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Notes and Comments

Copyright and License Protection for Computer Programs: A Market Oriented Assessment

"Programs are a relatively new type of writing, and how copyright protects them is not universally understood."

— *National Commission on New Technological Uses of Copyrighted Works*¹

I. Introduction

Copyright is the right of an author to retain certain control over the reproduction of his intellectual creation.² It is, in essence, the grant of a monopoly for a limited period of time in order to ensure that any economic benefits accrue to the author, and thus encourage him to further creation.³

The concept of copyright is not new. In the eighteenth century, the Statute of Anne specifically recognized the exclusive rights of authors to reproduce their works.⁴ Following the American Revolution, all the former colonies, with the exception of Delaware,⁵ passed laws extending to authors the "legal security of the fruits of their study and industry."⁶ The United States

1. FINAL REPORT OF THE NATIONAL COMMISSION ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS 20 (July 31, 1978).

2. *Goldstein v. California*, 412 U.S. 546, 555 (1973).

3. Chafee, *Reflections on the Law of Copyright*, 45 COLUM. L. REV. 503, 506-07 (1945). See generally N. BOORSTYN, COPYRIGHT LAW 2-3 (1981) (commentary on the purpose of copyright).

4. Statute of Anne, 8 Anne, ch. 19 (1710).

5. A. LATMAN, R. GORMAN & J. GINSBURG, COPYRIGHT FOR THE NINETIES 4 (3d ed. 1989).

6. *Id.* (quoting the preamble to the Mass. Act of March 17, 1783).

recognized these rights in its Constitution.⁷ Today, the statutes granting copyright comprise an entire volume of the United States Code.⁸

Recently, however, courts have faced a new challenge: applying copyright principles to computer programs.⁹ To the extent programs differ from literary or other works, courts have been forced to reassess the application of previously established judicial standards.¹⁰

This reassessment period has been short. Programs have been in the marketplace for less than forty years.¹¹ The current market structure for programs was formed less than twenty-three years ago¹² and their formal inclusion under a statutory grant occurred only ten years ago.¹³ As a result, there has been little time to establish a coherent body of judicial thought.

An analysis of the programming industry shows that the authors — the program developers — do not rely solely on statutory copyright protection.¹⁴ For example, program developers commonly use licenses to protect sensitive areas.¹⁵ This Comment compares the extent to which programs are protected by copyright, as delineated by recent court decisions, with the protection offered by licenses.

To provide a basis for understanding the unique protection problems associated with programs, Part II of this Comment includes a definition of the term "program," a brief history of the evolution of programs, and a discussion of the relevant characteristics of both programs and the programming industry. Commonly used licensing provisions are also highlighted and analyzed.

Part III of this Comment focuses on the statutes granting copyright to authors, while Part IV reviews judicial interpreta-

7. U.S. CONST. art. I, § 8, cl. 8.

8. 17 U.S.C. §§ 101-914 (1988).

9. Computer programs are hereinafter referred to as "programs." For a discussion of the term "program," see *infra* notes 16-19 and accompanying text.

10. See, e.g., *infra* notes 49-59 and accompanying text.

11. See *infra* note 22.

12. See *infra* notes 23 & 131 and accompanying text.

13. See *infra* notes 23 & 131-39 and accompanying text.

14. Smiddy & Smiddy, *Caught in the Act*, DATAMATION, June 15, 1985, at 102 (a discussion of the methods of protection used by program developers).

15. See *infra* notes 70-89 and accompanying text.

tion of these laws. Part V contrasts the scope of copyright protection, as established by statute and case law, with commonly used license provisions. It argues that the protection granted and the protection required are not the same. Focusing on congressional intent, alternatives that would return to these principles are discussed. Part VI concludes that, if current judicial trends continue, licenses will cease to be a viable means of protecting programs. This Comment proposes that market forces be allowed to determine the extent of the protection extended to computer programs.

II. Background

A. *A Definition: Software or Computer Program*

The first hurdle to be crossed in dealing with computer programs is the lack of a commonly accepted lexicon of terms. An early decision clearly illustrates this confusion. In 1979, the District Court of West Virginia, lacking a more precise formulation, defined the term "software" by a process of elimination.¹⁶ Other courts were more precise, defining software as "the logic and directions loaded into the machine that cause it to do certain things on command."¹⁷ However, no single definition is consistently employed by either courts or commentators.¹⁸ As a result, the use of the term "software" creates problems in analysis. From a legal standpoint, the term "computer program" is more precise. A computer program is defined by federal statute as "a set of statements to be used directly or indirectly in a computer in order to bring about a certain result."¹⁹ This Comment will

16. *State ex rel. E.D.S. Federal Corp. v. Ginsburg*, 259 S.E.2d 618, 621 n.1 (W. Va. 1979) ("The software segment of the industry includes everything other than hardware manufacture, and software is generally described as the program which instructs the computer on its function.").

17. *United States v. Seidlitz*, 589 F.2d 152, 154 n.3 (4th Cir. 1978) (use of telephone tracers attached to a computer does not constitute invalid electronic surveillance), *cert. denied*, 441 U.S. 922 (1979).

18. *See, e.g.*, 1 M. BENDER, *COMPUTER LAW SOFTWARE PROTECTION* § 2.06 n.1 (1989) (the term "software" includes programs, data bases, and documentation); M. GEMIGNANI, *COMPUTER LAW* 16 (1985) ("software" includes programs, documentation of programs, instruction manuals, operations, and the like). *But see, e.g.*, *Parker v. Flook*, 437 U.S. 584, 587 n.7 (1978) ("software" refers to programs); *Triangle Underwriters v. Honeywell, Inc.*, 604 F.2d 737, 739 (2d Cir. 1979) ("software" is used to refer to programs).

19. 17 U.S.C. § 101 (1988).

discuss copyright protection only as it relates to such "programs."

B. *The Development of the Programming Industry*

In less than forty years, programs have grown in economic importance from "give-aways"²⁰ to the source of almost twenty billion dollars in yearly revenue.²¹

1. *Industry Beginnings*

The first machine generally recognized as a computer was developed in 1949.²² Within twenty-five years, computer manufacturing became a major industry.²³

In the earliest stages of the computer industry's development, computer manufacturers supplied specialized system programs to their customers.²⁴ These programs generally were not marketed as having their own intrinsic value but were provided

20. See *infra* text accompanying notes 24-25.

21. In 1988, computer programs generated over eighteen billion dollars of revenue in the United States. This figure is projected to increase to twenty-nine billion dollars by 1991, an industry growth of approximately 160% over a three year period. E. JULIUSSEN & K. JULIUSSEN, *COMPUTER INDUSTRY ALMANAC* 10.16 (1988) (quoting estimates from Data Analysis Group). See also Davis, *U.S. Giants Run a \$50 Billion IS Tab*, *DATAMATION*, Nov. 15, 1989, at 42 (the top 120 U.S. companies estimate their spending on programs in 1989 to be almost eight billion dollars).

22. Although Blaise Pascal developed a numerical computing machine in 1642, Binac (Binary Automatic Computer), which authorities cite as the first computer, was developed by Eckert and Mauchly in 1949. See E. JULIUSSEN & K. JULIUSSEN, *supra* note 21, at 11.1.

23. The number of operational computers increased from fewer than two dozen in 1952 to more than two hundred thousand in 1975. M. BENDER, *supra* note 18, at § 1.03, 1-6 & n.1 (citing Testimony and Background Material before the U.S. Senate Committee on the Judiciary, Subcommittee on Antitrust and Monopoly, International Data Corp. (July, 1974)). By 1989, the estimated number of operational computers was close to five million. E. JULIUSSEN & K. JULIUSSEN, *supra* note 21, at 10.4-9 (quoting an estimate from International Data Corp.).

24. "System programs" or "operating systems" are those programs which instruct the central processing unit of a computer — the part that does the calculations — on how to use the resources available to it. Such resources include internal memory, auxiliary storage devices such as discs and tapes, and input/output devices such as printers and terminals. System programs also supervise the execution of other programs. A. CHANDOR, *A DICTIONARY OF COMPUTERS* 277 (1970). See also *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1243 (3d Cir. 1983) (injunction restraining Franklin from commercially marketing Franklin computers with Apple operating systems), *cert. dismissed*, 464 U.S. 1033 (1984).

with computers as part of a package.²⁶ Other specific application programs²⁶ were written by the customer's own staff of programmers.²⁷ The expense and time required to create application programs created a new marketing opportunity.²⁸ At first, entrepreneurs responded by providing customized services to develop individualized programs. By the early 1970s, a new industry had developed to address the demands of common customer requirements.²⁹

2. *The Bifurcation of the Computer Program Market*

Programs, like other commercial goods, reflect the requirements of their market. In the initial stages of the market's development, computers were purchased almost exclusively by businesses.³⁰ The machines themselves were costly, large, and generally required specialized environments.³¹ Trained data processing professionals were required to operate them.³² Businesses which acquired computers created a new corporate infrastructure, the data processing department, to realize a return on their major, new investment.³³

Programs in this environment were complex; they were designed to solve business problems requiring massive calculations and large amounts of data.³⁴ They were also expensive, due to their high development costs³⁵ and the limited market over

25. M. GEMIGNANI, *supra* note 18, at 60. This practice was known as "bundling" and was a general industry practice until 1970. See also Bender, *Trade Secret Protection of Software*, 38 GEO. WASH. L. REV. 909, 912 n.9 (1970).

26. An application program solves a user's individual problem or addresses a particular need. For example, a program that performs inventory analysis or creates and prints invoices would be referred to as an application program. A. CHANDOR, *supra* note 24, at 34; see also Franklin, 714 F.2d at 1243.

27. K. FISHMAN, *THE COMPUTER ESTABLISHMENT* 273 (1981).

28. Since the third party market had not yet developed and the computer manufacturers were not producing application programs, the customer was forced to develop his own. See M. PHISTER, JR., *DATA PROCESSING TECHNOLOGY AND ECONOMICS* 9 (2d ed. 1979).

29. *Id.* at 26.

30. *Id.* at 8.

31. The larger computers require specialized rooms with raised floors and controlled temperature and humidity. See, e.g., S. AUGARTEN, *BIT BY BIT* 254 (1984).

