⁴ and the Berne Convention.⁵ Both of these treaties rely, in large part, on a host country's national protections for software, rather than an international scheme of protection.⁶ The World Intellectual Property Organization (WIPO)⁷ has proposed a series of provisions which would secure international treatment for software protection.⁸ As of 1980, however, an international treaty based on these proposals was four to five years away from submission to a diplomatic conference.⁹

Because of the lack of international protection for software, national protections under individual countries' laws become increasingly important for those wishing to safeguard their software. As the sharpest competition in the data processing mar-

from which they may be read an infinite number of times. Computer programs are not permanently stored on floppy disks. ROMs, however, are hardware-like memory units in which instructions or data are permanently stored for use by the computer. ROMs are available in a variety of integrated-circuit configurations including PROMs (programmable read-only memories), EPROMs (electrically programmable read-only memories), EEROMs (electrically erasable read-only memories) and EEPROMs (electrically erasable programmable read-only memories). If the object code software is thus permanently fixed in a ROM, it is often referred to as firmware. Firmware may therefore be defined as software in a hardware form.

There are three classifications of software. Applications software constitutes the bulk of all software and determines how raw data will be handled by the computer by establishing whether the computer will be used as an adding machine or logic system. Compiler software enables computers to translate flow chart concepts into machine language and thus determines how the computer will interpret a language such as Fortran. Operations software provides computers with the ability to simultaneously process multiple sets of data and allows hardware resources to be allocated among several concurrently running applications programs. Pope, *supra* at 531.

3. See *supra* dollar figures in note 1.

4. Universal Copyright Convention, 25 U.S.T. 1341, T.I.A.S. No. 7868. See *infra* § IV.B.

5. Berne Convention for the Protections of Literary and Artistic Works, as revised at Paris, July 24, 1971, U.N. Reg. No. 18,338 (not yet published), as reprinted in COPYRIGHT L. REP. (CCH) ¶¶ 11,400-79 (1978). See *infra* § IV.A.

6. For the U.C.C., see *infra* notes 449-53 and accompanying text; for Berne, see *infra* notes 425-32 and accompanying text.

7. WIPO was established in 1970 to centralize the task of the administration of industrial property and copyright on an international level. It is comprised of a general assembly of representatives of member states, a permanent secretariat designated as the International Bureau for Intellectual Property, and a coordinating committee with consultative and executive function. WIPO operates the international registration of trademark, deposit of designs, and registration of the appellations of origin, as well as the recording of international patent applications. H. DEGENHARDT, TREATIES AND ALLIANCES OF THE WORLD 38 (3d ed. 1981).

8. See *Model Provisions*, *supra* note 2, at 11-27.

9. Braubach, *Computer Software International Protection*, 2 EUR. INTELL. PROP. REV. 225, 228 (1980).

ketplace is between the United States and Japan,¹⁰ each country's laws warrant close scrutiny.

Both the United States and Japan hold technological leadership positions with respect to the design and production of data processing equipment.¹¹ Each competes with the other at home¹² and abroad.¹³ Neither country has established a fully developed set of legal guidelines for software.¹⁴ Taken together, these facts place software developers in a precarious position in a highly competitive market with regard to their investment in software.

The actual dollar amounts involved in U.S. and Japanese production of data processing equipment serve to underscore the importance each country has in the world marketplace. Together, the United States and Japan produced over \$78 billion in data processing equipment in 1983.¹⁵ Import and export data further demonstrate the significant role Japan and the United States play in each other's domestic computer market. In 1981, Japan held a 23.4% share of all data processing equipment and parts imported by the United States.¹⁶ These imports had a value of \$386 million, a 103.4% increase over 1980 imports of \$189.8 million.¹⁷ By contrast, the United States held a 46% share of the Japanese computer market in 1981.¹⁸ This share represented \$235.5 million in shipments of computers and parts to Japan, a 0.3% drop from 1980 shipments of \$242.4 million.¹⁹ The need to know each country's legal safeguards for computer technology becomes increasingly significant as Japan's and the United States' technological economies become more closely entwined.

Japan does not have the domestic expertise to develop software in the same

10. *Straining to Lift Consumption after a Slow Start*, ELECTRONICS, Jan. 13, 1982, 121, 145 [hereinafter cited as *World Markets Report 1982*]. See *U.S.-Japan Competition in Small Computers*, 47 JAPAN ECON. INST. REP., Dec. 18, 1982 [hereinafter cited as *Small Computer Competition*]; *U.S.-Japan Competition in Mainframe Computers*, 29A JAPAN ECON. INST. REP., July 30, 1982 [hereinafter cited as *Mainframe Competition*]. See also *Japan Firms Push Into Computers*, *supra* note 1.

11. See *World Markets Report 1984*, *supra* note 1.

12. *World Markets Report 1982*, *supra* note 10, at 146; see also *U.S. Imports from Japan, by Commodity, 1981*, 34A JAPAN ECON. INST. REP., Sept. 3, 1982 [hereinafter cited as *U.S. Imports from Japan, by Commodity, 1981*].

13. See *West Germany Computer Firms Fighting to Take Turf from Foreign Companies*, Wall St. J., April 27, 1983, at 38, col. 3; see also *World Markets Report 1982*, *supra* note 10, at 138.

14. Takaishi, *supra* note 2, at 131; see also *Apple Computer v. Franklin Computer*, 545 F. Supp. 812, 819 n.10 (E.D. Pa. 1982), for some observations on the conflicts in the area of software protection.

15. See *World Markets Report 1984*, *supra* note 1.

16. *U.S. Imports from Japan, by Commodity, 1981*, *supra* note 12, at 5. All of Japan's major computer manufacturers compete in the U.S. marketplace. These manufacturers include Fujitsu, Hitachi, Nippon Electric, Toshiba, Mitsubishi, and Oki Electric. See generally *Small Computer Competition*, *supra* note 10; *Mainframe Competition*, *supra* note 10.

17. *U.S. Imports from Japan, by Commodity, 1981*, *supra* note 12, at 5.

18. Okamatsu, *Japanese Computer Industry and Government Policy*, 21 J. OF JAPANESE TRADE & INDUS. 22, 25 (1982). Leading importers were U.S.-based computer makers International Business Machines Corporation, Sperry Univac, Burroughs Corporation, and NCR Corporation. *Id.*

19. *U.S. Exports to Japan, by Commodity, 1981*, 24A JAPAN ECON. INST., REP. June 25, 1982, at 6.

profusion as it is being developed in the United States.²⁰ However, the Ministry of International Trade and Industry in Japan underwrites software development through government-initiated projects.²¹ Until they gain the same level of expertise in software development as U.S. companies have, the Japanese will look to software developments taking place in the United States as a basis for their own software projects.²² This situation illustrates the need for an understanding of the legal guidelines applicable to software in each country because of the thin line that exists between independent development efforts and the actual copying of software.

The increasing importance of software in configuring computer systems also underscores the need for a working knowledge of both Japanese and U.S. software safeguards. By 1985, industry observers expect that software associated with certain systems will exceed the cost of the hardware on which it runs.²³ Presently, estimates put the cost of software at 70% of the system cost.²⁴ Total sales estimates in the United States for software range from \$13 billion²⁵ to as high as \$45 billion.²⁶

Software developers are seeking ways to protect their investment against unauthorized infringement.²⁷ This Comment explores the established and developing protections against infringement in the United States and Japan. Under U.S. law, such safeguards include patent, copyright, and trade secret protections. This Comment analyzes both the historical development of these software protections as well as current case law. After considering U.S. law, the author turns to the protections available under Japanese law, including Japanese copyright and patent laws, as well as protections available under tort law. Finally, the author explores those protections currently available under international treaties or proposed under multinational agreements.

20. See Yoshio, *Technological Transfer: Grafted or Potted*, 7 JAPAN ECHO 25 (1980). Yoshio contends that most programming languages such as COBOL do not readily lend themselves to translation into Japanese, and therefore, in order to become proficient programmers, Japanese software developers must first be fluent speakers of English. *Id.* at 31-34.

21. Okamatsu, *supra* note 18, at 28.

22. *Small Computer Competition*, *supra* note 10, at 5.

23. *World Markets Report 1982*, *supra* note 10, at 129.

24. *Model Provisions*, *supra* note 2, at 3.

25. *Id.*

26. *World Markets Report 1983*, *supra* note 1, at 133.

27. See, e.g., *Warner Says Top Atari Official Leaving*, Wall St. J., Dec. 9, 1982, at 7, col. 1, for recent attempts by video game maker Atari to protect its software by patent and copyright suits; see also *IBM Wins Tough Trade Secrets Ruling*, Wall St. J., Dec. 1, 1982, at 7, col. 1, for coverage of recent IBM case seeking injunction against former employees revealing secrets about IBM's personal computer.

Infringement can be the actual copying of a software program by another without permission, or it can be the misappropriation of trade secrets by a competitor or an employee. In essence, infringement is the use of a patent, copyright or trade secret without authorization.

U.S. federal patent law defines infringement as the making, selling or using of any patented invention without authority. 35 U.S.C. § 271 (1982). U.S. copyright law defines infringement as the violation of any exclusive rights of the copyright owner. 17 U.S.C. § 501 (1982). The Restatement of Torts imposes liability on anyone who employs methods falling below the generally accepted standards of commercial morality and reasonable conduct in obtaining another's trade secrets. RESTATEMENT OF TORTS §§ 757, 759 (1939).

II. PROTECTIONS UNDER U.S. LAW

Protections afforded software under U.S. law have been uncertain because of the haphazard safeguards they offered,²⁸ the inconsistent interpretations of the law applied by the courts,²⁹ and the difficulty in enforcement.³⁰ Most software developers have relied on trade secret law coupled with licensing agreements³¹ to protect their investment in software development.³² However, trade secret protection becomes less effective as the software is more widely distributed over a greater number of users.³³ Other developers have turned to federal patent and copyright protections,³⁴ but, until recently, these safeguards have failed to meet the needs of the industry.

With current developments in both patent and copyright protection, however, software developers may now look to these federal statutory safeguards with increasing assurance. In 1981, the Supreme Court handed down its landmark decision of *Diamond v. Diehr*,³⁵ marking a turning point in the patentability of software.³⁶ A brief examination of the state of the law prior to *Diehr* will serve to put this important case into context.

A. Patent Protection Prior to 1981

The U.S. Constitution grants to Congress the broad powers to "promote the progress of science and the useful arts, by securing for limited times to authors and inventors the exclusive rights to their respective writings and discoveries."³⁷ Central to the Patent Act of 1952 is section 101, which provides that "whoever invents or discovers any new or useful process, machine, manufacture or composition of matter, or any new and useful improvement thereof, may obtain a

28. See, e.g., *Synercom Technology Inc. v. University Computing Company*, 462 F. Supp. 1003 (N.D. Tex. 1978), discussed *infra* at text accompanying notes 111-16. In *Synercom*, the court found that the plaintiff had protected its data processing manuals by copyright, but that its software formats were not covered by copyright. *Synercom*, 462 F. Supp. at 1013-14.

29. Compare *Williams Electronics v. Artic International*, 685 F.2d 870 (3d Cir. 1982) and *Apple Computer v. Franklin Computer*, 714 F.2d 1240 (3d Cir. 1983) with *Apple Computer v. Franklin Computer*, 545 F. Supp. 812 (E.D. Pa. 1982), discussed *infra* at text accompanying notes 154-73.

30. See *Model Provisions*, *supra* note 2, at 4. The International Bureau of WIPO notes that effective protection and enforceability is needed because of the vulnerability of computer software to copying once a prototype is made. *Id.*

31. Bender, *Trade Secret Software Protection*, § 4-4 COMPUTER L. SERVICE art. 2, 5-7 (1977).

32. Braubach, *supra* note 9, at 225. Up to seventy-eight percent of software firms depend on trade secret law coupled with license contracts to protect software. *Id.*

33. Maggs, *Computer Programs as the Object of Intellectual Property in the United States of America*, 30 AM. J. COMP. L. 251, 252 (1982 Supp.).

34. Braubach, *supra* note 9, at 225. About 15-17% of software firms protect computer software by copyright, and about 5% by patent. *Id.*

35. 450 U.S. 175 (1981).

36. See *infra* text accompanying notes 60-69.

37. U.S. CONST. art. I, § 8, cl. 8.

38. 35 U.S.C. § 101 (1982).

patent therefore."³⁸ After qualifying as statutory subject matter, an invention must be found novel³⁹ and nonobvious to one skilled in the art.⁴⁰ Under the patent laws,⁴¹ inventors receive an exclusive license for a specified time period as an incentive for invention and research.⁴² In exchange for this exclusive license, patent holders must fully disclose the details of their inventions in their patent applications.⁴³ Upon the expiration of the seventeen-year exclusivity period, anyone may use the patented knowledge without the need to obtain a license from the patent holder.⁴⁴

Prior to 1981,⁴⁵ two Supreme Court rulings precluded patent protection for software. First, in the 1972 case of *Gottschalk v. Benson*,⁴⁶ the Court found that a mathematical formula or algorithm used to change decimal numerals into binary numerals⁴⁷ was in essence an idea, which is not patentable.⁴⁸ If the Court had granted a patent, the free use of the algorithm for changing decimal numbers into binary numbers would not have been permitted to anyone in the data processing industry other than the patent holder.⁴⁹ The *Benson* Court further noted that in a process claim,⁵⁰ the transformation and reduction of an item to a different state or thing is the key to the patentability of that claim when the process does not rely on a specific machine.⁵¹ Thus, for a general process involving a software

39. 35 U.S.C. § 102 (1982). See, e.g., *In Re Christensen*, 478 F.2d 1392 (C.C.P.A. 1972).

40. 35 U.S.C. § 103 (1982). See, e.g., *Dann v. Johnston*, 425 U.S. 219 (1976).

41. 35 U.S.C. §§ 1-376 (1982).

42. Rose, *Protection of Intellectual Property Rights in Computers and Computer Programs: Recent Development*, 9 PEPPERDINE L. REV. 547, 549 (1982).

43. 35 U.S.C. § 112 (1982).

44. *Kewanee Oil v. Bicron*, 416 U.S. 470, 480-81 (1974).

45. For a discussion of other patent claims in earlier cases, see Pope, *supra* note 2, at 536-42; see also *Diamond v. Diehr*, 450 U.S. 175, 193-205 (1981) (Stevens, J., dissenting).

46. 409 U.S. 63 (1972).

47. The *Benson* Court gave the following description of the encoding process:

The BCD system using decimal numerals replaces the character for each component decimal digit in the decimal numeral with the corresponding four-digit binary numeral Thus decimal 53 is represented as 0101 0011 in BCD, because decimal 5 is equal to binary 0101 and decimal 3 is equivalent to binary 0011. In pure binary notation, however, decimal 53 equals binary 110101 The method sought to be patented varies the ordinary arithmetic steps a human would use by changing the order of the steps, changing the symbolism for writing the multiplier used in some steps, and by taking subtotals after each successive operation. The mathematical procedures can be carried out in existing computers long in use, no new machinery being necessary.

Benson, 409 U.S. at 66-67.

48. *Id.* at 71-72. "An idea of itself is not patentable." *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. (20 Wall) 498, 507 (1874).

49. *Benson*, 409 U.S. at 71-72.

50. "A process is a mode of treatment of certain materials to produce a given result. It is an act, or series of acts, performed upon the subject-matter to be transformed and reduced to a different state of thing." *Cochran v. Deener*, 94 U.S. 780, 788 (1876). The other type of patent claim, a machine or apparatus claim, is derived from 35 U.S.C. § 101 (1982).

51. *Benson*, 409 U.S. at 70.

program that could run on any computer, the process must change one item into a totally different one.⁵²

Second, in *Parker v. Flook*,⁵³ decided in 1978, the Court again denied a patent application because the only novel feature of the process sought to be patented was a software program used to calculate a mathematical formula.⁵⁴ In *Flook*, the respondent sought to patent a method whereby the danger limits used in monitoring catalytic conversion processes were updated using a computer program.⁵⁵ The *Flook* Court distinguished those claims in which a patent is sought on a process using a mathematical formula from those claims in which the process is actually the mathematical formula.⁵⁶ The Court noted that no matter how limited the application of a process based solely on a mathematical formula, the process would not constitute statutory subject matter under 35 U.S.C. § 101.⁵⁷ At the conclusion of both the *Benson*⁵⁸ and *Flook*⁵⁹ opinions, the Court emphasized the need for congressional action in the area of software protection, underscoring its unwillingness to provide judicially enacted protection.

B. Patent Protection after 1981

Congress did not act on the Court's recommendations in either *Benson* or *Flook*. In 1981, the Court once again considered a patent application for a process using a computer program. In *Diamond v. Diehr*,⁶⁰ the Court upheld the Court of Customs and Patent Appeals decision that a claim based on subject matter that otherwise meets statutory criteria does not become unpatentable simply because a computer is involved.⁶¹ The Court found that the respondents' claims were not based solely on a mathematical algorithm or an improved method of calculation, such as those in *Benson* and *Flook*, but rather were based on a recitation of an improved process for molding rubber.⁶²

The key to the Court's decision lay in the fact that a computer and its associated software were part of an overall process used to transform raw rubber into molded rubber.⁶³ Thus, the algorithm met the test laid out in *Benson* in that

52. See, e.g., discussion *infra* of rubber-molding process in *Diamond v. Diehr* at text accompanying notes 60-65.

53. 437 U.S. 584 (1978).

54. *Id.* at 594-95.

55. *Id.* at 585.

56. *Id.* at 590.

57. *Id.*

58. *Benson*, 409 U.S. at 72-73.

59. *Flook*, 437 U.S. at 595-96.

60. 450 U.S. 175 (1981).

61. *Id.* at 181.

62. *Id.*

63. *Id.* at 184-85.

it was part of a process used to transform and reduce an article to a different state or thing.⁶⁴ The Court concluded that the *Benson* algorithm had as its sole practical application the programming of a general purpose digital computer, whereas the *Diehr* algorithm had a practical application beyond the mere programming of a computer.⁶⁵

An equally divided Court acknowledged a similar claim in a companion case to *Diehr*.⁶⁶ *In re Bradley*⁶⁷ dealt with a claim based on a computer program stored in firmware.⁶⁸ The Court of Customs and Patent Appeals held that the invention was statutory despite *Benson* and *Flook*, because the claim involved an invention which combined a number of tangible hardware elements, including some elements which happened to contain microprogrammed information, or firmware.⁶⁹ The claim was a machine claim based on these elements rather than a process claim based on software as in *Diehr*.

Despite the Supreme Court's holding in *Diehr*, individual software programs will probably remain unpatentable because of the Court's reasoning that the software must be an integral part of a process or machine.⁷⁰ Even if the software program satisfies the statutory subject matter requirement,⁷¹ it still must meet both the nonobviousness⁷² and novelty⁷³ requirements.⁷⁴ As few as one percent of all programs may be inventive enough to meet these requirements and qualify for patent protection.⁷⁵

Software developers will most likely not choose to seek patent protection for the large number of programs developed each year because of the delay and expense involved.⁷⁶ One such time-consuming difficulty facing a software developer in obtaining a patent is the two to five year backlog of applications at the Patent Office.⁷⁷ Such a backlog may preclude the developer from obtaining a patent before the software becomes obsolete. Another is the expense of obtaining a patent, which includes the cost of finding a qualified examiner, conducting an investigation of the novelty and inventiveness of the program, and establish-

64. *Id.* at 181.

65. *Id.* at 187.

66. *Diamond v. Bradley*, 450 U.S. 381 (1981).

67. 600 F.2d 807 (1979).

68. *Id.* at 812. For a discussion of firmware, see *supra* note 2.

69. *In re Bradley*, 600 F.2d at 813.

70. Maggs, *supra* note 33, at 253-54.

71. See *supra* note 38 and accompanying text.

72. See *supra* note 40 and accompanying text.

73. See *supra* note 39 and accompanying text.

74. Maggs, *supra* note 33, at 254; see also Note, *Copyright Protection for Firmware: An International View*, 4 HASTINGS INT'L & COMP. L. REV. 473, 480 (1981).

75. *Model Provisions*, *supra* note 2, at 5.

76. CONTU Report, *supra* note 1, at 41-42.

77. Oxman, *Intellectual Property Protection and Integrated Circuit Masks*, 980 JURIMETRICS J. 405, 434 (1980).

ing the documentation on the prior art.⁷⁸ This cost often falls between \$2,500 and \$5,000 for each patent application.⁷⁹

Unrestricted disclosure to the public presents one of the most serious drawbacks to seeking a patent.⁸⁰ Software developers are loathe to make the full disclosure necessary for a patent application because the widespread distribution of computer programs makes detection of infringement difficult. The patent application becomes a public record, and anyone may duplicate it without a license with little chance of being caught.⁸¹

Because of the difficulty in obtaining patent protection for most software programs, and the delays and expense associated with those patents which are obtained, patent safeguards do not have widespread appeal among software developers. However, many software developers are turning to another federal statutory protection — copyright — as a means of safeguarding their investment. Today, as with patent claims, copyright claims are being upheld in cases where, until just a short time ago, such claims were found to be ungrounded. A brief summary of the copyright law, both past and present, as it applies to software will serve to put this increasingly popular protection into perspective.

C. Copyright Protection

A second statutory protection for software is federal copyright law.⁸² As with the patent laws, the copyright laws are promulgated under Congress' constitutional power.⁸³ A copyright protects the expression of an idea, but not the underlying idea itself.⁸⁴ A copyright holder is entitled to a number of rights, including those of reproduction, preparation of derivative works, distribution, performance, and display.⁸⁵ Unlike a patent, a copyright does not depend on any governmental action; it automatically obtains through authorship.⁸⁶ Copy-

78. *Model Provisions*, *supra* note 2, at 5.

79. Note, *supra* note 74, at 481 n.50.

80. *Model Provisions*, *supra* note 2, at 5.

81. *Id.*

82. 17 U.S.C. §§ 101-810 (1982).

83. U.S. CONST. art. I, § 8, cl. 8.

84. 17 U.S.C. § 102 (1982) states:

(a) Copyright protection subsists, in accordance with this title, in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device. Works of authorship include the following categories: (1) literary works; (2) musical works, including any accompanying words; (3) dramatic works, including any accompanying music; (4) pantomimes and choreographic works; (5) pictorial, graphic, and sculptural works; (6) motion pictures and other audiovisual works; and (7) sound recordings.

(b) In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery regardless of the form in which it is described, explained, illustrated, or embodied in such work.

Id.

85. 17 U.S.C. § 106 (1982).

86. Klepinger, *Copyright and Information Technology*, 15 ANN. REV. INFORMATION SCI. & TECH. 3, 5 (1980).

right protection for software has been evolving rapidly over the past decade through legislative changes and through judicial interpretation of those evolving copyright laws.

Congress amended the Copyright Act in 1976.⁸⁷ The amendment, effective January 1, 1978,⁸⁸ made several significant changes.⁸⁹ The first involved the principle of automatic copyright.⁹⁰ This change significantly altered previous copyright laws under which federal copyrights came into existence only after publication.⁹¹ Prior to publication, the common law principles of copyright in the various states prevailed.⁹² Under the new Copyright Act, however, the federal law preempts all state laws that provide equivalent protection.⁹³ Thus, a single federal system now applies to all published and unpublished works as soon as they are fixed in a tangible medium of expression.⁹⁴

87. Pub. L. No. 94-553, § 101, 90 Stat. 2541 (1976).

88. Pub. L. No. 94-553, § 102, 90 Stat. 2541, 2598 (1976).

89. See Keplinger, *supra* note 86, at 4-9.

90. H.R. REP. No. 1476, 94th Cong., 2d Sess. 51, 147 (1976), *reprinted in* 1976 U.S. CODE CONG. & AD. NEWS 5664 [hereinafter cited as House Report on Copyright Law]. "Under the general scheme of the [law], statutory copyright protection is secured automatically when a work is created, and is not lost when the work is published." *Id.*

The principle of automatic copyright has also been defined as one whereby a copyright in a work attaches on the creation and fixation of that work in some tangible medium of expression without the need to publish, register, or abide by any formalities. Keplinger, *supra* note 86, at 4.

91. House Report on Copyright Law, *supra* note 90, at 129.

Instead of a dual system of "common law copyright" for unpublished works and statutory copyright for published works . . . the [law] adopts a single system of Federal statutory copyright from creation . . . Common law copyright protection for works coming within the scope of the statute would be abrogated, and the concept of publication would lose its all-embracing importance. . . .

Id.

92. *Id.* at 131.

[S]ection 301(b) explicitly preserves common law copyright protection for one important class of works: works that have not been "fixed in any tangible medium of expression." . . . [U]nfixed works are not included in the specified "subject matter of copyright." They are therefore not affected by the preemption . . . and would continue to be subject to protection under State statute or common law until fixed in tangible form.

Id.

93. 17 U.S.C. § 301 (1982).

94. House Report on Copyright Law, *supra* note 90, at 129.

By substituting a single Federal system for the present anachronistic, uncertain, impractical, and highly complicated dual system, the [law] would greatly improve the operation of the copyright law and would be much more effective in carrying out the basic constitutional aims of uniformity and the promotion of writing and scholarship.

Id.

The House Report listed four arguments in favor of a federal system. The first noted that the copyright clause of the Constitution was enacted to promote uniformity. The second emphasized that although the concept of "publication" was the single most important idea under the then current law, it also posed the most serious defect. The third argument underscored the need for a limited time during which the copyright would be effective. This need is constitutionally mandated, and under the state common law system, was sorely abused because a work could remain unpublished for any number of years without this time being counted toward the federal copyright time limitation. The fourth argument stated that a uniform copyright system would improve international dealings with copyrighted material. *Id.* at 129-30.

A second change effectively eliminated the judicially interpreted requirement that a work had to exist in a human-readable form to be eligible for copyright.⁹⁵ A work which is within the scope of the copyright law⁹⁶ is protected regardless of its form, be it videotape, computer tape, magnetic disk, hologram, phonograph record, or any medium sufficiently stable to permit its repeated reproduction.⁹⁷

The third major change in the copyright law relaxes the notice requirement.⁹⁸ Notice consists of three elements: the word "copyright" or equivalent symbol, the year of the first publication of the work, and the name of the copyright owner.⁹⁹ Previously, minor flaws in the notice had caused outright forfeiture of the copyright.¹⁰⁰ The current requirements apply only to works that are publicly distributed and may be met within a five-year date of publication.¹⁰¹

Although these three changes have implications for the software industry, none of the changes in the 1976 Act directly affected software protection. Congress expressly enacted section 117 to maintain the then current status of the copyright law with respect to computer programs¹⁰² until it could further evalu-

95. *Id.* at 52-53. This change finally set aside the holding in *White-Smith Music Publishing Co. v. Apollo Co.*, 209 U.S. 1 (1908). In *White-Smith*, the Supreme Court held that a player piano roll was not an infringing copy of the musical composition recorded on it. The Court reasoned that the music embodied on the roll was not a written or printed record intelligible to humans, and thus not copyrightable. *Id.* at 17.

The House noted that the broad language of § 102(a) was intended "to avoid the artificial and largely unjustifiable distinctions derived from [cases] such as *White-Smith* . . . under which statutory copyrightability in certain cases has been made to depend upon the form or medium in which the work is fixed." House Report on Copyright Law, *supra* note 90, at 52.

96. 17 U.S.C. § 102(a) (1982). See *supra* note 84 for text of § 102(a).

97. Keplinger, *supra* note 86, at 4-5.

Under the [law] it makes no difference what the form, manner or medium of fixation may be — whether it is in words, numbers, notes, sounds, pictures, or any other graphic or symbolic indicia, whether embodied in a physical object in written, printed photographic, sculptural, punched, magnetic, or any other stable form, and whether it is capable of perception directly or by means of any machine or device "now known or later developed."

House Report on Copyright Law, *supra* note 90, at 52.

98. 17 U.S.C. §§ 401, 405, 406 (1982).

99. 17 U.S.C. § 401(b)(1), (2), (3) (1982).

100. House Report on Copyright Law, *supra* note 90, at 143.

[T]he copyright notice has real values which should be preserved, and . . . this should be done by inducing use of notice without causing outright forfeiture for errors or omissions. Subject to certain safeguards for innocent infringers, protection would not be lost by the complete omission of copyright notice from large numbers of copies or from a whole edition, if registration for the work is made before or within 5 years after publication. Errors in the name or date in the notice could be corrected without forfeiture of copyright.

Id.

101. 17 U.S.C. § 405(a)(2) (1982).

102. 17 U.S.C. § 117 (1976) stated:

[T]his title does not afford to the owner of copyright in a work any greater or lesser rights with respect to the use of the work in conjunction with automatic systems capable of storing, processing, retrieving, or transferring information, or in conjunction with any similar device, machine, or process, than those afforded to works under the law, whether title 17 or the common law or statutes of a State, in effect on December 31, 1977, as held applicable and construed by a court in an action brought under this title.

Id.

ate the effect of copyright protection-for software. In December 1980, Congress passed the Computer Software Copyright Act¹⁰³ to provide coverage for computer programs not provided under the 1976 enactment.¹⁰⁴ The Act closely follows the final recommendations of the National Commission on New Technological Use(s) of Copyrighted Works (CONTU).¹⁰⁵ The Commission had recommended reenactment of section 117 and incorporation of a definition for computer programs within section 101.¹⁰⁶ The Act contains two provisions: an amendment to section 101 to incorporate the definition of a computer program¹⁰⁷ and an amendment to section 117 to define permissible uses of copyrighted works in conjunction with a computer.¹⁰⁸ The House of Representatives has also considered one further amendment to Title 17.¹⁰⁹ This amendment would expand and add definitions to the Copyright Act to clarify the type of software entitled to copyright protection.¹¹⁰

103. Pub. L. No. 96-517 § 10, 94 Stat. 3015, 3028-29 (1980).

104. See H.R. REP. NO. 1307, 96th Cong., 2d Sess. 23-24 (1980), reprinted in 1980 U.S. CODE CONG. & AD. NEWS 6460, 6482-83. For a history of the amendment, see Rose, *supra* note 42, at 558-62; Note, *supra* note 74, at 487-92.

105. CONTU Report, *supra* note 1, at 29-34. For a history of the Commission, see Keplinger, *supra* note 86, at 9-13.

106. CONTU Report, *supra* note 1, at 29-30.

107. 17 U.S.C. § 101 (1982). "A 'computer program' is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." *Id.*

108. 17 U.S.C. § 117 (1982) now states:

Notwithstanding the provisions of section 106, it is not an infringement for the owner of a copy of a computer program to make or authorize the making of another copy or adaptation of that computer program provided:

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

(2) that such new copy or adaptation is for archival purposes only and that all archival copies are destroyed in the event that continued possession of the computer program should cease to be rightful. Any exact copies prepared in accordance with the provisions of this section may be leased, sold, or otherwise transferred, along with the copy from which such copies were prepared, only as part 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.

Id.

109. H.R. 6983, 97th Cong., 2d Sess. (1982). H.R. 6983 was introduced in August 1982 by Congressman Robert Kastenmeier, but was defeated in subcommittee later in the year. Representative Kastenmeier planned to reintroduce the bill during the 1983 session. Telephone conversation with congressional aide (Feb. 16, 1983).

110. H.R. 6983 provided for three major changes in the copyright laws for the protection of software. The first was that even if a notice of copyright appeared on a program or program material, this would not constitute publication under §§ 401 through 406, and consequently not endanger the software developer's trade secret protections.

The second change redefined computer program in § 101 as follows:

A '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.

A 'program description' means a complete procedural representation in verbal, schematic, or other form, in sufficient detail to determine a set of instructions constituting a corresponding computer program.

An examination of the case law decided under the pre-1980 amendment to the copyright law provides an understanding of the judicial evolution of copyright protection. Furthermore, an exploration of how the pre-1980 amendment courts dealt with the copyrightability of software as a generic work of authorship helps to provide some comprehension of how courts are now dealing with software in its myriad forms, such as object and source code.