32. *Id.*

33. W. FUORI & L. AUFIERO, *COMPUTERS AND INFORMATION PROCESSING* 497 (2d ed. 1986).

34. *Id.* at 431.

35. See generally M. PHISTER, JR., *supra* note 28, at 210-21 (discussing the factors

which to amortize these costs.³⁶ Specialized salesmen marketed these programs directly to businesses.³⁷ Detailed, signed contracts were used to document the resulting agreements.³⁸

The marketplace characteristics changed dramatically in the late 1970s with the advent of the personal computer.³⁹ The computer moved from the data processing department to the desk, where it was used to solve the daily analytic problems of the individual worker.⁴⁰ Designed for use in the home or office, the machines required nothing beyond standard electric current.⁴¹ The user of the personal computer operated it himself, usually with no other instruction than that supplied by a user's manual.

Programs reflected their new environment. They became simpler because they were designed to solve the problems of an individual, rather than an entire business.⁴² Since programs were marketed to people who had neither training nor interest in data processing, they were designed to be "user friendly."⁴³ Programs

involved in program development and their related costs).

36. The International Data Corporation forecasts that 1,490 large-scale computers will be shipped in 1990. The corresponding forecast for small-scale or personal computers is 270,000. E. JULIUSSEN & K. JULIUSSEN, *supra* note 21, at 10.5, 10.7.

37. M. PHISTER, JR., *supra* note 28, at 222.

38. See, e.g., AMDAHL CORP., AMDAHL UTS SOFTWARE LICENSE AGREEMENT (Sept. 1986) [hereinafter AMDAHL LICENSE]; INTERNATIONAL BUSINESS MACHINES CORP., IBM SYSTEMPLAN, AGREEMENT FOR IBM LICENSED PROGRAMS (Sept. 1989) [hereinafter IBM/ALP LICENSE]; SUN SYSTEMS, PURCHASE ACKNOWLEDGEMENT, SYSL2 - SUN OPERATING SYSTEM LICENSE, TWO-USER RIGHT TO USE (Version A, Mar. 1987) [hereinafter SUN LICENSE].

39. The first personal computer, the Kenbeck I, was built in 1971. Four years later, MIT introduced a 256 byte Altair personal computer. In 1977, Apple introduced the first personal computer to achieve widespread consumer use, the Apple II. In 1981, Commodore introduced the VIC-20 home computer and IBM introduced its 5150 personal computer. E. JULIUSSEN & K. JULIUSSEN, *supra* note 21, at 11.9.

40. M. EDELHART & D. GARR, *THE COMPLETE COMPUTER COMPENDIUM* 190 (1984).

41. For example, the IBM Personal Computer 5150 requires only standard household current.

42. Common uses for the personal computer are games, education, and business applications such as word processing, simple financial forecasts, and recordkeeping. M. EDELHART & D. GARR, *supra* note 40, at 191.

43. The importance of ease of use in marketing programs written for the personal computer is seen in the advertising emphasis upon this quality. *E.g.*, Microsoft, *INFORMATION WEEK*, Sept. 3, 1990, at 18-19 (the program "was designed to be easy to learn. And use. Neophytes, not to mention troglodytes, will be up and running in no time."); Quarterdeck, *COMPUTER SYSTEM NEWS*, July 30, 1990, at 72 ("Thank goodness complicated programs like Windows and OS/2 aren't the only way to multitask and window on the PC."); SPC Software Publishing, *BUSINESS WEEK*, Sept. 10, 1990, at 102 ("[I]t

also became less expensive⁴⁴ because of decreased development costs and an expanded market.⁴⁵

As a result, the marketing of programs also radically changed. In order to reach the large number of potential users while keeping marketing costs minimal, new sales approaches were developed. Retail stores marketed programs over the counter to walk-in customers.⁴⁶ Since signed agreements were burdensome in this environment,⁴⁷ unsigned "shrink-wrap" licenses were used.⁴⁸

couldn't be any simpler.").

44. The charges for personal computer games and educational programs range from \$8 to \$500. Charges for business programs range from \$100 to \$1,000. M. EDELHART & D. GARR, *supra* note 40, at 76.

45. See *supra* notes 35-36.

46. Retail outlets at one time accounted for seventy percent of the personal computer program market. R. FERTIG, *THE SOFTWARE REVOLUTION: TRENDS, PLAYERS, MARKET DYNAMICS IN PERSONAL COMPUTER SOFTWARE* 65 (1985).

47. In the retail environment, verifying the identity of a customer, assuming the customer was willing to sign a license, would presumably involve the same procedure that retail businesses now use to verify a customer's identity before accepting a check. Some retail stores require two separate pieces of identification which must be noted by document number on the back of the check. Telephone interview with the manager of *Consumers*, Port Chester, N.Y. (Mar. 30, 1990) (credit card and driver's license required as proof of identification in order to accept a personal check as payment).

48. The term "shrink-wrapped" license is used by industry commentators to refer to the license printed on the outside of the box containing the program. The license and box are sealed in a clear plastic heat-sealed wrap (shrink wrap) which allows a prospective customer to read the license before acquiring the program. See, e.g., Brooks, *Shrink-Wrapped License Agreements: Do They Prevent the Existence of a "First Sale"?* *THE COMPUTER LAWYER*, Apr. 1984, at 17; Oppenheimer, *Shrink-Wrapped Enforcement*, *PC TECH JOURNAL*, Sept. 1985, at 177.

Such licenses tend to be short. Their length is dictated by the space on the side of the box and the minimum type size restrictions of the various states. See, e.g., N.Y. PERS. PROP. LAW § 413 (McKinney 1989) (a minimum eight point type size is required for contracts dealing with consumer goods).

The license agreement states that acceptance on the part of the licensee is accomplished by the act of breaking the wrapper enclosing the package. See, e.g., WORDPERFECT CORP., *WORDPERFECT LICENSE AGREEMENT* (1989) ("Read the following License Agreement before opening this sealed package. If you do not agree to the terms and conditions in the Agreement, promptly return this unopened package for a refund."). *Id.*

The legal basis for such contracts is the Uniform Commercial Code which recognizes acceptance by act. U.C.C. § 2-206. This in turn is based on a recognition that programs are goods. *Communications Groups v. Warner Communications*, 138 Misc. 2d 80, 83, 527 N.Y.S.2d 341, 344 (N.Y. Civ. Ct. 1988) (a program package is within the definition of "goods" under the Uniform Commercial Code and so subject to implied warranties of merchantability and fitness). See generally Note, *Computer Programs as Goods Under*

C. *Unique Characteristics of Programs*

Programs have certain unique characteristics which exacerbate the common problems associated with protecting intellectual property. In order to protect one's rights in intellectual property, it is axiomatic that one must be able to identify when one's works have been pirated.⁴⁹ There are three factors which make such identification difficult with regard to programs. First, a program may be embodied in a number of forms.⁵⁰ As a result, for a developer to identify a program as a pirated copy of his work, he must be able to recognize it in any of its many forms. Second, programs are written in specialized languages. To compare two programs for similarities, even when in the same form, requires special training.⁵¹ Finally, although a program creates visible results, such as printed outputs or screen displays, these results are not the program itself.⁵² Two programs could create identical visible results, such as invoices. One program may be an exact copy of the other, or it may be a totally unique work — neither conclusion can be presumptively inferred from the invoices themselves.⁵³

The difficulty of protecting programs is exacerbated by the fact that the act of pirating is at the same time simple and lu-

the U.C.C., 77 MICH. L. REV. 1149 (1979).

49. The term "piracy" is generally used in the programming industry to refer to unauthorized copying or creation of derivative works. See, e.g., *Newsworthy Items: Software Piracy*, 5 MICH. COMPUTER LAW., Fall 1989, at 6 (study on the international dollar costs of program piracy); Morgan & Ruskell, *Software Piracy — The Problem*, INDUSTRIAL MANAGEMENT AND DATA SYSTEMS, Mar./Apr. 1987, at 8 (discussion of the methods used to prevent piracy).

50. A program can be expressed as specifications, algorithms, flowcharts, source code, or object code. *Whelan Assocs. v. Jaslow Dental Laboratory*, 797 F.2d 1222, 1229-31 (3d Cir. 1986), cert. denied, 479 U.S. 1031 (1987).

51. Program infringement cases usually require expert witness testimony. See, e.g., *Manufacturer Technologies Inc. v. CAMS Inc.*, 706 F. Supp. 984, 995 (D. Conn. 1989) (expert testimony as to effect of hardware on the method of screen navigation in a program). See also *Whelan*, 797 F.2d at 1232 (in determining whether two programs designed to operate a dental lab infringed, the Third Circuit concluded that "[t]he ordinary observer test . . . was developed in cases involving novels, plays, and paintings, and . . . is of doubtful value in cases involving computer programs on account of the programs' complexity . . .").

52. See, e.g., *Digital Communications v. Softklone Distrib.*, 659 F. Supp. 449, 455 (N.D. Ga. 1987) (output is not a copy of a program).

53. See, e.g., *Whelan*, 797 F.2d at 1244-45.

crative. Programs have a very high market value per unit⁵⁴ and are extremely easy to duplicate.⁵⁵ This encourages not only verbatim copying but also adaptations. Once an adaptation is made, multiple copies can be marketed at minimal production cost to the adaptor.

Developers' problems in protecting their programs are also heightened by a general public perception that it is not "wrong" to copy programs.⁵⁶ Because of the computer's design, a user must copy the program from the medium on which it is distributed to the computer on which it is used.⁵⁷ Further, standard operational procedure dictates that backup copies be created to protect against inadvertent destruction of the original.⁵⁸ In every day practice, the distinction between a permitted and a forbidden copy is one of form, not substance.⁵⁹

D. *Unique Characteristics of the Program Industry*

In contrast to computer manufacturing, the program industry has low capital barriers to market entry and a heavy content of skilled intellectual labor.⁶⁰ As a result, the industry has a

54. Charges for programs for large computers are often several thousand dollars. See, e.g., INTERNATIONAL BUSINESS MACHINES CORP., IBM PROGRAMMING ANNOUNCEMENT - 290-016 (Jan. 23, 1990) (X.25 SNA Interconnection Version 2 Release 2: one time charge of \$15,120, plus a monthly license charge of \$420); INTERNATIONAL BUSINESS MACHINES CORP., IBM PROGRAMMING ANNOUNCEMENT - 290-002 (Jan. 9, 1990) (Cooperative Software Program—Integrated Retail Information System: one-time charge of \$150,000). Charges for programs for personal computers range from \$10 to over \$1,000. Brooks, *supra* note 48, at 17-18.

55. The time required to copy WordPerfect using an IBM Personal Computer 5150 is under ten minutes. The procedure requires entering only three commands. WORDPERFECT CORP., WORDPERFECT FOR IBM PERSONAL COMPUTERS 11 (1989) (procedure to create backup copy of WordPerfect programs).

56. Buckler, *Are You Breaking the Law?*, COMPUTING CANADA, June 9, 1988, at 34 (people do not perceive copying and distributing software as stealing); Raysman & Brown, *Liability for Unauthorized Changes in Software*, N.Y.L.J., Nov. 15, 1989, at 3 (licensees routinely take liberties with licensed software).

57. See, e.g., WORDPERFECT CORP., *supra* note 55, at 9 (installation instructions).

58. *Id.* at 11-12.

59. The problem is severe. It has been estimated that unauthorized copies represent a loss to the program industry of several million dollars. Morrow, *Copy Protection of Software Programs*, INSURANCE SALES, Aug. 1989, at 27.

60. Clapes, Lynch, & Steinberg, *Silicon Epics and Binary Bards: Determining the Proper Scope of Copyright Protection for Computer Programs*, 34 UCLA L. REV. 1493, 1506 (1987).

large number of participants.⁶¹ Competitors in the industry have two means to increase market share: price-performance⁶² and innovative function.⁶³

As a competitive tool, price-performance is limited. If obtained through mere price-cutting, it has a natural cut-off at the point of zero profit.⁶⁴ Innovative function has a strategic advantage in that it is limited only by the developer's imagination. It has a disadvantage in that the needed exclusivity may be difficult to ensure. Rather than developing programs with innovative designs, less scrupulous firms may pirate the design of another innovative product.⁶⁵ This practice also has pricing advantages because it substantially reduces development costs.

E. *Alternative Means of Protection*

Program piracy has become such a major problem that the industry has been forced to focus on protecting its program assets.⁶⁶ Several methods are available to a developer for such protection: notably, patenting a program,⁶⁷ relying on trade secret

61. "Cottage industries," characterized by a low entry fee, high anticipated rate of return, and a marketplace not dominated by a small number of monolithic competitors, are the last bastions of the entrepreneur. It has been said that all a successful programming firm needs is one bright programmer and a little money. For example, one well-known firm, Advanced Computer Techniques, was started with only the know-how of its founder, Charley Lecht, and an initial capital of \$800. K. FISHMAN, *supra* note 27, at 274.

62. "Price-performance" is a measure of the program's capabilities (such as speed or storage capacity) divided by price. Clapes, *supra* note 60, at 1507 n.43.

63. "Function" refers to the range of uses of a program. *Id.*

64. A business marketing its products at less than cost not only faces economic ruin, it faces government action. Pricing below cost to effect a competitive advantage is prohibited by the Robinson-Patman Act if such practice is intended to eliminate competition. Robinson-Patman Anti-Discrimination Act, ch. 592 Stat. 1526 (1936)(codified as amended at 15 U.S.C. §§ 13-13b, 21a (1982)); see also, e.g., *Moore v. Mead's Fine Bread Co.*, 348 U.S. 115, 120 (1954) (price cutting may violate the Robinson-Patman Act), *reh'g denied*, 348 U.S. 932 (1955).

65. Clapes, *supra* note 60, at 1508.

66. It has been estimated that program piracy currently costs American firms about two to three billion dollars a year. *Lock Up Your Software*, THE ECONOMIST, Jan. 14, 1989, at 77.

67. Under 35 U.S.C. §§ 101-103, 112 (1988), patentable subject, disclosure of operation, novelty, utility, and nonobviousness are required for a program to be patentable. See, e.g., *Graham v. John Deere Co.*, 383 U.S. 1, 26 (1966) (a combination of old mechanical elements acting as a shock absorber for a plow did not meet the test of nonobvious nature).

Programs often fail to meet these basic requirements. For example, a program would

protection,⁶⁸ or even using a technical solution to address the

fail the test of novelty if there was a prior program (or art structure or device) which did substantially the same thing in substantially the same way. *See, e.g., Hughes Tool Co. v. Ingersoll-Rand Co.*, 437 F.2d 1106, 1108 (5th Cir. 1971) (test for novelty: patent for percussion drilling bit invalid because it was anticipated by prior art), *cert. denied*, 403 U.S. 918 (1971). There is general agreement, however, that the test of nonobviousness is likely to present a program with the most problems. *M. GEMIGNANI, supra* note 18, at § 42:3; *M. BENDER, supra* note 18, § 3A.02, at 3A-6.1 (over 90% of all computer programs would fail the nonobvious requirement).

Patents may be used to protect an idea, but not a law of nature or a pure algorithm such as a mathematical formula. *Compare Gottschalk v. Benson*, 409 U.S. 63, 67 (1972) (rejecting an attempt to patent a method of converting binary coded decimal numbers into pure binary numbers) with materials cited *infra* notes 102-04 and accompanying text (copyright does not protect ideas). As a result, only programs whose claims are limited, and do not preempt all further uses of a formula, will be accepted.

Patent protection grants a seventeen year monopoly free from infringement from both independent invention and "equivalents" (programs using substantially the same means to achieve the same result in substantially the same way). *Compare M. GEMIGNANI, supra* note 18, at §§ 42:2, 42:27A (1985 & Supp. Jan. 1989) with materials cited at *infra* notes 106-09 and accompanying text (copyright grants protection for the author's lifetime plus fifty years, although truly independent creations will not infringe).

Patent protection from equivalents is not without limit. A recent case held that two inventions which are sufficiently different taken as a whole might not infringe even if individual features infringed upon each other. *Texas Instruments Inc. v. United States Int'l Trade Comm'n*, 805 F.2d 1558, 1571 (D.C. Cir. 1986) (imported calculators had sufficient technological changes to avoid infringement of a United States manufacturer's patent), *reh'g denied*, 846 F.2d 1369 (1988). Applied to programs, where inventive piracy has reached a fine art, this standard may cripple the actual protection a patent offers.

Patents are difficult to obtain. The initial requirement is that a written description be created "in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains . . . to make and use the [device] . . ." 35 U.S.C. § 112 (1988). Acquiring a patent also requires a patent search of prior art and an examination by the United States Patent and Trademark Office. *Compare M. GEMIGNANI, supra* note 18, § 42:4 with *infra* note 112 (ease of acquiring copyright protection).

Another drawback, from the standpoint of a program, is the average two year wait to obtain a patent. *M. GEMIGNANI, supra* note 18, at § 42:4 n.12. The useful marketing life of a program from its development (as opposed to the length of time it may be used) is only three years. *Bender, Trade Secret Protection of Software*, 38 GEO. WASH. L. REV. 909, 916 (1970).

68. A trade secret is something not generally known which gives a competitive advantage. *Wilkin v. Sunbeam Corp.*, 377 F.2d 344, 346 (10th Cir. 1967) (principles incorporated in a sandwich grill known to the industry and hence not a trade secret), *cert. denied*, 389 U.S. 973 (1967).

Trade secret relies on state civil or common law and, in some states, trade secret theft statutes. *See, e.g., N.Y. PENAL LAW* §§ 155.00, 165.07 (McKinney 1967).

Courts have held that computer programs can be included under trade secret protection. *See, e.g., Telex Corp. v. International Business Machines Corp.*, 510 F.2d 894, 928-30 (10th Cir. 1975) (antitrust suit alleging unfair competition and misappropriation of trade secrets), *cert. denied*, 423 U.S. 802 (1975). The Uniform Trade Secrets Act includes programs in its definition of trade secret. UNIF. TRADE SECRETS ACT § 1(4), 14 U.L.A. 541

problem.⁶⁹ The simplest and most prevalent technique⁷⁰ — and the focus of this Comment — is the use of a license based on the rights granted under the copyright statutes.⁷¹

F. *Typical Licensing Provisions*

An analysis of the licenses used by the programming industry shows that there are several common provisions used to protect the developer's asset — the program.

One such provision is the retention of title to the copy of the program by the developer/copyright owner. This is achieved in two steps. First, the agreement is clearly characterized as a

(1980).

A trade secret is protected against unauthorized use or disclosure but not against independent development. RESTATEMENT, TORTS §§ 757, 758 (1939). Trade secret rights arise when a confidential relationship is established, either by implication as in an employer/employee relationship, or by contract. *Vendo Co. v. Stoner*, 105 Ill. App. 2d 261, 278, 245 N.E.2d 263, 272 (1969) (to establish misappropriation of a trade secret, it must be shown that the defendant was in a position of trust or confidence with the trade secret holder).

While characterization as a trade secret protects even the idea, this protection is lost if there is inadvertent disclosure, even if such disclosure results from the unlawful activities of a third party. *Underwater Storage, Inc. v. United States Rubber Co.*, 371 F.2d 950, 954-55 (D.C. Cir. 1966) (misappropriation of trade secret for underwater system for storage of strategic materials), *cert. denied*, 386 U.S. 911 (1967). For programs which are widely marketed the risk of such disclosure is significant. Required security increases the cost of the program. In addition, for personal computer programs, obtaining the signed nondisclosure agreements is just as difficult as obtaining a signed license.

69. For example, developers have encrypted programs. *Morgan & Ruskell*, *supra* note 49, at 9.

Another commonly used technique is the addition of a function to the program to protect the program from being copied. *Schneider, Users Must Take Responsibility to Control the Illegal Copying of Software*, 9 INFOWORLD, Oct. 5, 1987, at 56. In addition to the disadvantage of the cost incurred in creating the required program function, this solution had major marketing disadvantages. Vexatious customer objections eventually forced developers to abandon this solution. *Id.*

70. *Brooks*, *supra* note 48 at 19 (licenses, specifically shrink-wrapped licenses, used by a majority of programs for the personal computer); *Fuentebella, Testing Limits of Software Copyright*, BANK SYSTEMS & EQUIPMENT, Feb. 1989, at 42 (program developer relies on licensing protection for want of technological protection).