1. Case Law under the 1976 Copyright Act

In 1978, a federal district court in Texas decided one of the leading cases for computer program protection under the original Copyright Act. In *Synercom Technology Inc. v. University Computer Company*,¹¹¹ the plaintiff Synercom brought suit for copyright infringement of its instruction manuals and input formats used with a computer program designed to solve structural engineering problems. Synercom's formats used nine types of inputs, the logic and sequence arrangement of which were Synercom's own design.¹¹² Synercom claimed that the defendant, University Computing Company (U.C.C.), through its managing consultant, Engineering Dynamics Inc. (E.D.I.), had developed a computer program with input formats identical to those used with Synercom's program. Thus, U.C.C. could woo away Synercom's clients with little or no interruption in service to the clients and with no major development costs. The court's holding turned on whether E.D.I. had appropriated only the idea behind the input formats (no infringement) or the expression of the formats (infringement). The court found that the input formats were expressed ideas, not expressions, and hence not copyrightable.¹¹³ The court distinguished an expression as a stylistic creation exceeding the bare expression of sequence and arrangement associated with simple ideas.¹¹⁴ The court found that Synercom's input formats were ideas

'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 use instructions.

'Computer software' means any or several of the literary works referred to in the definitions of computer program, program description and supporting material.

H.R. 6983, 97th Cong., 2d Sess. (1982).

This second change closely parallels suggestions made by the Model Provisions set forth by the World Intellectual Property Organization. See *infra* text accompanying notes 465-68.

The third change would be in the preemption provision, section 301. The amendment language states: "[n]othing in this title shall alter or limit any right or remedy which the owner of a copyright may have under State trade secret law that is not equivalent to any of the exclusive rights with the general scope of copyright as specified by section 106." H.R. 6983, 97th Cong., 2d Sess. (1982).

This third alteration would solve those potential conflicts now posed between state trade secret protections and federal copyright protections. See, e.g., *Technicon Medical Information Systems v. Orein Buy Packaging, PAT. TRADEMARK & COPYRIGHT J.* (BNA) (E.D. Wisc. 1981).

111. 462 F. Supp. 1003 (N.D. Tex. 1978).

112. *Id.* at 1007.

113. *Id.* at 1013-14.

114. *Id.* at 1014.

based solely on order and sequence and that this arrangement was inseparable from the underlying idea.¹¹⁵ The court also found, however, that Synercom's manuals were copyrightable and that Synercom was entitled to relief for infringement of the copyright applicable to them.¹¹⁶

In a 1980 case decided by the Seventh Circuit Court of Appeals, *Data Cash Systems Inc. v. JS&A Group Inc.*,¹¹⁷ the plaintiff, a manufacturer of computer chess games, attempted to prevent the defendant from using plaintiff's computer program in a competing product. The program which ran the chess game was contained in a ROM (read-only memory) module.¹¹⁸ The defendant had obtained a copy of the game, read the computer program from the ROM, and duplicated it.¹¹⁹ The plaintiff had printed copyright notices on all of its manuals, but had failed to print any notice on the ROM itself. The court held that the program was not copyrighted and that the defendant therefore was not infringing.¹²⁰ More importantly, the district court had found that the plaintiff's ROM was not a copy under the copyright law, and thus defendant's reproduction of the ROM was not an infringement.¹²¹ The parties did not appeal this issue, and the Seventh Circuit did not address it directly. The appeals court considered the issue by implication, however, in that it would not have reached the notice requirement issue unless it first found the ROM was copyrightable.

Cases such as *Synercom* and *Data Cash*, although decided after the January 1, 1978, effective date of the Copyright Act of 1976, implemented pre-1976 law. This implementation was required under the 1976 version of section 117. These cases focused on the fundamental issue of whether software, as a generic work of authorship, could be copyrighted under the law. Thus, they provide a basic link in the understanding of how copyright protection has become applicable to software in the United States. Generally, as the above discussion on *Synercom* and *Data Cash* illustrates, the courts found that software was not statutory subject matter under the copyright law. However, Congress then stepped into the fray and as a result, with the enactment of the 1980 amendment, no question now exists that computer programs can be statutory subject matter under the copyright laws.¹²²

The courts have gradually become more technologically sophisticated and are now deciding what kind of software is copyrightable. The following discussion chronicles the current debates confronting the courts on such topics as the

115. *Id.*

116. *Id.* at 1013.

117. 628 F.2d 1038 (7th Cir. 1980).

118. For a discussion of ROMs, see *supra* note 2.

119. *Data Cash*, 628 F.2d at 1041.

120. *Id.* at 1044.

121. *Id.* at 1041. See Note, *supra* note 74, at 495-96, for discussion of the lower court finding.

122. See *supra* notes 103-04 and accompanying text.

protection afforded video games under copyright,¹²³ the protection of object code by source code copyright,¹²⁴ the copyrightability of software embodied in a utilitarian form such as a ROM,¹²⁵ and the safeguarding of software which is in the form of firmware.¹²⁶

2. Evolution of Copyright Protection Since 1980

The courts have decided numerous cases involving computer programs since 1980. Some courts¹²⁷ have used the Copyright Act of 1976 as a basis for their decisions, believing it to be adequate without subsequent changes, while others¹²⁸ have used the version amended in 1980. The decisions fall into two general categories: those dealing with software underlying video games and those dealing with software used on general-purpose computers. Although the latter type of decision will have a greater effect on the evolution of copyright for software, the video game decisions, resting solely on the copyrightability of the displayed audiovisual effects of the games, provide an intermediate step in the evolution of computer program copyrightability.

a. *Video Games: The Copyrighting of Audiovisual Works*

Although all video games, whether for arcade or home use, employ computer programs to generate the moving images, sounds, and scores, some recent cases fail to emphasize the role of the computer program in video games and rely much more on the physical aspects of the games.¹²⁹ In all cases, the plaintiff has been the developer of a computer-based video game which has been copied or "knocked off"¹³⁰ by a competing defendant. In such cases, the defendant has not only saved development time, but often has also capitalized on the plaintiff's marketing efforts and brand name.¹³¹

While some courts acknowledge that the games are based on computer programs stored in ROMs,¹³² most do not. This outcome is largely a result of the

123. See *infra* § I.C.2a for a discussion of protections afforded video games.

124. See, e.g., discussion *infra* of *GCA* at text accompanying notes 149-54.

125. See, e.g., discussion *infra* of *Williams* at text accompanying notes 155-62.

126. See, e.g., discussion *infra* of *Apple* at text accompanying notes 163-80.

127. See, e.g., discussion *infra* of *Tandy* at text accompanying notes 138-48.

128. See, e.g., discussion *infra* of *Williams* at text accompanying notes 155-62.

129. See, e.g., *Stern Electronics v. Kaufman*, 669 F.2d 852 (2d Cir. 1982); *Atari v. North American Phillips Consumer Electronics*, 214 U.S.P.Q. (BNA) 33 (7th Cir. 1982); *Atari v. Armenia, Ltd.*, 1981 COPYRIGHT L. REP. (CCH) ¶ 25,328 (N.D. Ill. 1981); *Atari v. Amusement World*, 215 U.S.P.Q. (BNA) 929 (D. Md. 1981); *Midway Manufacturing Co. v. Artic International*, 211 U.S.P.Q. (BNA) 1152 (N.D. Ill. 1981); *Midway Manufacturing Co. v. Dirkschneider*, 543 F. Supp. 466 (D. Neb. 1981).

130. See, e.g., *Stern Electronics*, 669 F.2d at 854-55.

131. See, e.g., *North American*, 214 U.S.P.Q. at 33; *Midway Manufacturing*, 211 U.S.P.Q. at 1152, for copyright infringement claims concerning the video game PAC-MAN.

132. *Stern Electronics*, 669 F.2d at 854; *Amusement World*, 215 U.S.P.Q. at 932; *Dirkschneider*, 543 F. Supp. at 481.

plaintiff couching the infringement claim in terms of an audiovisual work for which a copyright has been obtained and video tapes deposited with the Copyright Office as representative of the copyrighted work.¹³³ Instead, the courts look to the similarity of the copyrighted work to the infringing work.¹³⁴ The courts then determine whether the alleged copy is so similar to the plaintiff's work that a reasonable person would conclude that the defendant had misappropriated the plaintiff's copyrighted material.¹³⁵ The courts are not comparing computer program with computer program, but rather one audiovisual work with another, and as such they have not explored the nature of software copyrightability in these recent video game cases.

b. *Software: Present Protections under Copyright Law*

Since the passage of the 1976 Copyright Act, and its 1980 amendment, courts have wrestled with the application of copyright law to the technical subject matter of computer software. Where there is little or no visible evidence of a computer program, as with the audiovisual output of the video games discussed above, the courts have considered the nature of the computer software to determine whether the copyright covers the software claimed to be infringed.¹³⁶ The courts have also struggled with the utilitarian nature of computer programs as opposed to the creative aspects of developing them.¹³⁷

In *Tandy Corp. v. Personal Micro Computers*,¹³⁸ the court based its holding on the original Copyright Act of 1976, rather than the 1980 amended version of section 117, stating that ROM copies were adequately protected under sections 101 and 102 of the 1976 Act.¹³⁹ In *Tandy*, a manufacturer of personal computers brought an action based on copyright infringement against the defendant, also a manufacturer of personal computers. The plaintiff claimed that the defendant had copied an input-output routine that told a computer how to take the information put into it by an operator in one language and translate that information into a simpler machine language.¹⁴⁰ A ROM contained the program in question. The defendant alleged that the ROM could not be copyrighted under the pre-1980 amendment law, claiming that the original section 117 froze all law pertaining to copyright protection of software in its pre-1976 form. Under this interpretation, the defendant claimed that ROMs were not copyrightable because they were not

133. *Stern Electronics*, 669 F.2d at 854; *Amusement World*, 215 U.S.P.Q. at 932; *Artic*, 211 U.S.P.Q. at 1158; *Dirkschneider*, 543 F. Supp. at 475.

134. *Compare Atari v. Armenia*, 1981 COPYRIGHT L. REP. (Centipedes and War of Bugs video games) with *Atari v. Amusement World*, 215 U.S.P.Q. (BNA) 929 (Asteroids and Meteors video games).

135. *Atari v. North American Philips*, 214 U.S.P.Q. (BNA) at 39.

136. See, e.g., *Williams* discussed *infra* at text accompanying notes 155-62.

137. See, e.g., the *Apple* district court decision discussed *infra* at text accompany notes 163-74.

138. 524 F. Supp. 171 (N.D. Cal. 1980).

139. *Id.* at 174.

140. *Id.* at 173.

in human-readable form.¹⁴¹ The court found otherwise, holding that sections 101¹⁴² and 102¹⁴³ of the 1976 Copyright Act were applicable and that computer programs are works of authorship under section 101.¹⁴⁴ The court further held that a program fixed in a ROM was protected as "a tangible medium of expression" under section 102¹⁴⁵ and thus not subject to the outmoded human-readable requirement.¹⁴⁶ As an alternative basis for its decision, the court agreed with the plaintiff that in order to duplicate the program the defendant would have had to copy a visual display or printed version of the program and imprint it on a chip,¹⁴⁷ thus violating a right traditionally granted under the copyright laws: that of reproducing the copyrighted work in copies.¹⁴⁸

In *GCA v. Chance*,¹⁴⁹ the plaintiff manufactured, sold, and repaired machines which processed silicon wafers used in the production of integrated circuits. The defendants were former employees of the plaintiff and had gone into business for themselves repairing plaintiff's machines. GCA held copyrights on the source code¹⁵⁰ of certain computer programs used in a diagnostic and operating systems series. The object code¹⁵¹ of the programs was not copyrighted. The defendants claimed that the object code was not a protected work, relying on the definition of "publication" in section 101.¹⁵² The defendants argued that the copyrighting of the source code — which plaintiff had not distributed, and thus had not published — did not protect the underlying object code, which plaintiff had distributed, and therefore published.¹⁵³ The court, however, held that the

141. *Id.* at 174.

142. 17 U.S.C. § 101 (1982). Section 101 defines various terms used in Title 17. It defines "fixed" in a "tangible medium of expression" as: "an embodiment . . . sufficiently permanent or stable to permit it to be perceived, reproduced or otherwise communicated for a period of more than transitory duration." Section 101 defines "literary works" as "works, other than audiovisual works, expressed in words, numbers, or other verbal or numerical symbols or indicia, regardless of the nature of the material objects . . . in which they are embodied." *Id.* The *Tandy* court seemingly relied on these definitions in concluding that section 101 was applicable to a finding that computer programs were works of authorship. *Tandy*, 524 F. Supp. at 173.

143. 17 U.S.C. § 102 (1982). For the text of § 102, see *supra* note 84.

144. *Tandy*, 524 F. Supp. at 173. For a discussion on the nature of copyright making it applicable to the expression of a computer programmer in creating software programs, see House Report on Copyright Law, *supra* note 90, at 57.

145. *Tandy*, 524 F. Supp. at 173.

146. See *supra* note 95 and accompanying text.

147. *Tandy*, 524 F. Supp. at 175.

148. 17 U.S.C. § 106 (1) (1982).

149. 1982 COPYRIGHT L. REP. (CCH) ¶ 25,464 (N.D. Cal. 1982).

150. See *supra* note 2.

151. See *supra* note 2.

152. 17 U.S.C. § 101 (1982) defines "publication" as: "the distribution of copies or phonorecords of a work to the public by sale or other transfer of ownership, or by rental, lease, or lending. The offering to distribute copies or phonorecords to a group of persons for purposes of further distribution, public performance, or public display, constitutes publication." *Id.*

153. *GCA*, 1982 COPYRIGHT L. REP. at ¶ 25,464.

object code, as a derivation of the source code, was the same as the source code, and thus copyrighted.¹⁵⁴

The Third Circuit Court of Appeals in *Williams Electronics v. Artic International*¹⁵⁵ ignored previously made arguments on the copyrightability of the audiovisual effects of computer programs and found that the defendant directly infringed plaintiff's computer program copyright. The plaintiff had obtained both a copyright on the audiovisual effects and a copyright on the computer program underlying its video game.¹⁵⁶ The plaintiff had placed readily visible copyright notices on the game's cabinet, screen, and each label affixed to the internal ROM modules.¹⁵⁷

The defendant argued that plaintiff's copyright was an improper attempt to copyright the ROMs themselves, which could be protected as utilitarian objects under the patent laws.¹⁵⁸ The Court of Appeals found, however, that the plaintiff was trying to protect its artistic expression in an original work. The plaintiff had met the statutory fixation requirement of section 102(a) by embodying the computer program in ROM modules.¹⁵⁹ The defendant further erroneously argued that there was no infringement because, although the source code was copyrightable, the object code was not because it was not in human-readable form.¹⁶⁰ The Third Circuit looked to a broad interpretation of section 102(a),¹⁶¹ and a similar holding in *Tandy* that object code is the same as source code for copyrightability, to find that the defendant had infringed plaintiff's copyright of a computer program.¹⁶²

In contrast, the district court in *Apple Computer v. Franklin Computer*,¹⁶³ ruling several days before the Third Circuit handed down the *Williams* decision, held that a computer program in the form of object code is not statutory material for copyright protection under the copyright laws. The plaintiff, Apple Computer, is an acknowledged leader in the manufacture of personal computers.¹⁶⁴ Franklin Computer makes personal computers that are compatible with Apple's computer.¹⁶⁵ Apple claimed that Franklin had infringed a series of copyrights on the object code programs stored in ROM as firmware or on floppy disks.¹⁶⁶

154. *Id.*

155. 685 F.2d 870 (3d Cir. 1982).

156. *Id.* at 875.

157. *Id.* at 872.

158. *Id.* at 876; see also *supra* note 84 for text of 17 U.S.C. § 102 (1982).

159. *Williams*, 685 F.2d at 874.

160. *Id.* at 876-77.

161. For the text of 17 U.S.C. § 102 (1982), see *supra* note 84.

162. *Williams*, 685 F.2d at 877.

163. 545 F. Supp. 812 (E.D. Pa. 1982).

164. *Id.* at 812.

165. *Id.* at 814. By having an Apple-compatible computer, Franklin is able to take advantage of software programs designed exclusively for the widely-used Apple computer.

166. *Id.* at 815.