71. A license is a document which gives the licensee permission to perform certain acts or to exercise a certain privilege. *Blatz Brewing Co. v. Collins*, 69 Cal. App. 2d 639, 643, 160 P.2d 37, 39-40 (1945) (California administrative rule requiring licensing for out-of-state beer distributors). A license is neither property nor a property right. *American States Water Service of Cal. v. Johnson*, 31 Cal. App. 2d 606, 612, 88 P.2d 770, 773 (1939) (a franchise tax on corporations and banks is a license).

license arrangement,⁷² not a sale.⁷³ Second, title is explicitly retained by the developer.⁷⁴ Accordingly, the customer is relegated to the position of licensee. In other words he is a mere possessor, not an owner.

Typically, licenses restrict access to programs in two ways. The first restriction concerns access to the program itself. The developer distributes his program in object code⁷⁵ and prohibits decompilation⁷⁶ of this code.⁷⁷ Thus, the licensee is permitted access only to the reports produced by the program, the displays it creates on computer terminals, and the unintelligible object code. A licensee cannot analyze the actual sequence and logic of the program's instructions without decompiling the program. To accomplish this would be a violation of his license agreement. The second access restriction addresses who may access the pro-

72. See, e.g., AMDAHL LICENSE, *supra* note 38, at 1 ("[Amdahl] agrees to grant and the customer agrees to accept a license . . ."); APPLE CORP., APPLE LICENSE AGREEMENT 1 (Version 001-0100-A) [hereinafter APPLE LICENSE] ("[Apple software] is licensed, not sold, to you . . ."); IBM/ALP LICENSE, *supra* note 38, at 1 ("This is a license agreement and not an agreement for sale."); LOTUS DEVELOPMENT CORP., LOTUS LICENSE AGREEMENT (1983) [hereinafter LOTUS LICENSE] ("[Lotus] retains the ownership of this copy of software which is licensed to you . . ."); SUN LICENSE, *supra* note 38, at 1 ("Sun hereby grants to LICENSEE a perpetual, non-transferrable, non-exclusive, limited license . . .").

73. By definition, "sale" results in a transfer of title. BLACK'S LAW DICTIONARY 1200 (5th ed. 1979).

74. See, e.g., AMDAHL LICENSE, *supra* note 38, at 3 ("Nothing in this Agreement shall be interpreted as transferring any right to title to the intellectual property in the UTS Software."); APPLE LICENSE, *supra* note 72, at 1 ("You own the disk on which the Apple Software is originally or subsequently recorded or fixed, but Apple retains ownership of all copies of the Apple Software itself."); IBM/ALP LICENSE, *supra* note 38, at 1 ("IBM retains title to the copy of the Program and any copy made from it."); LOTUS LICENSE, *supra* note 72 ("[Lotus] retains the ownership of this copy of software which is licensed to you . . ."); SUN LICENSE, *supra* note 38, at 1 ("Title to all copies of the Licensed Software remains in Sun or in third parties from whom Sun has acquired license rights.").

75. "Object code" or "object language" refers to programs translated into a machine language which is directly understandable by the computer. A. CHANDOR, *supra* note 24, at 273.

76. The term "decompilation," or alternatively "disassembly," refers to the process by which machine-intelligible object code is converted back to human-intelligible source code. See, e.g., LA. REV. STAT. ANN. § 51:1962 (West 1987).

77. See, e.g., IBM/ALP LICENSE, *supra* note 38, at 1 ("You will not reverse assemble or reverse compile Programs."); LOTUS LICENSE, *supra* note 72 ("You MAY NOT . . . alter, modify or adapt the software . . . including, but not limited to, translating, decompiling, disassembling, or creating derivative works."); SUN LICENSE, *supra* note 38, at 2 ("LICENSEE shall not disassemble or decompile the Licensed Software.").

gram. Generally, developers prohibit licensees from making the program available to any third party.⁷⁸

Another prevalent license provision restricts the actual type of computer on which the program may be used. Programs licensed for use on large computers may often be operated only on a specific machine.⁷⁹ Programs for personal computers are less limited; they may be used on any personal computer, but on only one such machine at a time.⁸⁰

Licensees may be limited in the activities they can perform. Copying the program is allowed only under restricted circumstances.⁸¹ The right to create a derivative work is similarly restrained or, at times, totally prohibited.⁸²

A protective measure worth noting, although not as commonly used as those mentioned previously, is an explicit refer-

78. See, e.g., APPLE LICENSE, *supra* note 72, at 1 ("You may not distribute copies of the Apple Software to others or electronically transfer the Apple Software from one computer to another over a network."); IBM/ALP LICENSE, *supra* note 38, at 3 ("You may not distribute any Program to any other persons, including other licensees, without IBM's written consent."); SUN LICENSE, *supra* note 38, at 2 ("Licensee shall not make such proprietary software available for use by any third party unless such third party holds an appropriate license to utilize the License Software in conjunction with such proprietary software.").

79. See, e.g., AMDAHL LICENSE, *supra* note 38, at 2 (nontransferable program may be used only on a "Designated Machine" and only for the customer's own internal business purposes); IBM/ALP LICENSE, *supra* note 38, at 1 (restricts transfer of the licensed program by authorizing use only on the customer's "Designated Machine"); SUN LICENSE, *supra* note 38, at 1 (license grants the "limited license to use the Licensed Software in machine-readable form on the Designated Equipment at the Designated Site.").

80. See, e.g., APPLE LICENSE, *supra* note 72, at 1 ("This license allows you to . . . [u]se the Apple Software only on a single Apple computer."); INTERNATIONAL BUSINESS MACHINES CORP., IBM PROGRAM LICENSE AGREEMENT (1990) [hereinafter IBM/PLA LICENSE] ("[Y]ou may . . . use the Program on only one machine at any one time . . .").

81. See, e.g., AMDAHL LICENSE, *supra* note 38, at 2 ("Amdahl grants to Customer the right to reproduce the UTS Software in only those full or partial copies which are necessary to support the Use licensed under [this agreement] . . ."); HEWLETT PACKARD, HP 125/250/300/1000/3000/9800 SOFTWARE TERMS 1 (Revision No. R8-81 1985) ("[Programs] may not be copied except for archive purposes, to replace a defective copy, or for program error verification . . ."); IBM/ALP LICENSE, *supra* note 38, at 1 ("Each license granted authorizes you to . . . copy [a program] in support of your authorized use . . .").

82. See, e.g., APPLE LICENSE, *supra* note 72, at 1 ("YOU MAY NOT MODIFY, ADAPT . . . OR CREATE DERIVATIVE WORKS BASED UPON THE APPLE SOFTWARE."); IBM/ALP LICENSE, *supra* note 38, at 1 (modification and/or inclusion into another program is permitted, however the result may not be distributed to third parties).

ence to the proprietary nature of the program itself.⁸³ This enables the developer to argue that he has maintained his common-law rights under trade secret.⁸⁴ Yet another category of protective provisions applies generally to the license itself: its transfer and acceptance.

Transfer provisions found in licenses for business-oriented programs prohibit the licensee from transferring the programs to any other party.⁸⁵ Thus, the developer has control of his program to the extent that he knows the identity of those parties whom he has licensed. Licenses designed for programs used on personal computers, however, allow transfer only if the transferee accepts the license.⁸⁶

Perhaps the most crucial provision of all, since it governs whether the other provisions of the license are actually in effect, is the means by which the license is accepted. In the direct sale environment of programs for large computers, the traditional means of acceptance of a contract — signature — is used.⁸⁷ However, retail marketing of personal computer software presented unique problems.⁸⁸ As a result, the shrink-wrap licenses generally depend on acceptance by act.⁸⁹

83. See, e.g., *APPLE LICENSE*, *supra* note 72, at 1 ("Apple Software contains trade secrets . . ."); *SUN LICENSE*, *supra* note 38, at 2 ("Sun hereby states that the Licensed Software constitutes a valuable asset and is to be considered Proprietary Information."). In some cases, provisions stating that the program constitutes a trade secret are used.

84. See *supra* note 68.

85. See, e.g., *AMDAHL LICENSE*, *supra* note 38, at 2 (non-transferable program); *IBM/ALP LICENSE*, *supra* note 38, at 4 ("Any attempt to sublicense, assign or transfer any of the rights, duties or obligations under this Agreement is void."); *SUN LICENSE*, *supra* note 38, at 1 (the program "may not be sold, leased, assigned, sublicensed or otherwise transferred, in whole or in part . . .").

86. See, e.g., *APPLE LICENSE*, *supra* note 72, at 1 (transfer of program only if "the other party reads and agrees to accept the terms and conditions of this Agreement."); *IBM/PLA LICENSE*, *supra* note 80, at 2 (allows transfer of the program only if a copy of the license is transferred with the program and the transferee agrees to the license).

87. See, e.g., *AMDAHL LICENSE*, *supra* note 38, at 9 (space provided for the parties' signatures); *IBM/ALP LICENSE*, *supra* note 38, at 1 (space provided for parties' signatures); *SUN LICENSE*, *supra* note 38, at 7 (space provided for parties' signatures).

88. See *supra* notes 46-48 and accompanying text.

89. See, e.g., *APPLE LICENSE*, *supra* note 72, at 1 ("BY OPENING THE PACKAGE, YOU ARE AGREEING TO BECOME BOUND BY THE TERMS OF THIS AGREEMENT . . ."); *IBM/PLA LICENSE*, *supra* note 80, at 2 ("IF YOU OPEN THE READFIRST ENVELOPE, YOU AGREE TO THESE TERMS AND CONDITIONS . . ."); *LOTUS LICENSE*, *supra* note 72, at 1 ("BY OPENING THIS PACKAGE YOU ACCEPT THE TERMS OF THIS AGREEMENT.").

III. Copyright Protection for Programs — The Statutes

A. Copyright — Generally

1. Scope of Copyright

Congress has the power under the Constitution to "secur[e] for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."⁹⁰ The purpose behind this limited monopoly privilege is to benefit society because "[b]y establishing a marketable right to the use of [the author's] expression, copyright supplies the economic incentive to create and disseminate ideas."⁹¹

Federal law⁹² grants the owner of a copyright the exclusive right to: 1) reproduce the copyrighted work, 2) prepare derivative works based upon the copyrighted work, and 3) sell, lease, rent, or otherwise distribute copies of the copyrighted work.⁹³ This right is regarded as a property right,⁹⁴ although it attaches to an intellectual work, rather than the tangible medium in which the work is embodied.⁹⁵ In effect, the owner of the copy-

90. U.S. CONST. art. I, § 8, cl. 8.

91. *Harper & Row Publishers Inc. v. Nation Enter.*, 471 U.S. 539, 558 (1985) (magazine's use of 300 to 400 words from an unpublished memoir exceeded fair use); *see also* *Mazer v. Stein*, 347 U.S. 201, 219 (1954) (the "encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors . . .").

92. By statutory fiat, the federal law of copyright preempts applicable state laws. 17 U.S.C. § 301(a) (1988) states that:

On and after January 1, 1978, all legal or equitable rights that are equivalent to any of the exclusive rights within the general scope of a copyright as specified by section 106 in works of authorship that are fixed in a tangible medium of expression and come within the subject matter of copyright as specified by sections 102 and 103, whether created before or after that date and whether published or unpublished are governed exclusively by this title. Thereafter, no person is entitled to any such right or equivalent right in any such work under the common law or statutes of any state.

Id.; *see also* *Vault Corp. v. Quaid Software Ltd.*, 847 F.2d 255 (5th Cir. 1988) (Louisiana License Act preempted by Federal Copyright Law).

93. 17 U.S.C. § 106(1)-(3) (1988). This section also provides the owner with other rights pertinent only to literary, musical, dramatic, and choreographic works, pantomimes, motion pictures, graphic or sculptural works, and other audiovisual works. 17 U.S.C. § 106(4)-(5) (1988).

94. *White-Smith Music Publishing Co. v. Apollo Co.*, 209 U.S. 1, 9 (1908) (perforated sheets used with player pianos are not copyrightable).

95. The distinction is between the story, the intellectual work, and the paper on which it is recorded; between the program, the intellectual work, and the reel of com-

right⁹⁶ has the ability to prevent the possessor of the tangible medium from taking certain actions.⁹⁷

However, the rights protected by copyright are not all-encompassing. Copyright protects against copying, but not against independent production.⁹⁸ Copyright protects the expression or form of an idea — not the idea itself.⁹⁹ As a result, copyright protection does not 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[s].”¹⁰⁰ Similarly, copyright does not extend to discrete facts or systems explained within a

puter tape or computer diskette on which it is recorded.

96. The statute grants rights to the “owner of the copyright.” 17 U.S.C. § 106 (1988). Typically, an author of the work owns the copyright. 17 U.S.C. § 201(a) (1988). However, there are two specific exceptions to this rule. An author may transfer his rights, in which case the transferee is the owner. 17 U.S.C. § 201(d) (1988). Alternatively, in the case of “works made for hire,” the person for whom the work was prepared is considered the owner of the copyright. 17 U.S.C. § 201(b) (1988).

By definition, a “work for hire” is a work performed either by an employee within the scope of his duties or as a result of a specific order. 17 U.S.C. § 101 (1988). With regard to the first category, the term “employee” is construed in the light of the general common law of agency. See *Community for Creative Non-Violence v. Reid*, 490 U.S. 730, 740 (1989) (whether the organization which conceived the idea for a sculpture or the artist who executed it was the owner of the copyright). To fall into the second category, a commissioned work, the work must be identified as such by a written agreement and must also belong to one of several statutorily-defined categories. 17 U.S.C. § 101 (1988).

It is unclear whether programs fit under any of these categories. Beck, *Half a Loaf: Supreme Court Work for Hire Decision Leaves Many Questions Unanswered*, COMPUTER LAWYER, July 1989, at 37, 39-40.

97. Specifically, those which the statute grants the author as his exclusively. See *supra* note 95 and accompanying text.

98. A. LATMAN, R. GORMAN & J. GINSBURG, *supra* note 5, at 30.

99. 17 U.S.C. § 102(b) (1988) (“In no case does copyright protection for an original work of authorship extend to any idea . . .”). This is often referred to as the “idea/expression” dichotomy. For example, the idea of a boy and girl from two feuding groups falling in love cannot be protected but the “West Side Story” libretto can. See, e.g., *O'Neill v. Dell Publishing*, 630 F.2d 685, 686 (1st Cir. 1980) (no infringement was found where the only concept incorporated from an unpublished manuscript was the idea of a World War II submarine surfacing thirty years later: “Copyright protection extends only to the expression of the idea; it does not protect the idea itself.”); *Decorative Aides Corp. v. Staple Sewing Aides Corp.*, 497 F. Supp. 154, 158 (S.D.N.Y. 1980) (diagram and instructions printed on a drapery header were merely similar expressions of the same idea incorporated in an instruction sheet for a similar device), *aff'd*, 657 F.2d 262 (2d Cir. 1981).

100. 17 U.S.C. § 102(b) (1988).

work.¹⁰¹

The federal statutes provide certain limitations on the overall rights granted to the copyright author. Under section 107 of the 1988 Copyright Act, the otherwise exclusive rights of the copyright owner are limited by "fair use."¹⁰² Factors used in determining the fairness of use reflect underlying equity considerations.¹⁰³ Thus, the relevant considerations include: the purpose and character of the use, the commercial or nonprofit nature of the work, the nature of the original work, the amount of the original work used, and the effect of the use on the work's potential market.¹⁰⁴ Other statutes, specific to the type of work concerned, provide additional limitations of the basic guarantees.¹⁰⁵

To be eligible for fifty years of copyright protection,¹⁰⁶ a work must be an "original work[] of authorship fixed in any tangible medium of expression"¹⁰⁷ To qualify as original requires independent creation without copying.¹⁰⁸ In addition, works published before March 1, 1989, must include a copyright

101. See, e.g., *Baker v. Seldon*, 101 U.S. 99 (1879) (copyright protects a book on the subject of bookkeeping, but does not protect the system of bookkeeping explained therein).

102. 17 U.S.C. § 107 (1988).

103. R. NIMMER, *THE LAW OF COMPUTER TECHNOLOGY* ¶ 1.11[3], at 1-67 (1985).

104. 17 U.S.C. § 107 (1988).

105. See, e.g., 17 U.S.C. § 108 (1988) (limiting a copyright owner's exclusive rights by permitting reproduction by libraries and archives); 17 U.S.C. § 110 (1988) (permitting certain performances and displays). See also *infra* notes 137-39 and accompanying text.

106. Copyright protection for works created after 1977 extends for the author's lifetime plus fifty years. 17 U.S.C. § 302(a) (1988). For a work for hire, the term of protection is seventy-five years from the first year of publication. 17 U.S.C. § 302(c) (1988). Such protection is more than adequate for programs since they have an estimated marketable life of three years. *Bender, Trade Secret Protection of Software*, 38 GEO. WASH. L. REV. 909, 915 (1970).

107. 17 U.S.C. § 102(a) (1988).

108. *Roth Greeting Cards v. United Card Co.*, 429 F.2d 1106, 1109 (9th Cir. 1970) (infringement of the art and text of greeting cards: "originality necessary to support a copyright merely calls for independent creation, not novelty") The requirement for originality may be met by a slight degree of originality. *Original Appalachian Artworks, Inc. v. Toy Loft, Inc.*, 684 F.2d 821, 825 n.3 (11th Cir. 1982) (sufficient originality for copyrightability existed in soft-sculpture dolls which differed from other, similar dolls in facial expression, shape of nose, hands, buttocks, eyes, elbows and ears). However, more than a trivial variation of another work is required. *L. Batlin & Son, Inc. v. Snyder*, 536 F.2d 486, 491 (2nd Cir.) (copyright denied for plastic "Uncle Sam" banks which displayed only trivial variations from an antique cast iron bank), *cert. denied*, 429 U.S. 857 (1976).

notice.¹⁰⁹ Since the adoption of the Berne Convention by the United States,¹¹⁰ notice of copyright in this country is permissive, not mandatory.¹¹¹ However, registration remains a prerequisite to a suit for infringement of works originating in the United States.¹¹²

109. For works published between January 1, 1978 and March 1, 1989, a copyright notice consisting of a copyright word or symbol, the name of the copyright owner and the year of first publication was required. However, omission of the notice was not fatal. Under 17 U.S.C. § 405 (1988), a forgetful author could salvage his copyright by registering a copyright claim within five years after first publication and making reasonable efforts to add a notice to subsequently distributed copies.

But see NEC Corp. v. Intel Corp., 10 U.S.P.Q.2d (BNA) 1177, 1190 (N.D. Cal. 1989), (Intel's copyright on microcode forfeited because it failed to make a reasonable effort to add the notice to those copies distributed after Intel discovered the omission of the copyright notice).

For works published prior to January 1, 1978, the 1909 Copyright Act was less forgiving. Works without notices went into the public domain. Act of Mar. 4, 1909, ch. 320, §§ 10, 19, 20, 35 Stat. 1075, 1078-80 (previously codified at 17 U.S.C. §§ 10, 19, 20 *reprinted in* 17 U.S.C.A. app. §§ 10, 19, 20 (West Supp. 1990); recodified 1947; repealed 1976).

110. 17 U.S.C. § 101 (1988) (the term "Berne Convention" is used to refer to the Convention for Protection of Literary and Artistic Works, signed at Berne, Switzerland on September 9, 1886). The Convention, as currently amended, grants copyright protection in all member countries to any work first published in one of those member countries. A. LATMAN, R. GORMAN & J. GINSBURG, *supra* note 5, at 8.

The United States ratified the Berne Convention in October of 1988. Congress amended Title 17 to implement the Berne Convention's provisions. Berne Convention Implementation Act of 1988, Pub. L. No. 100-568, 102 Stat. 2853.