These programs were integral to Apple's operating system and, as such, provided Franklin with an immediate compatibility with all Apple-based software and hardware.¹⁶⁷

The district court found that the confusion surrounding the source code as an original work of authorship¹⁶⁸ as it translated into object code made it difficult, if not impossible, to determine that the object code was copyrightable subject matter.¹⁶⁹ The court reasoned that programmers do not envision the actual series of microswitches manipulated by object code, but rather communicate their ideas in expressions found in the source code.¹⁷⁰ The court found that the source code, as representative of an expression, is copyrightable.¹⁷¹ The court went on to find that object code, for the most part, is utilitarian in nature and able to be protected by patents, and thus not copyrightable.¹⁷² The court stressed that the appropriate protection for object code, if it could be had, would be a patent, such as that obtained in *In re Bradley*.¹⁷³ The court conceded, however, that few computer programs would be able to pass the rigorous patent tests.¹⁷⁴

Nearly a year later, the Third Circuit reaffirmed its holding in *Williams* in an appeal from the district court's *Apple* decision.¹⁷⁵ The appeals court reiterated that software embedded in a ROM is copyrightable.¹⁷⁶ The Third Circuit also emphasized that the operating system Apple sought to protect by copyright was copyrightable,¹⁷⁷ despite Franklin's claims that the operating software, as distinct from applications software, was uncopyrightable because it was utilitarian.¹⁷⁸ The court also grappled with Franklin's argument that an operating system was not copyrightable because it was an idea, rather than an expression.¹⁷⁹ The court found that so long as programs can be written that perform the same function as an existing operating system, they will be an expression of an idea and hence copyrightable.¹⁸⁰

The law in the area of software copyrightability remains unsettled to date. Courts continue to evaluate the newly revised copyright laws with conflicting

167. *Id.* at 814-15.

168. The *Apple* court had no quarrel with the copyrightability of source code. *Id.* at 822 n.15.

169. *Id.* at 820-21.

170. *Id.* at 821-22 n.14. The *Apple* court quotes at length from T. KIDDER, *THE SOUL OF A NEW MACHINE* 97-102 (1981) about the detailed engineering work involved in actually writing object or microcode. *Apple*, 545 F. Supp. at 821-22 n.14.

171. *Id.* at 821-22.

172. *Id.* at 823-24.

173. *Id.* at 824; see also the discussion *infra* on software patentability in § 11.A.

174. *Apple*, 545 F. Supp. at 824.

175. *Apple Computer v. Franklin Computer*, 714 F.2d 1240, 1248-49 (3d Cir. 1983).

176. *Id.* at 1249.

177. *Id.* at 1253-54.

178. *Id.* at 1250-51.

179. *Id.* at 1253.

180. *Id.*

outcomes.¹⁸¹ The district court's *Apple* decision reflects this confusion. In some jurisdictions the object code, as a derivative of source code, retains the copyright originally applied to the source code. Such was the result in *GCA*. The same may be said of software in the form of firmware. This may be safeguarded by copyright in some instances such as *Tandy*, and not in others. Software embodied in ROMs may run the risk of being classified as utilitarian, rather than creative, and thus not copyrightable. This confusion is not healthy for the burgeoning software industry. Insecurity with respect to legal safeguards will lead to increased costs and litigation as software developers attempt to define and enforce their rights.¹⁸²

There is no doubt that copyright provides a form of protection, but courts must determine the extent of that protection as well as which forms of software may be safeguarded by copyright. Until the courts settle this matter with some assurance, software developers will continue to turn to tested methods of insuring their investment. Foremost among these safeguards is trade secret protection.

D. Trade Secret Protection

Until the Supreme Court decision in *Diamond v. Diehr*¹⁸³ and the recent copyright law changes, the most popular form of protection for software was trade secret protection enforceable under state law.¹⁸⁴ Unlike the situation with either patent or copyright protection, the owner-developer of software can maintain trade secret protection without disclosure. As Chief Justice Burger noted in *Kewanee Oil v. Bicron*:¹⁸⁵

the subject of a trade secret must be secret, and must not be of public knowledge or of a general knowledge in the trade or business. . . .

This necessary element of secrecy is not lost, however, if the holder of the trade secret reveals the trade secret to another in confidence, and under an implied obligation not to use or disclose it.¹⁸⁶

Consequently, many of the dealings between software vendors and vendees have

181. Other recent cases include: *Apple Computer v. Formula International*, COPYRIGHT L. REP. (CCH) ¶ 25,631 (9th Cir. 1984); *S&H Computer Systems v. SAS Institute*, 568 F. Supp. 416 (M.D. Tenn. 1983); *Hubco Data Products v. Management Assistance*, COPYRIGHT L. REP. (CCH) ¶ 25,529 (D. Idaho 1983); *BPI Systems v. Leith*, 1982 COPYRIGHT L. REP. ¶ 25,392 (W.D. Tex. 1982); *Warrington Associates v. Kellogg Citizens National Bank*, 215 U.S.P.Q. (BNA) 375 (E.D. Wisc. 1981).

182. Rather than continue the legal battle to the Supreme Court, Franklin settled with Apple for \$2.5 million. Wall St. J., Jan. 5, 1984, at 10, col. 1.

183. See *supra* text accompanying notes 60-65.

184. Scafetta, *Computer Software and Unfair Methods of Competition*, 10 J. MAR. J. PRAC. & PROC. 447, 449-50 (1977).

185. 416 U.S. 470 (1974).

186. *Id.* at 475.

been in the form of licensing agreements whereby the licensee has an obligation not to disclose the software developer's trade secrets to third parties.¹⁸⁷

A trade secret is defined as:

any formula, pattern, device 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. It may be a formula for a chemical compound, a process of manufacturing, treating or preserving materials, a pattern for a machine or other device, or a list of customers.¹⁸⁸

Software, so long as it is not widely distributed or easily accessible to people outside the company, can be protected by trade secret laws.¹⁸⁹

Trade secret law can safeguard computer programs in three ways. First, a software owner may design the program so that it will run only on the software owner's computer.¹⁹⁰ Second, the developer may sell or lease the program to a limited number of users, each of whom must sign a formal trade secret protection agreement.¹⁹¹ This second method is the preferred means of distribution for large computer manufacturers selling to large corporations or institutions.¹⁹² Third, the developer may sell the program to the public at large without requiring that a trade secret agreement be signed. For this method to work reliably, the program must be in an undecipherable or uncopyable form.¹⁹³ This last method, however, is becoming less reliable for mass-marketed programs.¹⁹⁴

Unlike patents and copyrights which grant an exclusive license for a limited period of time, trade secrets are open to discovery by any fair and honest means, such as independent invention, accidental disclosure, or reverse engineering.¹⁹⁵

1. The Case Law

The courts have not hesitated to apply trade secret law to the misappropriation of computer programs.¹⁹⁶ The theft of trade secrets in the form of software

187. Maggs, *supra* note 33, at 252.

188. RESTATEMENT OF TORTS § 757 comment b (1939).

189. Scafetta, *supra* note 184, at 450.

190. Maggs, *Some Problems of Legal Protection of Programs for Microcomputer Control Systems*, 1979 U. Ill. L.F. 453, 465. Maggs cites as an example of such a program one which analyzes geological data and predicts the location of oil reserves. *Id.* Normally such a program would be run only within the confines of a highly secure installation belonging to the program owner. *Id.*

191. *Id.*

192. *Id.*

193. *Id.*

194. See *Data Cash Systems v. JS&A Group*, 628 F.2d 1038, 1043 (7th Cir. 1980), discussed *supra* at text accompanying notes 117-121. In *Data Cash*, plaintiff relied on the supposed impregnability and indecipherability of its ROM, only to have the competition copy it.

195. *Kewanee Oil*, 416 U.S. at 476. Reverse engineering is taking a known product and working backward to discover the process which aided in its development or manufacture.

196. See generally Bender, *supra* note 31. See also discussions *infra* on *Com-Share v. Computer Complex* at

can occur through the abuse of a licensee,¹⁹⁷ the breach of contract by an employee,¹⁹⁸ or the breakdown of a joint venture with another company.¹⁹⁹ In most instances a competitor has solicited, or will eventually acquire, the information.

The 1971 case of *Com-Share v. Computer Complex*²⁰⁰ illustrates the abuse that can occur through a licensee. Com-Share had signed a technical exchange agreement with the defendant whereby information, systems software developments, training, documents, tapes, tangible items, and other technology developed by the plaintiff were to be exchanged with the defendant for similar information and technical items.²⁰¹ The agreement called for a twenty-four month moratorium on any information disseminated to any third party after the parties terminated the agreement.²⁰² The parties ended the agreement, and within a twenty-four month period the defendant sold its rights, assets, and goodwill relating to its computer time-sharing operations to a third party, Tymshare.²⁰³ The court found that the plaintiff had used the utmost caution in protecting the secrecy of its software through such means as the words "company confidential" printed on all pages of all computer listings, passwords designed into the software to prevent unauthorized use, and the securing of magnetic tapes and symbolics when not in use.²⁰⁴ The court granted a preliminary injunction against the defendant selling its interest to Tymshare. The Sixth Circuit upheld this ruling.²⁰⁵

In *University Computing v. Lykes Youngstown*,²⁰⁶ the Fifth Circuit Court of Appeals found that the defendant had breached a joint venture agreement by misappropriating trade secrets. The court found that the defendant had misappropriated plaintiff's software for automated inventory management evaluation by receiving stolen property from one of plaintiff's customers.²⁰⁷ The court assessed damages against the defendants as if they had been properly licensed to use the software.²⁰⁸

One of the more significant cases for trade secret misappropriation of com-

text accompanying notes 200-05, and *University Computing v. Lykes Youngstown* at text accompanying notes 206-08.

197. See, e.g., *Com-Share v. Computer Complex* discussion *infra* at text accompanying notes 200-05.

198. See, e.g., *Republic Systems & Programming v. Computer Assistance*, 440 F.2d 996 (2d Cir. 1971).

199. See, e.g., *University Computing v. Lykes Youngstown*, discussed *infra* at text accompanying notes 206-08.

200. 338 F. Supp. 1229 (E.D. Mich. 1971).

201. *Id.* at 1231.

202. *Id.* at 1232.

203. *Id.*

204. *Id.* at 1234.

205. *Com-Share v. Computer Complex*, 348 F.2d 1341 (6th Cir. 1972).

206. 504 F.2d 518 (5th Cir. 1974).

207. *Id.* at 533-34.

208. *Id.* at 545.

puter technology is *Telex v. International Business Machines*.²⁰⁹ Telex had brought an action against IBM based on the Sherman Act for antitrust violations. IBM counterclaimed, bringing an unfair competition action based on misappropriation of trade secrets. The district court and the court of appeals found that Telex had misappropriated IBM trade secrets by hiring away IBM employees for greatly increased salaries, substantial bonuses, and stock options in order to develop peripheral devices, such as memory units and printers, in a shorter span of time than if Telex had had to go through the entire development process itself.²¹⁰ The court of appeals affirmed the lower court's finding that Telex had taken the source code for a program used in the diagnosis, checkout, and debugging of various devices used in one of IBM's computer systems.²¹¹ The court of appeals found damages for IBM in the amount of \$17,500,000, plus \$1,000,000 in punitive damages.²¹²

These three cases illustrate the varied forms trade secret protection can take in application to software programs. *Com-Share* demonstrates the need to have strict enforcement procedures in place for monitoring individual licensees. These procedures can include agreements with nondisclosure clauses and tight security at the licensor's premises. *University Computing* takes these precautions a step further in mandating extreme caution and protective measures when dealing in a joint venture situation. Finally, *Telex* serves as a landmark decision for would-be takers of competitors' employees. *Telex* stands for the proposition that trade secret theft is not just the stealing of documents and equipment, but also the misappropriation of company knowledge contained in employees' minds. Furthermore, with its \$18.5 million damages award, *Telex* points to the expense of trade secret theft.

In the past, as the above discussion demonstrates, trade secret law afforded an effective means of protection for software developments. Trade secrecy will remain an important means of protection for large systems software developers in the future.²¹³ As newer markets open up for mass-marketed computer systems, however, software developers will seek other methods of protection.²¹⁴ Protecting a product through trade secret law is costly: a software developer must curtail wide distribution of the product, closely watch employees, maintain special storage areas, and give close attention to details such as stamping confidential documents.²¹⁵ As software vendors develop programs for ever

209. 510 F.2d 894 (10th Cir. 1975).

210. *Id.* at 911, 929.

211. *Id.* at 911.

212. *Id.* at 933.

213. Scafetta, *supra* note 184, at 449-50; see also CONTU Report, *supra* note 1, at 84-85 (Commissioner Hersey's dissent).

214. Maggs, *supra* note 33, at 252; see also CONTU Report, *supra* note 1, at 38.

215. See generally Scafetta, *supra* note 184.

widening markets, trade secrecy will become increasingly difficult and expensive to maintain between the seller and the buyer. Policing trade secret agreements to ensure that the many buyers are adhering to the provisions will also become more difficult.²¹⁶ Other problems remain with respect to traditional trade secret protection as well. Preemption is one such problem.

2. Preemption of Trade Secret Law by Federal Law

Trade secret law is based on state common law.²¹⁷ As such, federal supremacy with regard to the patent and copyright laws is an issue.²¹⁸ Section 301 of the Copyright Act of 1976²¹⁹ preempts state law with regard to any works that are within the scope of protection afforded by the federal copyright laws.²²⁰ However, the courts had largely settled the preemption issue before the passage of section 301 in 1976.²²¹

a. Pre-1976

Prior to 1976, the courts found little conflict between state trade secret laws and federal copyright laws because the federal laws were only applicable after publication or public distribution.²²² This was demonstrated in *Goldstein v. California*,²²³ where the Supreme Court determined that the copyright clause of the Constitution²²⁴ and the federal statute enacted under that clause²²⁵ were not in conflict with California's own copyright statutes²²⁶ as applied to pirated musical recordings.²²⁷ The Court found that the federal copyright laws were intended to protect compositions of original musical work,²²⁸ not renderings of an original performance,²²⁹ and therefore the states were free to legislate in the latter area.²³⁰

The Supreme Court relied on *Goldstein* in the later case of *Kewanee Oil v. Bicron*,²³¹ in deciding another conflict between state trade secret law and federal

216. See Maggs, *supra* note 33, at 252.

217. Bender, *supra* note 31, at 2.

218. See, e.g., *Sears, Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225, 231 (1964).

219. 17 U.S.C. § 301 (1976 & Supp. V 1981).

220. See *supra* notes 92-93 and accompanying text.

221. See discussion *infra* on *Goldstein* at text accompanying notes 223-30 and *Kewanee Oil* at text accompanying notes 231-38.

222. 17 U.S.C. § 10 (1947). See, e.g., *Loew's v. Superior Court of Los Angeles County*, 18 Cal. 2d 419, 115 P.2d 983 (1941).

223. 412 U.S. 546 (1973).

224. U.S. CONST. art. I, § 8, cl. 8.

225. 17 U.S.C. §§ 1-216 (1976).

226. CAL. PENAL CODE § 653h (West 1970).

227. *Goldstein*, 412 U.S. at 571.

228. *Id.* at 565.

229. *Id.* at 566.

230. *Id.* at 566, 570.

231. 416 U.S. 470 (1974).

patent law. In *Kewanee Oil*, the petitioner sought the protection of Ohio's trade secret laws in an action claiming that former employees had misappropriated trade secrets pertaining to the manufacture of synthetic crystals used in the detection of ionizing radiation.²³² The court of appeals reversed the lower court's finding that trade secret law was applicable. The court of appeals ruled that Ohio's trade secret law was in conflict with federal patent law and that the manufacture of synthetic crystals was a more appropriate subject for federal patent law.²³³ The court reasoned that Ohio had no power to grant monopoly protection under its trade secret laws in an area covered by federal law.²³⁴ The Supreme Court reversed the court of appeals, basing its holding in large part on the arguments presented in *Goldstein*.²³⁵ The Court differentiated between trade secret laws and the patent laws, observing that both provide different incentives for business.²³⁶ The Court reasoned that the abolition of trade secret protection would not result in increased public disclosure of discoveries that were not covered by patent protection.²³⁷ Furthermore, the Court noted that the disclosure of customer lists or advertising campaigns would not benefit the public, adding that keeping such information secret encourages business to embark on new plans of operation for competition, which in turn promotes a wide variety of business methods.²³⁸

Following *Kewanee Oil*, a software developer may opt for either patent or trade secret protection.²³⁹ Once a program has been disclosed in a patent application, however, trade secret protection is no longer available.²⁴⁰ It follows that trade secret protection will remain available for any software not described in the patent application.

b. *Post-1976*

Since the enactment of the Copyright Law of 1976, software developers have not been able to rely automatically on both trade secret and copyright law for protection.²⁴¹ As federal copyright law now applies equally to published and

232. *Id.* at 473.

233. *Id.* at 474.

234. *Id.*

235. *Id.* at 478-79. "Just as the States may exercise regulatory power over writings so may the States regulate with respect to discoveries. States may hold diverse viewpoints in protecting intellectual property relating to invention as they do in protecting the intellectual property relating to the subject matter of copyright." *Id.* at 479.

236. *Id.* at 483.

237. *Id.*

238. *Id.*

239. See *Kewanee Oil*, 416 U.S. at 482-83, for the proposition that patent law and trade secret law are mutually exclusive as protections.

240. CONTU Report, *supra* note 1, at 47.

241. See *supra* notes 92-93 and accompanying text; see also Maggs, *supra* note 33, at 272.

unpublished works (the latter only so long as no wide distribution occurs without notice),²⁴² the use of trade secret protection in conjunction with federal copyright protection presents a preemption issue.

A recent case, *Warrington Associates v. Real-Time Engineering Systems*,²⁴³ held that preemption does not occur because the interests secured by the copyright law under section 301(b)²⁴⁴ and the state trade secret law are not equivalent.²⁴⁵ In *Warrington Associates*, the plaintiff, a designer and marketer of computer software programs for banks and other financial institutions, filed a claim against the defendant for wrongful appropriation of its secret computer software programs.²⁴⁶ The court found that while the disclosure of the copyrighted expression does not negate rights protected therein, the same disclosure could strip the underlying idea of its protection under trade secret law.²⁴⁷ The court found that the two protections interact.²⁴⁸ Once a developer has copyrighted and published a program, the chances that it will be subject to unprivileged disclosure increase.²⁴⁹ However, the publishing of a work does not necessarily mean that the underlying trade secret is disclosed or eliminated.²⁵⁰ The court concluded that different legal concepts underlie each type of law. Tort law and the concomitant concepts of breach of trust and confidentiality provide the foundation for trade secret law.²⁵¹ On the other hand, copyright law, while also premised on tort law, incorporates the concept of outright copying.²⁵²

The House of Representatives has considered measures which would eliminate any problems of preemption between state trade secret law and federal copyright law.²⁵³ Under the House proposals, section 301 would be amended so that nothing in the copyright laws would alter or limit any right or remedy which the owner of a copyright might have under state trade secret law, provided the state protected right or remedy is not equivalent to any of the exclusive rights within the general scope of copyright as specified by 17 U.S.C. § 106.²⁵⁴

242. See *supra* notes 100-01 and accompanying text.

243. 522 F. Supp. 367 (N.D. Ill. 1981).

244. 17 U.S.C. § 301(b) (1982) provides: "Nothing in this title annuls or limits any rights or remedies under the common law or statutes of any State with respect to . . . (3) activities violating legal or equitable rights that are not equivalent to any of the exclusive rights within the general scope of copyright as specified by sec. 106."

245. *Warrington Associates*, 522 F. Supp. at 368.

246. *Id.* at 367-68.

247. *Id.* at 368.

248. *Id.*

249. *Id.*

250. *Id.*

251. *Id.* at 369.

252. *Id.*

253. H.R. 6983, 97th Cong., 2d Sess (1982). See *supra* note 110 and accompanying text for partial text, and discussion, of bill.

254. See *supra* text accompanying note 220.

c. *Summary of the Preemption Problem*

Trade secret law remains a tested method of protection for software. However, under the new copyright law, which protects works of authorship prior to mass publication, a software developer may be forced to choose between federal copyright protection and state trade secret protection because of the preemption doctrine. This same problem does not occur with patent protection and trade secret law, provided the software sought to be protected by trade secret principles is not disclosed in a patent application. It is doubtful that a court would prevent the use of trade secret protection when someone is also seeking copyright protection, but the House has nevertheless been considering legislation affirming this outcome.²⁵⁵

E. *Conclusions under U.S. Law*

The law in the United States has been changing rapidly within the past few years, and evolving protections for software have emerged. Based on the reasoning of the Supreme Court in *Diamond v. Diehr*, so long as the computer program is part of a process, and is not purely a mathematical formula or algorithm, the developer may possibly obtain a patent. Copyright protection, however, has become the most reliable method of protection since the passage of the Copyright Act of 1976 and the 1980 amendment directed at computer programs. Courts are struggling with various interpretations of the law insofar as it protects object code, but the trend seems to be in favor of protecting all forms of software. A software developer may still invoke trade secret protection as a tested method of maintaining rights in a software program. There is some indication that, although the Copyright Act of 1976 preempts all equivalent state law, it does not preempt trade secret law because the latter protects different legal rights in software.

These protections combine to form an assured legal basis for the U.S. software developer at home. Given the intense competition from Japanese computer makers both in the United States and Japan, however, an understanding of that country's legal protections for software developments is necessary. The following analysis discusses those Japanese legal protections which most closely parallel U.S. legal developments, as well as those safeguards which appear to have little similarity to U.S. law.

III. SOFTWARE PROTECTION UNDER JAPANESE LAW

Under Japanese law, a developer may protect software using one of several methods.²⁵⁶ None of these methods has yet obtained an official imprimatur of

255. See *supra* discussion of legislation at note 110.

256. Takaishi, *supra* note 2, at 131.

either specific legislation or judicial decision as has occurred in the United States.²⁵⁷ The two most effective methods for widely distributed software are copyright²⁵⁸ and patent protection.²⁵⁹ Other methods include a tort action brought to secure a right,²⁶⁰ an action based on breach of contract of a licensing agreement,²⁶¹ or general criminal sanctions for theft under patent or copyright laws.²⁶²

Compared to U.S. law, Japanese protections for software are inadequate. None of the statutory language makes specific mention of computer software, and thus much of the law's application to software must be implied. Furthermore, because the Japanese law does not provide for trade secret misappropriation, but only for tort actions to secure tangible rights,²⁶³ much of the protection afforded developers under U.S. trade secret law is unavailable in Japan. Thus, Japanese developers must rely solely on nondisclosure clauses in licensing agreements, whereas U.S. manufacturers couple such agreements with trade secret protection.²⁶⁴ Of all the Japanese protective measures available for software, however, copyright protection in Japan is that which most closely parallels U.S. law.²⁶⁵

A. *Japanese Copyright Law*

The Copyright Law²⁶⁶ applies to unfair competition involving copyright infringement.²⁶⁷ Article 2 of the law defines a copyrightable work as a "production in which thoughts or sentiments are expressed in a creative way and which falls within the literary, scientific, artistic or musical domain."²⁶⁸ Article 10 lists those works for which copyright protection is available. These include literary, musical, and artistic works, figurative works of a scientific nature such as plans, charts,

257. *See generally id.*

258. *Id.* at 132.

259. *Id.* at 137.

260. *Id.* at 138.

261. *Id.*

262. *Id.*

263. *See infra* § III.C.

264. *See supra* discussion of U.S. trade secret law in § II.D.

265. The Japanese legislature has been considering weakening copyright protection for software programs, replacing it by a limited patent protection, and requiring all foreign software developers to license their software to domestic Japanese producers. Wall St. J., March 16, 1984, at 31, col. 4. It seems likely that the discussion will continue into the next legislative session. Wall St. J., March 20, 1984, at 10, col. 3.

266. Law No. 48, 1970, translated in UNITED NATIONS EDUCATIONAL SCIENTIFIC AND CULTURAL ORGANIZATION, COPYRIGHT LAWS AND TREATIES OF THE WORLD, JAPAN (1971 & Supp. 1978) [hereinafter cited as COPYRIGHT LAW].

267. PINNER'S WORLD UNFAIR COMPETITION LAW (§ Survey) (H. Dawid ed. 1978) [hereinafter cited as PINNER]. *See generally*, T. DOI, THE INTELLECTUAL PROPERTY LAW OF JAPAN (1980) for a discussion of the history of copyright law in Japan.

268. COPYRIGHT LAW, *supra* note 266, art. 2(1)i.

and models, and cinematographic and photographic works.²⁶⁹ The law protects these works against unauthorized reproduction or copying if they consist of sentences, photographs, or pictures of original creation.²⁷⁰

Copyright protection extends only to the form of the expression, rather than the idea, methods, schemes, or systems expressed by letters, numerals, or drawings.²⁷¹ This concept is embodied in the language of Article 2 which states that thoughts must be expressed in a creative manner if they are to be copyrightable.²⁷² In this respect, Japanese law is similar to the U.S. law which states that copyright does not extend to any idea, concept, or principle regardless of the form in which it occurs.²⁷³

The rights given to a copyright holder under Japanese law may be split into two groups: one comprising exclusive rights²⁷⁴ and the other moral rights.²⁷⁵ The first group includes such rights as the right of reproduction,²⁷⁶ the rights of translation and adaptation,²⁷⁷ and the right to exploit a derivative work.²⁷⁸ These rights closely parallel those found under U.S. copyright law.²⁷⁹ Moral rights guaranteed by the Japanese copyright law are more ephemeral and include such rights as the right to make a work public,²⁸⁰ the right of an author to use, or not use, the author's name on the work²⁸¹ and the right of an author to preserve the integrity of a work.²⁸² U.S. law does not recognize these rights, nor does it appear that it will at any time in the near future.²⁸³

1. Japanese Copyright Law as Applied to Software

For a work of authorship to be copyrightable under Japanese law, it must meet the three criteria set out in Article 2 of the Copyright Law.²⁸⁴ First, the work must be an expression of an idea or a feeling of the author.²⁸⁵ Second, the work must be creative and original in the major portion of its expression.²⁸⁶ Third, the

269. *Id.*, art. 10.

270. PINNER, *supra* note 267, § 11.

271. *Id.* § 33.

272. See discussion *supra* at text accompanying note 268.

273. See *supra* note 84 for the text of 17 U.S.C. § 102(b).

274. COPYRIGHT LAW, *supra* note 266, arts. 21-28.

275. *Id.*, arts. 18-20.

276. *Id.*, art. 21.

277. *Id.*, art. 23.

278. *Id.*, art. 28.

279. 17 U.S.C. § 106 (1982).

280. COPYRIGHT LAW, *supra* note 266, art. 18.

281. *Id.*, art. 19.

282. *Id.*, art. 20.

283. See *infra* notes 440-42 and accompanying text.

284. See *supra* note 268 and accompanying text.

285. *Id.*

286. *Id.*

work must be expressed in one of those forms specified under Article 10, such as words, characters, colors, pictures or other images, or sound.²⁸⁷

A computer program is a work which creatively expresses ideas or concepts of a programmer regarding a method of performing tasks by a computer.²⁸⁸ Most programs are creative and original in their expression and are written in computer languages that are similar to prose.²⁸⁹ As such, Japanese legal observers generally hold computer programs to be copyrightable subject matter under Japanese law.²⁹⁰

The Computer-Related Committee of the Copyright Council published a discussion of the limited scope of the application of copyright protection to computer programs in 1973.²⁹¹ The Committee determined that it would not be appropriate to revise the copyright law so as to grant the copyright owner of a program an exclusive right either to execute the program²⁹² or to distribute it.²⁹³ The Committee found that the right of execution is a right to use or apply the program and as such is not covered by copyright provisions on exclusive rights of creation or authorship.²⁹⁴ The Committee noted further that the right to distribute a computer program would be a powerful and limiting right on the time, place, and purpose of disposal of that program. The Committee observed that such a policy would be at odds with the spirit of the current copyright laws providing for the uninhibited use and enjoyment of a copyrighted work.²⁹⁵ The Committee also recommended that the period of protection afforded copy-

287. See *supra* note 269 and accompanying text.

288. Takaishi, *supra* note 2, at 132.

289. *Id.*

290. *Id.* Takaishi cites four reports which have concluded that software is copyrightable in Japan. These reports are: (1) Electric Communication Research Institute, Research on Software (Feb. 1972); (2) Research Committee on Legal Protection of Software, Interim Report on Legal Protection of Software (May 1972) (produced by the Ministry of International Trade and Industry) [hereinafter cited as the MITI Report]; (3) Cultural Affairs Agency, (Computer-Related) Report of the Copyright Council (the second committee report, June 1973) [hereinafter cited as the Copyright Council Report] and (4) Special Committee on Research for Legal Protection of Software, Interim Report on Research for Legal Protection of Software (March 1981) (produced by the Japanese Software Industry Association). Takaishi, *supra* note 2, at 131 n.3.

The MITI Report is summarized in 6 COMPUTER L. SERV. (CALLAGHAN), § 9-4, art. 3 (1973); the Copyright Council Report is summarized in Nomura, *Letter from Japan*, 10 COPYRIGHT 129, 133 (1974).

291. PINNER, *supra* note 267, § 33; see also the Copyright Council Report, *supra* at note 290.

292. Nomura, *supra* note 290, at 134. The Committee found that the execution of a program when it is copied into main memory is not the same as reproducing the program because the action is so transient, and therefore not a proper subject for copyright. *Id.*

293. *Id.*

294. *Id.* at 134. For a discussion of these exclusive rights, see *supra* text accompanying notes 76-78.

295. Nomura, *supra* note 290, at 134. Article 1 of the Copyright Law specifies that the purposes of the provisions are to secure the rights of authors and to justly and fairly exploit the cultural products of authorship, thereby contributing to the development of the country's culture. COPYRIGHT LAW, *supra* note 266, art. 1. Therefore, limitation on the distribution of a copyrighted work would not aid in the development of Japanese culture because it could limit access to copyrighted works.

righted works should be shortened.²⁹⁶ The current term of protection is for fifty years after the death of the author.²⁹⁷

A 1972 report by the Ministry of International Trade and Industry (MITI) echoed these conclusions.²⁹⁸ The MITI Report stated that computer programs could be regarded as literary works falling within the scope of science since most of them are creations involving technical ideas.²⁹⁹ The Report also concluded that computer programs would not be sufficiently protected under the Copyright Law because it was not applicable to the execution of programs.³⁰⁰ The Report observed that duplicated efforts in software creation were unavoidable so long as no registration or publication system existed in Japan.³⁰¹ Finally, the Report concluded that the term of protection was too long.³⁰²

2. The Types of Software Protected under Japanese Copyright Law

There is little doubt that program materials such as designs, flow charts, and manuals are copyrightable.³⁰³ The former two materials are regarded as "artistic works" and the latter as a "literary work."³⁰⁴ However, an object program written in machine-readable language cannot be a copyrightable original since it is a mere copy of the source program.³⁰⁵ Such programs obtained by changing the program language lack originality and therefore constitute reproductions.³⁰⁶ Using this reasoning, any program which is a permutation of the source program is no more than the reproduction of the source program.³⁰⁷

There is growing sentiment in Japan, however, that object code may be copyrightable subject matter.³⁰⁸ The Interim Report of the Japanese Software Industry Association³⁰⁹ made three points in favor of copyrighting object code.

296. *Id.*

297. COPYRIGHT LAW, *supra* note 266, art. 51(2).

298. See *supra* note 290. See also 6 COMPUTER L. SERV. (CALLAGHAN), *supra* note 290, at 3.

MITI occupies a prominent position in Japan's industrial policy making process. Almost all of Japan's major industries come within its purview. Among its primary responsibilities are the management of specific technical areas such as patents used by small businesses, and industrial technology, the control of raw materials and energy used by industry, the supervision of industrial development including the monitoring of production and distribution chains, the regulation of foreign trade and commercial policies, and the determination of overall industrial structures. Note, *Regulating Japanese Automobile Imports: Some Implications of the Voluntary Quota System*, 5 B.C. INT'L & COMP. L. REV. 431, 454 (1982).

299. 6 COMPUTER L. SERV. (CALLAGHAN), *supra* note 290, at 3.

300. *Id.* Compare with note 292 and accompanying text, *supra*.

301. 6 COMPUTER L. SERV. (CALLAGHAN), *supra* note 290, at 3.

302. *Id.* Compare with text accompanying notes 295-97, *supra*.