111. *See* Berne Convention Implementation Act of 1988, Pub. L. No. 100-568, § 7, 102 Stat. 2853, 2858 (replacing the prior language that notice "shall be placed on all" with the permissive "may be placed on").

112. 17 U.S.C. § 411 (1988). Registration is also required to obtain damages. 17 U.S.C. § 412 (1988). Registration of a copyrighted work is relatively simple. For computer programs, registration is achieved by sending a completed form, ten dollars, and one copy of "identifying material" to the copyright office. "Identifying material" consists of a "visually perceptible without the aid of a machine or device, either on paper or in microform" copy of the first twenty-five and last twenty-five pages of the program. Source code is preferred. *See* COPYRIGHT OFFICE, LIBRARY OF CONGRESS, COPYRIGHT REGISTRATION FOR COMPUTER PROGRAMS CIRCULAR R61 (July 1983).

Despite the relatively simple requirements of registration the programming industry has required even more speed and flexibility. *See, e.g.,* M. BENDER, *supra* note 18, at § 4.03 (quoting ADAPSO proposal for modifications to section 117, item 4, 559 Pat. Trade-mark & Copyright J. (BNA) A-11 (Dec. 17, 1981)).

2. *Exclusive Right to Copy and Create Derivative Works*

Current copyright law grants to the owner of the copyright the right to exclude others from producing copies.¹¹³ This protection extends not only to verbatim copying but also to paraphrasing.¹¹⁴ To invoke protection against an unauthorized copy, ownership of the original as well as infringement of that original by copying must be proved.¹¹⁵ A registration certificate is *prima facie* evidence of ownership.¹¹⁶ A presumption of copying will be established by proof that the alleged infringer had access to the copyrighted work and that the two works are substantially similar.¹¹⁷

Current law also gives the copyright owner the exclusive right to "prepare derivative works based upon the copyrighted

113. 17 U.S.C. § 106 (1988) ("the owner of copyright under this title has the exclusive right[] to . . . reproduce the copyrighted work in copies . . .").

The statute defines "copies" as material objects "in which a work is fixed by any method now known or later developed, and from which the work can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device." 17 U.S.C. § 101 (1988).

The section further explains that a work is "fixed" when the embodiment is "sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration." *Id.*

114. *See, e.g., Contemporary Arts, Inc. v. F.W. Woolworth Co.*, 93 F. Supp. 739, 743 (D. Mass. 1950) (a ceramic dog need not be an exact or "Chinese copy" to infringe a copyrighted sculpture), *aff'd*, 193 F.2d 162 (1st Cir. 1951), *aff'd*, 344 U.S. 228 (1952).

115. N. BOORSTYN, *supra* note 3, at § 10.10.

116. 17 U.S.C. § 410(c) (1988) (a certificate of registration either before or within five years of first publication of the work is *prima facie* evidence of the "facts stated in certificate," namely the owner of the copyright, that the work in issue was original and copyrightable, and that the statutory formalities were complied with).

117. *Benson v. Coca Cola Co.*, 795 F.2d 973, 974-75 (11th Cir. 1986) (proof of access and substantial similarity permits an inference of infringement).

Access is established by proof that the alleged infringer had a reasonable opportunity to see or hear the copyrighted work. *See, e.g., Roth Greeting Cards v. United Card Co.*, 429 F.2d 1106, 1109-10 (9th Cir. 1970) (infringement of greeting cards determined, in part, by the defendant's access to cards, its practice of looking at other manufacturers' cards, and its producing similar cards).

The exact line at which copying becomes substantial is not clear. *See, e.g., Peter Pan Fabrics, Inc. v. Martin Weiner Corp.*, 274 F.2d 487, 489 (2d Cir. 1960) (in a case of alleged infringement between cloth designs, the court admitted that the tests for determining substantial similarity are, of necessity, vague). One standard used to establish substantial similarity is whether an ordinary observer would recognize the copy as having been made from the copyrighted work. *See, e.g., Herbert Rosenthal Jewelry v. Honora Jewelry*, 509 F.2d 64, 65 (2d Cir. 1974) (the "average layman would indeed detect numerous differences" between the designs for two pins in the shape of turtles).

work”¹¹⁸ By statutory definition, a derivative work is one “based upon one or more pre-existing works [in any] . . . form in which the work may be recast, transformed, or adapted.”¹¹⁹ This definition includes any revision, annotation, elaboration or other modification which “as a whole, represent[s] an original work of authorship”¹²⁰ Unauthorized derivative works infringe on the copyright.¹²¹

While the principles regulating derivative works are clear in the abstract, significant problems can arise in their application. For example, a claim of infringement may be countered by the argument that the derivative work contains so many modifications that it constitutes an independent work.¹²² Since modifications may be made simply to disguise piracy of the original work, determining whether a work is derivative or original can be extremely difficult.¹²³

118. 17 U.S.C. § 106(2) (1988).

119. 17 U.S.C. § 101 (1988).

120. *Id.*

121. A derivative work which makes a nontrivial contribution to an existing work may be copyrighted by the derivative author. *See Durham Indus. v. Tomy Corp.*, 630 F.2d 905, 911 (2d Cir. 1980) (plastic wind-up toys based on Disney characters did not provide sufficient additional contribution to avoid infringement). However, copyright in a derivative work “extends only to the material contributed by the author of such work, as distinguished from the preexisting material employed in the work” 17 U.S.C. § 103(b) (1988); *see also* *Eden Toys, Inc. v. Florelee Undergarment Co.*, 697 F.2d 27 (2d Cir. 1982) (sketch infringed copyrighted Paddington Bear). In this case, the court noted that derivative works may infringe the original copyright if the derivative work were to be published without permission from the owner of the original work. *Id.* at 34.

122. *Nichols v. Universal Pictures*, 45 F.2d 119 (2d Cir. 1930) (copyrighted play based on interfaith marriage was not infringed by a work with a similar theme), *cert. denied*, 282 U.S. 902 (1931). Judge Learned Hand commented on the thin line between using an idea and infringement of the copyrighted work as follows:

[Copyright] cannot be limited literally to the text, else a plagiarist would escape by immaterial variations. . . . Upon any work, and especially upon a play, a great number of patterns of increasing generality will fit equally well, as more and more of the incident is left out. The last may perhaps be no more than the most general statement of what the play is about, and at times might consist only of its title; but there is a point in this series of abstractions where they are no longer protected, since otherwise the playwright could prevent the use of his “ideas,” to which, apart from their expression, his property is never extended.

Nobody has ever been able to fix that boundary, and nobody ever can.

Id. at 121 (citations omitted).

123. *Tennessee Fabricating Co. v. Moultrie Mfg.*, 421 F.2d 279, 284 (5th Cir.) (re-designing a room divider by adding additional straight lines to filigree pattern did not save redesigned work from infringement), *cert. denied*, 398 U.S. 928 (1970).

B. Copyright Protection for Computer Programs

1. Pre-1980 Statutory Protection for Programs

The earliest statutory copyright protection for programs can be found in the Copyright Act of 1976.¹²⁴ Although this Act did not explicitly recognize programs as copyrightable, the accompanying House Report clearly expressed a congressional intent to include programs under the copyright umbrella.¹²⁵

The 1976 Act's silence on the computer program issue¹²⁶ was attributable to a concern on the part of Congress that it did not have sufficient information to take informed action.¹²⁷ In 1974, when it became apparent that the pending revisions did not address the problems created by computer technology,¹²⁸ Congress created the National Commission on New Technological Uses of Copyrighted Work (CONTU).¹²⁹ CONTU's mandate

124. 17 U.S.C. §§ 101-914 (1988). The predecessor act was the Copyright Act of 1909. A. LATMAN, R. GORMAN & J. GINSBURG, *supra* note 5, at 8. At the time of its enactment, neither computers nor programs had been invented. See *supra* note 22 and accompanying text. The Copyright Office first began to accept computer programs under the category of literary works in 1964. N. BOORSTYN, *supra* note 3, at § 2:3 n.29.

125. The 1976 Copyright Act left it to the House Report to explain that programs were included in the definition of literary works by stating that: "[The term 'Literary works'] also includes computer data bases, and computer programs to the extent that they incorporate authorship in the programmer's expression of original ideas, as distinguished from the ideas themselves."

H.R. REP. NO. 1476, 94th Cong., 2d Sess. 54, *reprinted in* 1976 U.S. CODE CONG. & ADMIN. NEWS 5659, 5667 [hereinafter H.R. REP. 94-1476].

126. The original version of section 117, included in the Copyright Act of 1976, dealt with computer uses of copyrighted works. This version left open the copyrightability of programs, themselves. In its original form, section 117 provided, among other things, that the Copyright Act of 1976:

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 [information storage and retrieval systems], 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

Act of Oct. 19, 1976, Pub. L. No. 94-553, § 117, 90 Stat. 2541, 2565 (previously codified at 17 U.S.C. § 117, repealed 1980). This provides less guidance in reality than appears on its face. As of December 31, 1977, there were neither state nor federal laws relating to this subject. The common law had only two decades in which to develop. N. BOORSTYN, *supra* note 3, § 2:21, at 69.

127. H.R. REP. 94-1476, *supra* note 125, at 116 (the problems related to computer programs were "not sufficiently developed for a definitive legislative solution").

128. FINAL REPORT OF THE NATIONAL COMMISSION ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS 1 (July 31, 1978) [hereinafter CONTU REPORT].