303. Takaishi, *supra* note 2, at 132.

304. *Id.*

305. *Id.*

306. Nomura, *supra* note 290, at 133.

307. *Id.*

308. Takaishi, *supra* note 2, at 132.

309. See *supra* note 290.

The first is the necessity of providing legal and economic protection for object code³¹⁰ when under prevailing industry practice the user obtains a copy of the computer program in this form.³¹¹ The second is that the requirement of creativity or originality³¹² does not have to be interpreted strictly. Therefore, object code, as a derivation of source code and not an entirely original creation, may be protected.³¹³ The third is that major technological leaders like the United States, in decisions such as *Data Cash v. JS&A Group*,³¹⁴ have considered object code copyrightable.³¹⁵

3. Court Decisions Addressing Software Copyrightability

Unlike the United States, no definitive court decisions addressing the copyrightability of computer programs exist in Japan. Two Japanese district courts, however, have issued injunctive orders to prevent defendant manufacturers from producing and selling alleged copies of plaintiff's video games.³¹⁶

The first decision granted a preliminary injunction on the ground that the programs used were copies of plaintiff's original programs.³¹⁷ In the second, *Namco Inc. v. Nishi Nihon Sales Co.*, the plaintiff sought a preliminary injunction for infringement of a video game.³¹⁸ The court found that the defendant's game produced the same images and sounds as plaintiff's,³¹⁹ and therefore granted the injunction.³²⁰ Although these preliminary injunctions cannot be considered definitive judicial statements on the copyrightability of computer programs, they provide the first affirmative indication under Japanese law that such protection is available.³²¹

4. Copyright Protection of Video Games

Current Japanese law provides three approaches for protecting video games under the copyright law.³²² The first relies on the definition of a computer

310. Takaishi, *supra* note 2, at 132 n.15.

311. *Id.*

312. *See supra* text accompanying note 272.

313. Takaishi, *supra* note 2, at 132 n.15.

314. *See supra* discussion of *Data Cash* at text accompanying notes 117-21.

315. Takaishi, *supra* note 2, at 132 n.15. The report cites *Data Cash Systems v. JS&A Group*, 628 F.2d 1038 (7th Cir. 1980) as an example of a foreign case holding object code copyrightable. Takaishi, *supra* note 2, at 132 n.15.

316. Takaishi, *supra* note 2, at 132.

317. *Id.* at 132-33, citing *Sega Enterprises v. Taito Shoji* in *Nikkei Sangyo Newspaper* (Nov. 16, 1981). Takaishi, *supra* note 2, at 133 n.16.

318. *See Doi, The Scope of Copyright Protection against Unauthorized Copying — Japan's Experience and Problems*, 29 J. COPYRIGHT SOC'Y 367, 377 n.16 (1982), citing 27 KÖGYÖSHOYUKENHÖ KENKYŪ 17 (1981).

319. Doi, *supra* note 318, at 377.

320. *Id.*

321. Takaishi, *supra* note 2, at 133.

322. Doi, *supra* note 318, at 377-78.

program as a work of authorship.³²³ Under a broad definition of reproduction,³²⁴ when a software developer authors a program and then embodies it in a ROM, this embodiment may be considered a reproduction of the original program.³²⁵ Thus, when a competitor copies the developer's ROM into another ROM, the competitor is reproducing a work of authorship without permission.³²⁶ This approach to the protection of video game software in ROM form is very similar to the approach taken under U.S. law in such cases as *Tandy* and *Williams*.³²⁷ In both of these cases the court found that the underlying ROM-based software had been copyrighted, either directly as in *Tandy*, or indirectly by a copyright on the source code, as in *Williams*. Once the defendant copied the software, the defendant infringed plaintiff's copyright.

The second approach under Japanese law regards video games as cinematographic works.³²⁸ When a video game is in the play mode, it displays a series of moving images on the picture tube. A computer program produces these prefixed images. While playing the game, the player simply selects one of the limited number of prefixed copyrighted images. A competitor copying the program, then, will be copying the images, which constitutes an infringement.³²⁹ Under Japanese law, this second approach most closely mirrors the current U.S. view with respect to video games. In the most elementary handling of a video game suit, a U.S. court may look only to the visual images created by the plaintiff and displayed on a screen to see if these images are so nearly matched to defendant's as to constitute a copy. Such has been the outcome in several recent U.S. cases.³³⁰

The third Japanese approach protects the small amount of electronic music which can be heard when a game is played. Unauthorized copying of a ROM containing a musical computer program is an infringement of the program author's reproductive right.³³¹ Although presumably this third tack to copyright

323. *Id.* Article 2(1) of the Copyright Law defines work of authorship as productions in which thoughts or sentiments are expressed in a creative way. See *supra* text accompanying note 268. Article 10(1) lists the types of works of authorship. See *supra* text accompanying note 269. It may be concluded, given these two articles, that a computer program is a work of authorship. Doi, *supra* note 318, at 377-78.

324. COPYRIGHT LAW, *supra* note 266, art. 21.

325. See *supra* note 276 and accompanying text.

326. Doi, *supra* note 318, at 378.

327. See *supra* text accompanying notes 138-48 and 155-62.

328. Doi, *supra* note 318, at 378. See also COPYRIGHT LAW, *supra* note 266, art. 25. Cinematographic works are protected under Article 10. Article 26 gives the author of such a work the exclusive right to present his work publicly and to distribute it. The author of a work reproduced in cinematographic form retains similar rights. COPYRIGHT LAW, *supra* note 266, arts. 10, 26.

329. Doi, *supra* note 318, at 378. Compare with video game discussion *supra* in § 11.C.2a.

330. See, e.g., those cases cited *supra* at note 129.

331. Doi, *supra* note 318, at 378.

protection of an underlying software program is possible under U.S. copyright laws,³³² no case has yet been decided solely on these grounds.³³³

5. Possible Bars to Software Copyright Protection

Under Japanese copyright law as it is currently interpreted, two bars exist to the implementation of copyright protection for software.³³⁴ The first involves the execution of any program within a particular computer. In order to execute a software program, the program itself must regularly be copied from one section of memory to another as it is needed by different parts of the computer performing various data processing tasks. Under current Japanese law, such copying is not considered a reproduction, but rather an application, and therefore not protected by the copyright provisions.³³⁵ The second bar goes to the exclusive right to distribute computer programs. Under the current copyright law, no right exists which would impose limitations on the time, place, and purpose of the disposal of copyrighted software.³³⁶

Japanese law in this area is at odds with U.S. law, under which both execution and distribution rights are specifically protected. A strict reading of amended section 117(1)³³⁷ of the U.S. copyright law gives copyright owners unlimited rights for program execution, and section 106(3)³³⁸ gives unlimited distribution rights. Thus, the execution of a computer program by a computer as well as the distribution of that program to the public, which may cause legal difficulties under Japanese copyright law, present no problems under U.S. copyright laws.

6. Summary of Japanese Copyright Protection for Software

Although no affirmative legislation or judicial opinion speaks to the copyrightability of software in Japan, a growing trend would allow computer programs to be copyrighted. This trend closely parallels the state of the law in the United States with regard to copyright protection of software. However, the Japanese laws are not as flexible as the U.S. laws with regard to the execution and distribution of programs. These are matters which may well have to be taken up in the Japanese courts or legislature. In the meantime, a software developer may

332. 17 U.S.C. § 106 (1982) provides protection for musical works.

333. In several cases, the U.S. courts have referred to the sounds accompanying the visual images and have remarked that these sounds were or were not similar to the video game at dispute. *See, e.g., Atari v. North American Phillips Consumer Electronics*, 214 U.S.P.Q. (BNA) 33, 37 (7th Cir. 1982); *Stern Electronics v. Kaufman*, 669 F.2d 852, 854 (2d Cir. 1982); and *Midway Manufacturing v. Dirkschneider*, 543 F. Supp. 466, 473 (D. Neb. 1981).

334. *See Takaishi, supra* note 2, at 135-37.

335. *Nomura, supra* note 290, at 134.

336. *Id.*

337. 17 U.S.C. § 117 (1982). For text of § 117, *see supra* note 108.

338. 17 U.S.C. § 106 (1982).

consider protecting his program under the Japanese patent laws, although this protection, as under U.S. law, is not extensive.

B. *Japanese Patent Law*

Under the Japanese Patent Law,³³⁹ Article 2 defines an invention as any "high grade creation among creations of technical ideas, utilizing natural rules."³⁴⁰ For a computer program to be patentable, it must not only incorporate a technological thought using the laws of nature,³⁴¹ but it must also be an invention that can be used in industry.³⁴² The program must be novel and progressive,³⁴³ and no one else may have made another patent application for the same program.³⁴⁴ At present, Japanese legal theorists do not generally view computer programs as patentable, but instead as being totally artificial and lacking any basis in natural law.³⁴⁵

In 1976, the Japanese Patent Office issued the criteria it will use in examining computer program inventions.³⁴⁶ Although the criteria do not completely eliminate patentability for computer programs, they do not recognize patentability

339. Law No. 121, 1959 *translated in* 2 D. J. SINNOT, *WORLD PATENT LAW & PRACTICE, JAPAN 2* (1979) [hereinafter cited as *PATENT LAW*].

340. *Id.* art. 2. The full text of Article 2 provides:

1. "Invention" in this Law shall mean any high grade creation among creations of technical ideas utilizing natural rules.

2. "Patented invention" in this Law shall mean any invention on which a patent has been granted.

3. "Working" in respect of an invention in this Law shall mean the followings acts:

(1) In an invention of a thing, acts of manufacturing, using, transferring, leasing, exhibiting, for the purpose of transfer or lease, or importing the thing;

(2) In an invention of a process, acts of using the process;

(3) In an invention of a process of manufacturing a thing, acts of using, transferring, leasing, exhibiting for the purpose of transfer or lease, or importing the thing by the process in addition to those as mentioned in the preceding items.

Id.

341. *Id.*

342. *Id.* art. 29(1). Article 29(1) states:

Any person who has made an invention which can be utilized in industry may obtain a patent except for the following inventions: (1) an invention which has been publicly known in Japan prior to the patent application; (2) an invention which has been publicly worked in Japan prior to the patent application; (3) an invention which had been described in a publication distributed in Japan or in any foreign country prior to a patent application.

Id. See generally Takaishi, *supra* note 2, at 137.

343. *PATENT LAW, supra* note 339, art. 29(2). Article 29(2) states:

In the case where a person having an ordinary knowledge in the technical field to which such invention belongs could have made an invention easily on the basis of the invention as mentioned in each item of the preceding paragraph prior to the patent application, a patent may not, in spite of the provision of said paragraph, be granted in respect of such inventions.

Id.

344. *Id.* art. 29(1).

345. R. RUSSELL, *PATENTS AND TRADEMARKS IN JAPAN 161* (1974). *But see* recent developments in the Japanese legislature with regard to the patentability of software cited *supra* note 265.

346. Takaishi, *supra* note 2, at 137.

for a mere mathematical formula.³⁴⁷ The viewpoint of the Japanese Patent Office closely follows the U.S. Supreme Court decisions in *Gottschalk v. Benson*³⁴⁸ and *Parker v. Flook*.³⁴⁹ In each of these cases, the Court held that a computer program which could be found to be only a mathematical formula or algorithm was not patentable. Largely predicated on the principle that U.S. patents cannot be obtained for ideas,³⁵⁰ these decisions are reflected in the approach taken by Japan.³⁵¹

When viewed in this context, Articles 2³⁵² and 29³⁵³ of the Japanese Patent Law provide very similar protection to that provided by sections 101,³⁵⁴ 102,³⁵⁵ and 103³⁵⁶ of the U.S. patent laws. Thus, as under U.S. law after the *Diehr* decision,³⁵⁷ a computer program used as part of a process control system³⁵⁸ may also qualify as patentable subject matter under Japanese law.³⁵⁹ That is, if a method of controlling, processing, manufacturing, or measuring uses a computer and its program and is novel or creative enough to meet the standards set out in Article 29,³⁶⁰ that method may be patentable.³⁶¹

The 1972 MITI Report,³⁶² however, observed that even if computer programs are considered patentable, the present patent system cannot provide adequate protection for three reasons.³⁶³ First, because of the difficulty in meeting the novelty and progressiveness requirements, only a limited number of programs can meet the requirements of patentability under the existing patent law.³⁶⁴ Second, the tremendous amount of prior art existing in the field of computer

347. *Id.*

348. *Gottschalk v. Benson*, 409 U.S. 63 (1972). *See supra* notes 46-51 and accompanying text.

349. *Parker v. Flook*, 437 U.S. 584 (1978). *See supra* notes 53-57 and accompanying text.

350. *See supra* note 48 and accompanying text.

351. Examples of unpatentable claims include a method for calculating by division, for classifying data, for automatically measuring a dynamic friction coefficient, and for calculating optimal profits from a process. Yamamoto & Conlin, *Guidelines of the Japanese Patent Office for the Examination of an Invention Related to a Computer Program*, 77 PAT. & TRADEMARK REV. 195, 203-13 (1979). Other examples of unpatentable programs include standard commercial application programs. Takaishi, *supra* note 2, at 137.

352. *See supra* note 341 and accompanying text.

353. *See supra* notes 342, 343 and accompanying text.

354. *See supra* note 38 and accompanying text.

355. *See supra* note 39 and accompanying text.

356. *See supra* note 40 and accompanying text.

357. *Diamond v. Diehr*, 450 U.S. 175 (1981); *see supra* text accompanying notes 60-65.

358. Process control is the automatic monitoring and regulation of continuous operations such as oil refining, food processing, and steel manufacturing.

359. Takaishi, *supra* note 2, at 137.

360. For the text of Article 29, *see supra* note 340.

361. R. RUSSELL, *supra* note 345, at 161. Patentable inventions or processes under Japanese law include a method for monitoring the process of a computer, and for automatic thickness control in a hot strip mill. Yamamoto & Conlin, *supra* note 351, at 213-19.

362. *See supra* note 290 and accompanying text.

363. T. Doi, *supra* note 267, at 12.

364. *Id.* Compare with U.S. conditions discussed *supra* at text accompanying notes 70-75.

science would render the present examination system inadequate³⁶⁵ because it would be impossible to check on all of the previously developed computer programs. Third, the life of computer programs is generally much shorter than for ordinary technology.³⁶⁶ By the time a patent is obtained, the program is often obsolete.

1. Protection of U.S. Patents in Japan

The Japanese patent laws protect only those inventions registered in Japan.³⁶⁷ They are laws of territorial application and do not apply to acts committed abroad.³⁶⁸ Thus, a plaintiff could not bring a suit based on Japanese law in a Japanese court for patent infringement which occurred outside of Japanese jurisdiction. Article 11 of the *Horei* (the law concerning the application of laws)³⁶⁹ is applicable to tortious acts, including patent infringement, and further qualifies this jurisdictional requirement.³⁷⁰ Article 11(2) of the *Horei* specifies that where an act occurring in a foreign country is not unlawful under the laws of Japan, such an act does not give rise to a tort claim in Japanese courts.³⁷¹ Therefore, to prevent unlicensed manufacture in Japan of an article patented in the United States, a U.S. business should also obtain a Japanese patent.³⁷²

Under Japanese case law, the only decision to construe Article 11(2) of the *Horei* is *Nihon Musentsuhin K.K. v. Masushita Denki K.K.*³⁷³ In that case, the plaintiff, an owner of both Japanese and Manchurian patents on a radio tube, brought an action for damages in a Japanese court claiming infringement of its Manchurian patents. The defendant manufactured radio receiving sets in Japan and shipped them to Manchuria. These radio receiving sets contained radio tubes manufactured by the plaintiff's licensee under plaintiff's patent. The court dismissed the action under Article 11(2) of the *Horei* on the ground that given the principle of the independence of patents, "only Japanese patents are recognized in Japan and foreign patents have no protectable rights in Japan, hence an act which infringes upon a patent of a foreign country does not constitute a tort. This is true of a Manchurian patent."³⁷⁴

365. T. DOI, *supra* note 267, at 12.

366. *Id.*

367. PRICE WATERHOUSE CO., *DOING BUSINESS IN JAPAN: INFORMATION GUIDE 14* (1975).

368. PINNER, *supra* note 267, § 1.

369. Law No. 10, 1898 [hereinafter cited as *Horei*], translated in PINNER, *supra* note 267, § 1.

370. PINNER, *supra* note 267, §§ Survey, 1.

371. *Horei*, art. 11(2), *supra* note 369, translated in PINNER, *supra* note 267, § 1.

372. PRICE WATERHOUSE CO., *supra* note 367, at 14. The U.S. manufacturer, however, should be careful to comply with the timing of the registration vis-à-vis publication in the United States as specified under Japan's patent law, Law No. 121, 1959, art. 29(1). For text of Article 29(1), see *supra* note 342.

373. PINNER, *supra* note 267, § 1.

374. *Id.*

2. Summary of Japanese Patent Law

A U.S. manufacturer who desires patent protection in Japan should take steps to register its software under Japanese law at the same time registration occurs for U.S. patents. Japanese patent law may afford the software some protection, so long as the computer program is part of a manufacturing, controlling, measuring, or some other type of process. Like U.S. law, Japanese patent law does not extend protection to pure mathematical formulae or algorithms.

Patent protection under Japanese law is not adequate for most programs. However, if a software proprietor cannot invoke either copyright protection or patent protection under Japanese law, other safeguards exist which may help to protect the software. These protections fall generally under tort principles, although they are not trade secret protections. Nor are they protections that can be relied upon with the same assurance that trade secret law provides software developers in the United States.

C. Other Protections under Japanese Law

1. Trade Secret Law

In Japan, trade secret law has not sufficiently developed to protect software.³⁷⁵ No statutory provision clearly mentions trade secrets.³⁷⁶ For example, the Japanese Unfair Competition Prevention Law³⁷⁷ does not prohibit misappropriation of trade secrets or industrial espionage.³⁷⁸ Article 1(1) prohibits only those acts which would cause confusion with goods of another person by using an identical or similar name, trademark, container, or wrapping.³⁷⁹ Article 1(2) prohibits acts which would create confusion between two business activities or facilities in similar circumstances to those enumerated in Article 1(1).³⁸⁰ The last four sections of Article 1(1) deal with misleading the public as to the origin of goods, their quality, contents, or quantity, and the slander of a competitor's goods.³⁸¹

A plaintiff may seek civil remedies against unauthorized disclosure or misap-

375. Takaishi, *supra* note 2, at 138.

376. *Id.*

377. Fusei-kyoso-boshi-ho, Law No. 14, 1934, as amended in 1938, 1950, 1953, and 1965 [hereinafter cited as UNFAIR COMPETITION LAW], translated in PINNER, *supra* note 267, § Survey.

378. PINNER, *supra* note 67, § 1.

379. UNFAIR COMPETITION LAW, *supra* note 377, art. 1(1), translated in 1 A. WISE, TRADE SECRETS AND KNOW-HOW THROUGHOUT THE WORLD 1.76 (1981) and in 3 S. LADAS, PATENTS, TRADEMARKS, AND RELATED RIGHTS 1704 (1975).

380. UNFAIR COMPETITION LAW, *supra* note 377, art. 1(2), translated in 1 A. WISE, *supra* note 379, at 1.76 and in 3 S. LADAS, *supra* note 379, at 1704.

381. UNFAIR COMPETITION LAW, *supra* note 377, art. 1(3), (4), translated in 1 A. WISE, *supra* note 379, at 1.76 and in 3 S. LADAS, *supra* note 379, at 1704.

propriation of trade secrets under the general tort provisions of the Civil Code.³⁸² The Civil Code³⁸³ recognizes intangible property or de facto property rights³⁸⁴ similar to that of goodwill.³⁸⁵ According to Articles 703³⁸⁶ and 704³⁸⁷ of the Civil Code, a plaintiff may resort to a theory of unjust enrichment.³⁸⁸ Plaintiffs may also use a tort concept involving infringement of rights under Article 709 of the Code.³⁸⁹ Article 709 provides that "a person who, willfully or negligently, has injured the right of another is bound to compensate him for the damage which has arisen therefrom."³⁹⁰ It is uncertain whether this avenue is available to the owner of trade secrets who seeks damages for the misappropriation or unauthorized disclosure of trade secrets by another, because Article 709 does not expressly state that a trade secret is a protectable right.³⁹¹ However, if the injured owner of the trade secret can prove that a right exists that should be protected by the law, and this right was injured,³⁹² the plaintiff may collect damages, even if Article 709 is interpreted strictly.³⁹³ Moreover, a liberal interpretation of this section provides that if the injured party can prove that an inviolable interest exists, and the defendant injured this interest by an illegal act, the injured party can recover.³⁹⁴

Article 709 contains no mention of injunctive relief, although Article 198 of the Civil Code provides that "if a possessor is disturbed in his possession, he may bring an action for the maintenance of possession, demand discontinuance of the disturbance, as well as reparation of damages."³⁹⁵ However, the Civil Code

382. T. DOI, *supra* note 267, at 87.

383. MINPŌ, Law No. 89, as amended by Law No. 51, May 17, 1980, reprinted in English in 2 EIBUN-HOREI-SHA (EHS) L. BULL. SERIES, at FA 1 (1981) [hereinafter cited as CIVIL CODE].

384. 3 S. LADAS, *supra* note 379, at 1630.

385. 1 A. WISE, *supra* note 379, at 1.65.

386. CIVIL CODE, *supra* note 383, art. 703, at FA 115. Article 703 provides: "a person, who without any legal ground derives a benefit from the property or services of another and thereby causes loss to the latter, is bound to return such benefit to the extent that it still exists." *Id.*

387. *Id.* art. 704, at FA 115. Article 704 states: "a person enriched mala fide shall return the benefit received by him with interest, and if there has been any damage, he is bound also to make compensation therefor." *Id.*

388. 3 S. LADAS, *supra* note 379, at 1630.

389. *Id.*; see also 1 A. WISE, *supra* note 379, at 1.65.

390. CIVIL CODE, *supra* note 383, art. 709 at FA 116. See also T. DOI, *supra* note 267, at 87 and PINNER, *supra* note 267, § 74.

391. PINNER, *supra* note 267, § 74.

392. 1 A. WISE, *supra* note 379, at 1.62-1.63, citing the Japanese Supreme Court case of *Daija Kuyū* in 4 Dai Shin-In Minji Hanrei Shū 670 [A Collection of the Great Court of Judicature Civil Cases], 5 Hanrei Minji Ho 524 [Civil Case Law] (note Suehire) (Great Court of Judicature, Civil Dep't III, Nov. 28, 1925). The Court defines a right as "an interest which warrants protection by the law even though such an interest cannot be called a 'right' " in the same manner as ownership or surface rights, claimable assets, intangible property rights, or rights of honor. *Id.*

393. T. DOI, *supra* note 267, at 87; see also PINNER, *supra* note 267, § 74.

394. T. DOI, *supra* note 267, at 87; see also PINNER, *supra* note 267, § 74.

395. CIVIL CODE, *supra* note 383, art. 198, at FA 34. See also T. DOI, *supra* note 267, at 87-88; PINNER, *supra* note 267, § 74.

does not provide for injunctive relief when trade secrets are misappropriated.³⁹⁶ The only Japanese court decision in this area clearly demonstrates this interpretation.³⁹⁷ In that case, plaintiff signed an agreement with another company granting an exclusive license to manufacture and sell oil-lubricated sealings in the United States and Canada. The other company agreed to keep the process a secret. However, in order to manufacture these sealings in Japan, plaintiff's licensee signed an agreement with a Japanese company, thereby forming the defendant company. Plaintiff claimed that defendant's act of manufacturing the sealings was in violation of the contract between plaintiff and its licensee and argued that it was entitled to injunctive relief from both companies. Although the Tokyo High Court admitted the property value of the trade secret, it denied the relief because defendant was a third party to the contract. The High Court stated that no provision existed to restrain such acts.³⁹⁸

Such an outcome in a similar situation would be unthinkable in the United States.³⁹⁹ Trade secret law in the United States is based primarily on unfair competition law, but also has roots in property, contract, quasi-contract, and breach of confidence concepts.⁴⁰⁰ Many of these notions are tied to contractual licensing agreements that are popular among trade secret proprietors, especially software developers, in the United States.⁴⁰¹ Therefore, suits brought in the United States for misappropriation of trade secrets involve more than unfair business allegations, but also depend heavily on well established concepts of property and contract rights.

2. License Agreements

As in the United States, contractual protection of software through licensing is of primary importance in Japan.⁴⁰² Software developers may issue licenses for copyrighted or patented software, but the most important licenses are those for the purpose of trade secret protection. As in the United States, such licenses usually contain a closely worded confidentiality clause.⁴⁰³ The general principles of the law of obligations and contract contained in the Civil Code⁴⁰⁴ govern licensing agreements of trade secrets in Japan.⁴⁰⁵ Any such licensing agreement

396. PINNER, *supra* note 267, § 74.

397. Deutsche Werft Aktiengesellschaft v. Cheutsu-Waukesha Yugen Kaisha, 17 Kakyu minshu 769 (Tokyo High Court, Sept. 5, 1966), *cited in* T. DOI, *supra* note 267, at 88, 99 n.9; *see also* PINNER, *supra* note 267, § 74; Takaishi, *supra* note 2, at 138.

398. T. DOI, *supra* note 267, at 88-90.

399. *See, e.g.*, discussion *supra* of University Computing v. Lykes Youngstown at text accompanying notes 207-08.

400. Bender, *supra* note 31, at 5.

401. *See, e.g.*, *supra* text accompanying note 191.

402. Takaishi, *supra* note 2, at 138.

403. *Id.* at 139.

404. CIVIL CODE, *supra* note 383, art. XX at FA XX.

405. I A. WISE, *supra* note 379, at 1.131.

must be in writing.⁴⁰⁶ Furthermore, all agreements with Japanese licensees relating to industrial rights are subject to government approval.⁴⁰⁷ Those agreements whose duration is for longer than one year must have the approval of the Ministry of Finance, whereas those of less than one year require MITI's approval.⁴⁰⁸ Government approval, it is believed, will help to eliminate those licenses which could be detrimental to the Japanese economy.⁴⁰⁹ License agreements are the most effective means for maintaining trade secrecy for foreign manufacturers doing business in Japan.⁴¹⁰

In sum, Japanese law provides no explicit protection for trade secrets as does U.S. law. Thus, for the U.S. software developer who has protected an investment through carefully controlled secrets and agreements in the United States, the Japanese marketplace may present unusual hazards. A software proprietor may obtain some protection through licensing agreements. However, trade secret law in Japan must be considered in its infancy and of little value in protecting software rights.

D. *Protections for Software under Japanese Law: Conclusion*

The most reliable method of software protection in Japan is that provided under copyright law. However, these safeguards are less than those provided under U.S. law. Yet Japan is following the United States in incorporating innovative protections within its statutory constructions, and those familiar with the U.S. copyright law will see striking similarities between the two countries' copyright protections for software. Processes employing computer programs can be protected under Japanese patent law. As in the United States, however, there will be few programs in Japan that will meet statutory qualifications. Finally, trade secret law, an area that is and has been so important for software development in the United States, is virtually nonexistent in Japan. This one area perhaps best illustrates the broad dividing line between the protections afforded developments in each of these technically advanced countries. Such a division also illustrates the need for more thorough and uniform software protections on an international level.

IV. INTERNATIONAL AGREEMENTS

Presently, software developers in the United States and Japan may seek protection under two international agreements. The first, the Berne Convention for

406. *Id.*

407. 3 L. ECKSTROM, LICENSING IN FOREIGN AND DOMESTIC OPERATIONS § 31-08, at 31-117 (1974).

408. *Id.* at 31-117 to 31-118. See *supra* note 298 for a description of MITI's overall functions.

409. 3 L. ECKSTROM, *supra* note 407, at 31-121.

410. See *supra* text accompanying notes 397-98.

the Protection of Literary and Artistic Works,⁴¹¹ has been signed by Japan.⁴¹² The second, the Universal Copyright Convention (U.C.C.),⁴¹³ has been signed by both the United States and Japan.⁴¹⁴ A third set of protections proposed by the International Bureau of the World Property Organization in its Model Provisions⁴¹⁵ would provide protections specifically aimed at computer programs.

Under Japanese law, the rights afforded authors of either a Berne or U.C.C. signatory country will be the same as those afforded Japanese authors under Japanese laws, unless the treaty provides otherwise.⁴¹⁶ Under U.S. law, works that are published in a country party to the U.C.C. receive the same treatment as though they had been published in the United States.⁴¹⁷ Although both conventions provide similar copyright protections for authors,⁴¹⁸ the Berne Convention goes further in protecting an author's moral rights.⁴¹⁹ Because of these additional rights, some authors may seek "back door" protection under Berne's provisions,⁴²⁰ even though their own country is not a member of the Convention.

Despite the fact that the United States is not a member of the Berne Convention, an understanding of its provisions and how they may affect the protection of software is helpful for two reasons. The first is the importance the Berne Convention plays in the international copyright scheme, and the second is the back door policy by which many U.S. software developers may be protected under the Berne Convention's provisions. The following discussion will give a broad view of the Convention and the protections it provides. It will then focus on the back door policy. Lastly, it will look at those continuing barriers preventing the United States from becoming a signatory.

411. Berne Convention for the Protection of Literary and Artistic Works, as revised at Paris, July 24, 1971, U.N. Reg. No. 18,338 (not yet published) [hereinafter cited as Berne], reprinted in COPYRIGHT L. REP. (CCH) ¶ 11,440-79 (1978).

412. Ableman & Berkowitz, *International Copyright Law*, 22 N.Y. L. SCH. L. REV. 619, 649 (1977). This article lists all Berne adherents.

413. Universal Copyright Convention, as revised at Paris, July 24, 1971 [hereinafter cited as U.C.C.], 25 U.S.T. 1341, T.I.A.S. No. 7868.

414. Ableman & Berkowitz, *supra* note 408, at 649, 651. This article lists all the Universal Copyright Convention adherents.

415. See generally *Model Provisions*, *supra* note 2.

416. COPYRIGHT LAW, *supra* note 266, arts. 5, 6(iii).

417. 17 U.S.C. § 104(b)(2) (1982).

418. See *infra* text accompanying notes 425, 449-50.

419. See *infra* notes 440-42 and accompanying text.

420. See *infra* text accompanying notes 429-33.

421. The Berne Convention was formalized in 1886 and has been revised five times since then: in Berlin (1908), in Rome (1928), in Brussels (1948), in Stockholm (1967) and, most recently, in Paris (1971). COPYRIGHT L. REP. (CCH) ¶ 6025. See de Sanctis, *The International Copyright Conventions*, 14 COPYRIGHT, 254, 254-56 (1978) for a detailed history of the various Berne enactments.

A. *The Berne Convention*

The Berne Convention⁴²¹ provides international protection for works of authorship.⁴²² Under the Convention, an author obtaining a copyright in a Berne signatory country has the same protection in other signatory countries as an author in the nation whose protection is sought.⁴²³ Thus, foreign authors experience no discrimination.

Article II(1) of the Berne Convention states that literary and artistic works include "every production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression."⁴²⁴ Article 11(2) limits this definition by stating that signatory countries may prescribe by legislation that any works in general or any specified category of works shall not be protected unless they have been fixed in some material form.⁴²⁵ Thus, although the Berne Convention may protect software generally, the standard of protection will vary according to the laws of the country in which the protection is sought.⁴²⁶ No copyright protection will be available in a Berne country which does not recognize computer programs as suitable subject matter.⁴²⁷

Despite the fact that the United States is not a signatory country, U.S. authors may nevertheless avail themselves of the protections afforded by the Berne Convention. Article VI(1) of the Convention⁴²⁸ provides protection in the case of

422. COPYRIGHT L. REP. (CCH) ¶ 6025. Article 3 supplies these protections and states:

(1) The protection of this Convention shall apply to: (a) authors who are nationals of one of the countries of the Union, for their works, whether published or not; (b) authors who are not nationals of one of the countries of the Union, for their works first published in one of those countries, or simultaneously in a country outside the Union and in a country of the Union.

(2) Authors who are nationals of one of the countries in the Union but who have their habitual residence in one of them shall, for the purposes of this Convention, be assimilated to nationals of that country.

(3) The expression "published works" means works published with the consent of their authors, whatever may be the means of manufacture of the copies, provided that the availability of such copies has been such as to satisfy the reasonable requirements of the public, having regard to the nature of the work. The performance of a dramatic, dramatic-musical, cinematographic or musical work, the public recitation of a literary work, the communication by wire or the broadcasting of literary or artistic works, the exhibition of a work of art and the construction of a work of architecture shall not constitute publication.

(4) A work shall be considered as having been published simultaneously in several countries if it has been published in two or more countries within thirty days of its first publication.