129. Act of Dec. 31, 1974, Pub. L. No. 93-573, 88 Stat. 1873.

was to develop a national policy that balanced the need for public access to programs, the rights of the owners of copyrights in these works, and the concerns of the consumer.¹³⁰ It was not until 1980, when Congress enacted CONTU's recommendations into law, that computer programs were formally brought under copyright protection.¹³¹

2. *Copyright Protection for Programs - 1980 Modifications*

Congress' 1980 attempt to formally grant copyright protection to programs took the form of two modifications to the existing statutes. First, Title 17 of the United States Code was modified to include a definition of a computer program.¹³² It should be noted that the portion of Title 17 which defines the works which are subject to copyright was never similarly amended.¹³³ Thus, applying copyright to programs requires reference to earlier legislative history which indicates a congressional intent to include computer programs under copyrighted works.¹³⁴

The second, and more substantive, change to the existing copyright law was the addition of a section concerned solely with the extent of the rights granted to a copyright owner. Since programs were now considered to be copyrighted works,¹³⁵ section 106 granted the program owner the exclusive right to copy and create derivative works based on his own work.¹³⁶ Section 117 was enacted to limit these rights.¹³⁷ Specifically, it created the following exceptions:

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 new a [sic] copy or adaptation is created as an es-

130. CONTU REPORT, *supra* note 128, at 1.

131. 17 U.S.C. § 117 (1988).

132. 17 U.S.C. § 101 (1988).

133. 17 U.S.C. § 102 (1988).

134. See *supra* note 125 and accompanying text.

135. By inference from 17 U.S.C. § 101 coupled with the legislative history. See *supra* notes 125 & 132-34 and accompanying text.

136. 17 U.S.C. § 106 (1988).

137. 17 U.S.C. § 117 (1988).

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 are 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.¹³⁸

3. *Interpreting the 1980 Modifications*

a. *Legislative History*

It is clear that Congress intended to grant some limited right of protection to an "owner" of a copy of a program.¹³⁹ Unfortunately, a plain language interpretation to determine the intent of the statute is difficult because several critical terms are undefined.¹⁴⁰ It is also unfortunate that the minimal legislative history associated with the 1980 amendments to Title 17 lend no further clarification.¹⁴¹

138. *Id.*

139. As opposed to the "rightful possessor" which was in the originally proposed version of the statute. CONTU REPORT, *supra* note 128, at 12.

140. The terms "owner," "utilization," "essential step" and "adaptation" used in § 117 are not defined.

Because of the lack of legislative guidance, the following definition of "owner" will be used for the purposes of this Comment: "The person in whom is vested the ownership, dominion, or title of property; proprietor. He who has dominion of a thing, real or personal, corporeal or incorporeal, which he has the right to enjoy and do with as he pleases." BLACK'S LAW DICTIONARY 996 (5th ed. 1979).

In contrast, that same source defines "possessor" as one who has "detention and control, or the manual or ideal custody, of anything which may be the subject of property, for one's use and enjoyment, either as owner or as the proprietor of a qualified right in it." *Id.* at 1047-48.

Since Congress specifically chose the word "owner" rather than "possessor," it may be inferred that they were not referring to someone with a qualified right.

141. The House contented itself with commenting that § 117 "embodies the recommendation of the Commission of New Technological Works with respect to clarifying the law of copyright of computer software." H.R. REP. NO. 1307 (Part I), 96th Cong., 1st Sess. 23, reprinted in 1980 U.S. CODE CONG. & ADMIN. NEWS 6460, 6482. Any analysis of the

b. *The CONTU Report*

The final report produced by CONTU¹⁴² is the primary reference used by courts in interpreting the congressional intent behind its 1980 enactments.¹⁴³ The courts' reliance on this report is well founded since Congress adopted CONTU's statutory proposal with only one change. Although CONTU's recommendation authorized any *rightful possessor* to make, or authorize the making of, a copy or adaptation of a computer program,¹⁴⁴ Congress limited this right to *owners*.¹⁴⁵

The analysis employed in the CONTU Report was based on already existing copyright principles.¹⁴⁶ As the Report noted, however, programs did not fit easily within this framework.¹⁴⁷ Copyright ordinarily forbids copying of a protected work. A computer program, by its nature, must be copied from its medium into a computer in order to operate. Thus, CONTU had to draw a line between permissive and forbidden copying. It resolved the problem by permitting only copying which was "an essential step" in "utilizing" a program.¹⁴⁸

A similar problem arose in the area of derivative works.

comments to the Copyright Act of 1976 would be suspect since the House had made it clear that it felt the subject was not sufficiently understood. H.R. REP. 94-1476, *supra* note 125, at 117.

142. CONTU REPORT, *supra* note 128.

143. This view can be found in a number of court decisions. See, e.g., *Vault Corp. v. Quaid Software Ltd.*, 847 F.2d 255, 261 (5th Cir. 1988); *Whelan Assocs. v. Jaslow Dental Laboratory*, 797 F.2d 1222, 1241-42 (3d Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987); *Apple Computer, Inc. v. Formula Int'l, Inc.*, 725 F.2d 521, 524 (9th Cir. 1984); *Lotus Dev. Corp. v. Paperback Software Int'l*, 740 F. Supp. 37, 49-51 (1990).

144. CONTU REPORT, *supra* note 128, at 12.

145. 17 U.S.C. § 117 (1988) (reproduced at notes 138, 140 and accompanying text).

146. For example, CONTU states that the policy underlying their efforts was to provide protection for authors without inhibiting the rightful use, further development or dissemination of ideas. CONTU REPORT, *supra* note 128, at 12. This policy was to be carried out by protecting the expression of the program. *Id.* at 19 (quoting S. REP. NO. 473, 94th Cong., 1st Sess. 54 (1975) and H.R. REP. 94-1476, *supra* note 125, at 57, that it is "the expression adopted by the programmer [which] is the copyrightable element in a computer program").

In addition, the CONTU relied on the most recent expression of these principles, the Copyright Act of 1976 and its associated legislative comments, to provide a framework on which to build. For example, the report uses the definition of copyrightable material from that Act. CONTU REPORT, *supra* note 128, at 18.

147. CONTU REPORT, *supra* note 128, at 12-13.

148. *Id.* at 12.

CONTU discussed requirements for certain types of program adaptations. These are enumerated in the CONTU Report as:

1) an adaptation of the program to enable it to operate in the possessor's computer;¹⁴⁹

2) the conversion of a program from one high-level language to another;¹⁵⁰ and

3) the right to add features to the program that were not present at the time of acquisition.¹⁵¹

However, not all adaptations were permissible.¹⁵² Adaptations could be created only "so long as they did not harm the interests of the copyright proprietor."¹⁵³ Further, the right of adaptation could be conveyed only by the express authorization of the owner of the copyright.¹⁵⁴ Finally, the adaptor could not commercially market the adapted program.¹⁵⁵

Although CONTU recommended legislative action, it also saw self-help as a viable alternative.¹⁵⁶ According to CONTU, "[s]hould proprietors feel strongly that they do not want rightful possessors of copies of their programs to prepare such adaptations, they could, of course, make such desires a contractual matter."¹⁵⁷

149. CONTU later expanded on the type of adaptations to which they were referring:

Because of a lack of complete standardization among programming languages and hardware in the computer industry, one who rightfully acquires a copy of a program frequently cannot use it without adapting it to that limited extent which will allow its use in the possessor's computer. . . . Thus a right to make those changes necessary to enable the use for which [the program] was both sold and purchased should be provided.

Id. at 13.

This language suggests that CONTU saw adaptations limited to an initial modification or tailoring of a program.

150. *Id.*

151. *Id.*

152. Overall, CONTU saw adaptation as a personal exercise in "extensive marginal note-taking." It did not perceive any economic impact to program developers. *Id.*

153. *Id.*

154. CONTU REPORT, *supra* note 128, at 13.

155. *Id.*

156. *Id.* at 12.

157. *Id.* at 13-14.

c. *Limits to the Applicability of the 1980 Modifications: The Effect of a Rapidly Evolving Market*

In the case of a rapidly changing industry, the time required to formulate and pass a statute may result in a law that reflects past, not current, industry requirements. When this occurs the law may lag behind the industry it is designed to regulate. Congress' 1980 enactments demonstrate this phenomenon. CONTU's analysis was performed between 1974 and 1978.¹⁵⁸ The personal computer did not come into common use until 1977.¹⁵⁹ It did not become a major factor in the market until the beginning of the 1980s.¹⁶⁰ CONTU's analysis reflected the requirements of the industry which existed at the time. It did not reflect the requirements of an environment characterized by mass marketing and "shrink-wrap" licenses.

IV. Copyright Protection for Programs — Judicial Interpretation

A. Section 106 Issues

Although there were innumerable cases interpreting section 106 in a literary or artistic context, cases concerning copyright protection for programs presented the federal courts with a number of new challenges in interpreting the statute.¹⁶¹ The issues were often inextricably interwoven with the technology of computer programs.¹⁶² The facts were presented in technical jargon that was difficult to comprehend and often inconsistent.¹⁶³ The kaleidoscopic changes that had beset the industry

158. See *supra* note 128 and accompanying text.

159. M. EDELHART & D. GARR, *supra* note 40, at 57. See also *supra* note 39.

160. *Home Computers*, BUSINESS WEEK, Sept. 10, 1990, at 64-65, (by the 1980s consumers were purchasing hundreds of thousands of personal computers).

161. Federal courts have exclusive jurisdiction in cases in which claims arise under the federal copyright act. 28 U.S.C. § 1338(a) (1988).

162. See, e.g., *Hubco Data Prod. Corp. v. Management Assistance, Inc.*, 219 U.S.P.Q. (BNA) 450 (D. Idaho 1983) (modification of programs which limited the function of the computer on which they ran).

163. *Honeywell, Inc. v. Lithonia Lighting, Inc.*, 317 F. Supp. 406 (N.D. Ga. 1970) (breach of contract action concerning a computer lease). The court expressed its frustration as follows:

By comparison, the misnomers and industrial shorthand of the computer world make the most esoteric legal writing seem as clear and lucid as the Ten Com-

resulted in a mismatch between reality and the environment envisioned by the statute.¹⁶⁴ The inventiveness of program developers resulted in the courts facing a continuing series of *de novo* situations.¹⁶⁵ In addition, since programs themselves had a relatively short history,¹⁶⁶ there were few decisions directly on-point for guidance.