Berne, art. 3, *reprinted in* COPYRIGHT L. REP. (CCH) ¶ 11,405.

423. COPYRIGHT L. REP. (CCH) ¶ 6025.

424. Berne, *reprinted in* COPYRIGHT L. REP. (CCH) ¶ 11,402.

425. *Id.*

426. Salzman, *International Protection for Computer Software*, 12 L. & COMPUTER TECH. 3, 4 (1979).

427. *Id.*

428. Article 6(1) states:

Where any country outside the Union fails to protect in an adequate manner the works of authors who are nationals of one of the countries of the Union, the latter country may restrict the protection given to the works of authors who are, at the date of the first publication thereof, nationals of the other country and are not habitually resident in one of the countries of the Union shall not be required to grant to works thus subjected to special treatment a wider protection than that granted to them in the country of first publication.

Berne, art 6(1), *reprinted in* COPYRIGHT L. REP. (CCH) ¶ 11,407.

simultaneous publication in a Berne nation by nationals of nonmember states.⁴²⁹ Traditionally, U.S. authors have used this "back door to Berne" by simultaneous publication in the United States and Canada, thereby obtaining the benefits of the Convention without subjecting the United States to obligations under it.⁴³⁰ Thus, a U.S. software proprietor may seek protection for computer programs under the Berne Convention by publication under Canadian or another Berne signatory's laws. If the developer were seeking protection in Japan under the Berne Convention, Japanese copyright law would govern.⁴³¹ However, a Japanese developer could not likewise invoke Berne protections under U.S. law as the United States is not a signatory.⁴³²

If the United States were a signatory to Berne, efforts to get in the back door would be unnecessary. However, four barriers have prevented the United States from becoming a Berne Convention member.⁴³³ The passage of the 1976 Copyright Act lowered two of these barriers: the duration of the copyright⁴³⁴ and a requirement of U.S. manufacture.⁴³⁵ The adoption of a life plus fifty year term⁴³⁶ now puts the U.S. copyright law into conformity with Article VII of the Berne Convention.⁴³⁷ With respect to the latter barrier, before passage of the 1976 Act, the federal government would only grant copyright protection to English language works manufactured in the United States.⁴³⁸ The 1976 Act liberalized this manufacturing clause, but did not eliminate it.⁴³⁹

The final two barriers preventing U.S. copyright law conformity with the provisions of the Berne Convention will be more difficult to remove. The third barrier concerns the issue of moral rights under copyright law.⁴⁴⁰ U.S. copyright law does not accept, *per se*, the doctrine of moral right. Although certain court decisions⁴⁴¹ imply rights that seem to be moral rights, none of these rights fully

429. COPYRIGHT L. REP. (CCH) ¶ 6050.

430. Note, *The Question of Berne Entry for the United States*, 11 CASE W. RES. J. INT'L L. 421, 422-23 n.10 (1979).

431. Takaishi, *supra* note 2, at 140.

432. *Id.*

433. Note, *supra* note 430, at 426-28.

434. *Id.* at 426.

435. *Id.* at 427.

436. 17 U.S.C. § 302(a) (1982).

437. Article 7(1) of the Berne Convention states that "the term of protection granted by this convention shall be the life of the author and fifty years after his death." Berne, art. 7(1) *reprinted in* COPYRIGHT L. REP. (CCH) ¶ 11,409.

438. Note, *supra* note 430, at 427.

439. 17 U.S.C. § 601 (1982).

440. Moral rights of an author include the right to modify and to prevent deformation; the right to prevent excess criticism; the right to prohibit other attacks on the personality of the creator; the right to create and to publish, or note, in any form desired; the right to be made known to the public as the creator of his work; the right to prevent others from usurping his work by naming another person as author; and the right to prevent others from wrongfully attributing to him a work he has not written (these last three are sometimes referred to as the paternity right). Note, *supra* note 430, at 429, 431.

441. *See, e.g.,* Gilliam v. American Broadcasting Companies, 538 F.2d 14, 24-25 (2d Cir. 1976); *Graz*

complies with Article VI bis(1) of the Berne Convention.⁴⁴² The fourth and last barrier centers on the U.S. requirement of notice which mandates that the date of first publication, the name of the copyright owner, and the word or symbol for copyright be displayed on a visually perceptible copy of the work.⁴⁴³ Under the Berne Convention, the enjoyment and exercise of the rights given under the various signatory countries' laws are not to be subject to any formality such as the U.S. notice requirement.⁴⁴⁴ As the United States has recently relaxed its notice requirement under the 1976 Act,⁴⁴⁵ little likelihood exists that it will soon dispense with all notice requirements.⁴⁴⁶

So long as the United States maintains its notice requirements and denies protection of authors' moral rights, it is unlikely that it will become a member of the Berne Convention. However, the United States is a member of the Universal Copyright Convention and, as such, other international protection is afforded U.S. software proprietors. Provided that a U.S. software developer does not wish to invoke moral rights in a software program, then the U.C.C. will provide certain copyright protections under Japanese law.

B. *The Universal Copyright Convention*

Believing that the United States was a necessary party to any international scheme of copyright protection, various nations promulgated the U.C.C. so that the Berne provisions, with which the United States did not agree, could be avoided.⁴⁴⁷ Designed and created as a convention distinct from any other international convention, the U.C.C. serves as a complement to the Berne Convention⁴⁴⁸ by deferring to any Berne provisions in countries where both conventions are in effect.⁴⁴⁹ The U.C.C. and Berne differ in several respects, although the principle of national treatment in each is the same.⁴⁵⁰ The differences under the

v. Harris, 198 F.2d 585, 590 (2d Cir. 1952); *Neland v. Home Pattern Co.*, 65 F.2d 363, 364 (7th Cir. 1933); *Curwood v. Affiliated Distributors*, 283 F. 219, 223 (S.D.N.Y. 1922); *Clemens v. Press Publishing Co.*, 122 N.Y. Supp. 206, 206-07 (1910).

442. Article 6 bis(1) states:

Independently of the author's economic rights, and even after the transfer of the said rights, the author shall have the right to claim authorship of the work and to object to any distortion, mutilation or other modification of, or other derogatory action in relation to, the said work, which would be prejudicial to his honor or reputation.

Berne, art. 6 bis(1), *reprinted in* COPYRIGHT L. REP. (CCH) ¶ 11,408.

443. 17 U.S.C. § 401 (1982).

444. Berne, art. 5(2), *reprinted in* COPYRIGHT L. REP. (CCH) ¶ 11,406.

445. *See supra* notes 100-01 and accompanying text.

446. Note, *supra* note 430, at 444.

447. *Id.* at 423.

448. De Sanctis, *supra* note 421, at 256.

449. U.C.C., art. XVII(1), 25 U.S.T. 1367, T.I.A.S. No. 7868.

450. Note, *supra* note 430, at 423-24; *see also* U.C.C., art. II, 25 U.S.T. 1345, T.I.A.S. No. 7868.

451. U.C.C., art. IV, 25 U.S.T. 1347-49, T.I.A.S. No. 7868.

U.C.C. include a minimum copyright duration after the life of the author plus twenty-five years or as stated under the contracting State's laws (if a longer term is specified),⁴⁵¹ a formality of copyright notice,⁴⁵² and no provision for the protection of moral rights.⁴⁵³

The U.C.C. provides for the protection of the rights of authors and other copyright proprietors in literary, scientific, and artistic works.⁴⁵⁴ Article IV⁴⁵⁵ defines "publication" so as to require general distribution to the public of copies of a work which can be read or otherwise visually perceived. This provision would eliminate magnetic tape, and possibly punch cards, containing computer programs from U.C.C. coverage.⁴⁵⁶ It would also eliminate any protection for software in the form of object code or firmware. Therefore, by its own terms, the U.C.C. provides only limited software protection. However, under the U.C.C., both U.S. and Japanese software developers protected at home would be afforded protection in each other's country to the extent of that country's laws. Under the national treatment provisions of Article II, the U.C.C. would supply a U.S. software developer with such protections as are afforded Japanese software developers.⁴⁵⁷ The converse is true for Japanese developers seeking protection in the United States.

Given the fact that the United States is not a Berne signatory, and that the U.C.C. provides little protection for software developers beyond what is available under an individual signatory's laws, the need for international protection of software is obvious. To date, no such protection has emerged, but a very thorough scheme under the Model Provisions has been suggested. The following discussion provides an overview of the reasons behind the creation of the provisions as well as a summary of the protection they afford.

C. *The Model Provisions*

The International Bureau of the World Intellectual Property Organization (WIPO) prepared the Model Provisions for the Protection of Computer Software to meet several needs.⁴⁵⁸ WIPO sought a means of protection that would serve as

452. U.C.C., art. III, 25 U.S.T. 1345-46, T.I.A.S. No. 7868.

453. Note, *supra* note 430, at 424.

454. U.C.C., Preamble, 25 U.S.T. 1344, T.I.A.S. No. 7868.

455. Article VI defines publication as the reproduction in tangible form and the general distribution to the public of copies of a work from which it can be read or otherwise visually perceived. U.C.C., art. VI, 25 U.S.T. 1362, T.I.A.S. No. 7868.

456. Salzman, *supra* note 426, at 4.

457. Article II(1) states:

Published works of nationals of any Contracting State and works first published in that State shall enjoy in each other Contracting State the same protection as that other State accords to works of its nationals first published in its own territory, as well as the protection specially granted by this Convention.

U.C.C., art. II(1), 25 U.S.T. 1345, T.I.A.S. 7868.

458. See generally *Model Provisions*, *supra* note 2.

an incentive to disclosure and as a basis for trade.⁴⁵⁹ It also sought, through its Model Provisions, a redress to the extreme vulnerability of computer software to copying.⁴⁶⁰

The Model Provisions make two major recommendations for instituting an international system of protection. The first recommendation is that any system be based on a copyright law approach.⁴⁶¹ WIPO decided that copyright protection was appropriate for computer software since a large amount of computer software consists of descriptive or explanatory matter that can be considered a form of expression under copyright laws.⁴⁶² The second recommendation is that a mandatory system of deposit, or alternatively, a less rigorous registration system, be instituted to ensure the eventual disclosure of the software to the public.⁴⁶³ The deposit would aid in the dissemination of the software, facilitate its sale or licensing, and increase the knowledge concerning what was actually being protected, i.e., source code or object code, audiovisual effects, or the actual program.⁴⁶⁴

The Model Provisions go to the heart of removing difficulties which have arisen in implementing national systems of protection. Thus, the differences in protection under U.S. law between trade secret, patent, or copyright protection would be eliminated. So too would the similar insecurity under Japan's laws. Furthermore, a single protective system would be available for the software proprietor doing business in both countries.

The provisions would protect all computer software⁴⁶⁵ including computer programs,⁴⁶⁶ program descriptions,⁴⁶⁷ and supporting materials.⁴⁶⁸ Although Japanese and U.S. law protect the supporting materials in the form of documentation and manuals,⁴⁶⁹ and the program descriptions in the form of flow charts or diagrams under copyright law,⁴⁷⁰ the computer programs themselves are not

459. *Id.* at 4.

460. *Id.*

461. *Id.* at 7.

462. *Id.* at 5.

463. *Id.* at 7.

464. *Id.*

465. Section I(iv), *Model Provisions*, *supra* note 2, at 11.

466. Section I(i), *Model Provisions*, *supra* note 2, at 11. Computer program is defined as "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." *Id.*

467. Section I(ii), *Model Provisions*, *supra* note 2, at 11. Program description is defined as "a complete procedural presentation in verbal, schematic or other form, in sufficient detail to determine a set of instructions constituting a corresponding computer program." *Id.*

468. Section I(iii), *Model Provisions*, *supra* note 2, at 11. Supporting materials include: "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." *Model Provisions*, *supra* note 2, at 11.

469. See, e.g., *supra* discussion at text accompanying notes 270 and 116.

470. See, e.g., *supra* discussion at text accompanying notes 269 and 97.

assured of the same protection.⁴⁷¹ Nor can the programs necessarily be protected under another theory of law. Therefore, the WIPO provisions would fully guarantee software developers protection for their programs in whatever form under an international scheme.

The rights granted under the provisions would adhere to the person who created the software, unless created under the auspices of an employer, in which case the rights would belong to the employer.⁴⁷² The provisions further state that they will apply only to computer software which is original in the sense that it is the result of its creator's own intellectual effort⁴⁷³ and that the rights provided will not extend to the underlying concepts on which the software is based.⁴⁷⁴ The rights afforded under the provisions will last for twenty years.⁴⁷⁵ Finally, the rights afforded under the provisions include the right to prevent any person from disclosing the computer software, allowing access to the software before general access is permitted, using the program to produce the same or substantially similar program, utilizing the program to control the operation of a computer, or offering the computer program for sale, lease, or hire.⁴⁷⁶

The provisions would subject software to uniform conditions of protection and would place greater emphasis on the dispersal of information to all interested parties.⁴⁷⁷ Because of the added security, developers would be more likely to offer their software for sale or lease on an open market.⁴⁷⁸ The Model Provisions, although not mandating the deposit of software upon registration, suggest that such a system could lead to an advancement in the art similar to that obtained with a patent application.⁴⁷⁹ The provisions also suggest such a system would prevent duplication of effort among software developers.⁴⁸⁰ Because of the present secrecy surrounding most software development, major advances in the state of the art come slowly, while duplication of effort is widespread.

It will be four to five years before an international treaty on the subject of the Model Provisions is submitted to a diplomatic conference.⁴⁸¹ This delay should allow adequate time for industry observations to be made and for subsequent recommendations to be incorporated into the provisions.⁴⁸²

471. See *supra* text accompanying notes 305-07 for a discussion of the Japanese view of object code vis-à-vis source code. See *supra* text accompanying notes 155-80 for the U.S. view.

472. Section 2, *Model Provisions*, *supra* note 2, at 14-15.

473. Section 3, *Model Provisions*, *supra* note 2, at 16.

474. Section 4, *Model Provisions*, *supra* note 2, at 17.

475. Section 7, *Model Provisions*, *supra* note 2, at 21.

476. Section 8, *Model Provisions*, *supra* note 2, at 18.

477. Kolle, *Computer Software Protection — Present Situation and Future Prospects*, 13 *COPYRIGHT* 70, 75 (1977).

478. *Model Provisions*, *supra* note 2, at 7.

479. *Id.*

480. *Id.*

481. Braubach, *supra* note 9, at 228.

482. *Id.*

Most developing nations do not have a software protection system similar to those evolving in industrial nations such as Japan and the United States.⁴⁸³ The type of protections proposed under the WIPO provisions may aid in the dissemination of computer technology to less developed countries, without causing great expense to countries such as the United States and Japan. The WIPO provisions would also implement a common exchange of software technology for the United States and Japan, thereby potentially decreasing the amount of duplicated effort each country undertakes in the development of software. All software developers would benefit from a copyright scheme that affords adequate protections and a registration system that adequately handles infringement detection.

V. CONCLUSION

Protections for software are steadily evolving in both the United States and Japan, although neither country possesses a complete plan of software safeguards. In each country, the most effective means of computer program protection is by copyright, although the United States provides by far the greater and more assured protection under this type of scheme. Meanwhile, Japan continues to scrutinize what is occurring in the U.S. courts and Congress with regard to software protections, before adopting similar safeguards herself.

Patent protection in either country has been, and will continue to be, a difficult protection to obtain. Software must be an integral part of a process in order to meet the statutory subject matter requirement under both countries' laws, and this criterion will remain elusive for most developers.

Trade secret protection will most likely remain a mainstay safeguard for many software proprietors in the United States. Coupled with individual licensing agreements, trade secret protection has provided a nurturing environment for the growing software industry until recently, and these old ways will die hard. But the wary U.S. businessman entering the Japanese market must rely on contractual relationships alone to protect a closely held interest; no common law trade secret protection exists under Japanese laws.

These different approaches, offering varying levels of protection, may one day become obsolete should an international system of protection be instituted. At the present time, international treaties provide little added protection beyond what each individual country can offer. Should WIPO's Model Provisions ever be enacted on an international basis, software protection would be greatly increased. Until such time, however, a working knowledge of both U.S. and Japanese protections as they now exist may help to increase the effectiveness of those safeguards in the United States, in Japan, and in a world marketplace.

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483. See Salzman, *supra* note 426, at 14-18.