1. *Does Media Matter?*

Initially, the medium on which the program was embodied presented significant problems to the courts in determining whether a program was copyrightable. Traditionally, copyright was construed to encompass only works that could be perceived by humans.¹⁶⁷ Based on this rationale, a federal district court in Illinois held that a chess-playing program distributed on a ROM¹⁶⁸ chip was "mechanical."¹⁶⁹ As a non-written work, the program was not under copyright protection.¹⁷⁰ In direct contrast, a federal district court in California held that a copy of a program on a ROM chip was a true copy.¹⁷¹ Distinguishing the chip as the tangible medium of expression, the court found that

mandments or the Gettysburg Address; and to add to this Babel, the experts in the computer field, while using exactly the same words, uniformly disagree as to precisely what they mean.

Id. at 408.

164. For example, the shrink-wrapped license had not come into general use. *See supra* notes 39-48 and accompanying text.

165. *See, e.g., infra* notes 244 & 249 and accompanying text.

166. *See supra* notes 20-27 and accompanying text.

167. R. NIMMER, *THE LAW OF COMPUTER TECHNOLOGY* ¶ 1.03[5][b], at 1-26 (1985); *see also* White-Smith Music Publishing Co. v. Apollo Co., 209 U.S. 1 (1907) (a piano roll was not copyrightable since it was not in a form visually perceptible to humans).

168. Read Only Memory. A ROM is an "internal permanent memory device consisting of a semi-conductor 'chip' which is incorporated into the circuitry of the computer Information stored on a ROM can only be read, not erased or rewritten." Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240, 1243 (3d Cir. 1983), *cert. dismissed*, 464 U.S. 1033 (1984).

169. *Data Cash Sys. v. JS&A Group, Inc.*, 480 F. Supp. 1063 (N.D. Ill. 1979), *aff'd*, 628 F.2d 1038 (7th Cir. 1980), disagreed with by multiple cases as stated in *Brown v. Kerr-McGee Chem. Corp.*, 767 F.2d 1234, 1237-38 (7th Cir. 1985) (the Illinois district court held that a ROM copy was not a copy under copyright law, hence, reproduction of a computer chess playing program copied on ROM could not be an infringement), *cert. denied*, 475 U.S. 1066 (1986).

170. *Data Cash*, 480 F. Supp. at 1065.

171. *Tandy Corp. v. Personal Micro Computers, Inc.*, 524 F. Supp. 171 (N.D. Cal. 1981) (Radio Shack "input-output" program imprinted on a ROM is copyrightable).

the program embodied on the chip was protectable.¹⁷²

An early interpretation of the 1980 amendments to the 1976 Copyright Act resolved the controversy in favor of programs, providing protection for works in tangible media from which they "can be perceived, reproduced, or otherwise communicated, *either directly or with the aid of a machine or device.*"¹⁷³ In subsequent decisions, the Third and the Seventh Circuits held that the medium on which a program is stored is not relevant to a determination of whether the program is protected.¹⁷⁴ A federal district court of California, in a decision subsequently affirmed by the Ninth Circuit, went so far as to assert that "[it is] crystal-clear that CONTU recommended that *all* computer programs, fixed in any method and performing any function, be included within copyright protection."¹⁷⁵

2. *Idea and Expression: How Much Can Be Protected?*

CONTU suggested that the general principle of copyright — that expression is protected, ideas are not — should also hold true for programs.¹⁷⁶ While the principle seems clear, its application to a program by drawing a "bright line" between an idea and an expression has presented considerable difficulty.

Initially, the courts focused their analysis on whether the

172. The court also noted that the 1976 version of section 117 dealt with the use of copyrighted works in conjunction with computers and the problem of "copying" the program into a computer or subsidiary storage device so that it could be used. Noting that the duplication of a chip is not the use of a copyrighted program in conjunction with a computer, the court held that the disputed action was simply unprotected copying of the chip. *Id.* at 173.

173. 17 U.S.C. § 102(a) (1988) (emphasis added).

174. *Williams Elec., Inc. v. Artic Int'l, Inc.*, 685 F.2d 870, 873-74 (3d Cir. 1982) (the broad language used by Congress indicated that Congress intended expansive interpretations of the terms "fixation" and "copy" to encompass any technological advances including programs embodied on ROMs); *Midway Mfg. v. Artic Int'l, Inc.*, 547 F. Supp. 999, 1006-07 (N.D. Ill. 1982) (a "copy" may be made in any medium whatsoever), *aff'd*, 704 F.2d 1009 (7th Cir.), *cert. denied*, 464 U.S. 823 (1983); *see also* *Midway Mfg. v. Strohon*, 564 F. Supp. 741, 753 (N.D. Ill. 1983) (computer programs in object code form stored in ROM chips are copyrightable).

175. *Apple Computer, Inc. v. Formula Int'l, Inc.*, 562 F. Supp. 775, 781 (C.D. Cal. 1983) (copying of Apple Program on ROM for commercial use infringed Apple's copyright), *aff'd*, 725 F.2d 521 (9th Cir. 1984).

176. CONTU stated that "[o]ne is always free to make the machine do the same thing it would if it had the copyrighted [program] placed in it, but only if by one's creative effort rather than by piracy." CONTU REPORT, *supra* note 128, at 13.

work in question was an idea or an expression. For example, a federal district court in Texas held that the idea and its expression embodied in the input formats for a program were inseparable.¹⁷⁷ Thus, under the principles of copyright,¹⁷⁸ such formats were not afforded copyright protection.¹⁷⁹

Programs themselves fared somewhat better. In two cases involving verbatim copying of a microcomputer operating system, the courts rejected arguments that operating system programs were per se mergers of ideas and expressions and hence not protectable. In *Apple Computer, Inc. v. Formula International, Inc.*,¹⁸⁰ the Ninth Circuit found irrelevant the distinction that programs were intended to control computer operations and not to produce a discernable expression.¹⁸¹ Under this court's analysis, the program "when written embodies expression."¹⁸² The idea (or process) merges with the expression only if no alternative method of expression exists.¹⁸³

Using the same rationale, the Third Circuit, in *Apple Computer, Inc. v. Franklin Computer Corp.*,¹⁸⁴ proposed the following test: If "other programs can be written or created which perform the same function as [the program in question], then that program is an expression of the idea and hence

177. *Synercom Technology v. University Computing Co.*, 462 F. Supp. 1003 (N.D. Tex. 1978).

178. See *supra* notes 99-100 and accompanying text.

179. In *Synercom*, the defendant created a program which was competitive to that of the plaintiff but used data recorded in the format the plaintiff had developed. This simplified a user's conversion from the plaintiff's to the defendant's program, making the latter more marketable. The defendant did not copy the formats or forms in the traditional sense, nor did it furnish the plaintiff's format forms to its licensee.

Under the court's formulation, the issue was whether the sequence and ordering of data, the input format, was the expression of an idea or the idea itself. By concluding the input format was an idea, the court was forced to find that the format was not protectable under the basic principles of copyright. *Synercom*, 462 F. Supp. at 1006, 1014-15.

180. 725 F.2d 521 (9th Cir. 1984) (injunction restraining Formula from duplicating Apple operating system programs in a computer kit commercially marketed by Formula).

181. *Id.* at 523-24.

182. *Id.* at 525.

183. *Id.* The court noted that "Apple introduced evidence that numerous methods exist for writing the programs" and accordingly concluded the Apple program was protectable. *Id.*

184. 714 F.2d 1240 (3d Cir. 1983) (injunction restraining Franklin from commercially marketing Apple operating systems with Franklin computers), *cert. dismissed*, 464 U.S. 1033 (1984).

copyrightable.”¹⁸⁵

Arguments that an object code is a process or system (that is, an idea, and hence not protectable) have also fared poorly. Courts have consistently found programs copyrightable in either source or object formulations.¹⁸⁶

Once these preliminary cases established a framework for analysis, the courts began to focus on the specific aspect of a program that constitutes the protected expression: the output, the instructions, the functions, or the organization and structure.¹⁸⁷

In *SAS Institute, Inc. v. S & H Computer Systems*,¹⁸⁸ a federal district court in Tennessee established that the instructions were copyrighted to the extent that a verbatim translation of a program is copying, and hence an infringement of the original program.¹⁸⁹

A more difficult issue is presented by programs written using the original program's flow chart or general definition.¹⁹⁰ Faced with this issue, the Third Circuit in *Whelan Associates v. Jaslow Dental Laboratory*¹⁹¹ applied copyright protection broadly, holding that “copyright protection of computer programs may extend beyond the program's literal code to their

185. *Id.* at 1253.

186. *Hubco Data Prod. Corp. v. Management Assistance, Inc.*, 219 U.S.P.Q. (BNA) 450, 453 (D. Idaho. 1983) (court refuses to accept defendant's argument that object code is a machine process which is not communicated to others); *Midway Mfg. v. Strohon*, 564 F. Supp. 741, 753 (N.D. Ill. 1983) (computer programs in object code stored in ROM chips are copyrightable); *Williams Elec., Inc. v. Artic Int'l, Inc.*, 685 F.2d 870, 877 (3d Cir. 1982) (both humanly intelligible source code and machine-intelligible object code are protectable).

187. R. NIMMER, *supra* note 167, ¶ 1.03[5][c], at S1-10 (Supp. 1989).

188. 605 F. Supp. 816 (M.D. Tenn. 1985) (a copy of a statistics program with only cosmetic changes found infringing).

189. *Id.* at 828-30; *see also* *Williams v. Arndt*, 227 U.S.P.Q. (BNA) 615 (D. Mass. 1985) (the translation of a manual into source code language is infringing because the manual and the program produced substantially similar results).

190. In dicta, the SAS court considered the question of where copying stops and a new work begins. It suggested that formulating a program based on a detailed description in a flow chart or prose instructions would probably infringe. In contrast, preparation from a general description of the problem to be solved by the program would not constitute a copy or version of the original. *SAS*, 605 F. Supp. at 830.

191. 797 F.2d 1222 (3d Cir. 1986) (a program written in a different language and not a direct translation of the original was found infringing on the basis of an overall substantial similarity), *cert. denied*, 479 U.S. 1031 (1987).

structure, sequence, and organization"¹⁹² Basing its conclusions on an analogy to literary works, which may be infringed "even absent copying of the literal elements of the program," the court sought to draw the line between idea and expression by reference to the purpose of the work.¹⁹³ The court suggested that "the purpose or function of a utilitarian work would be the work's idea, while everything that is not necessary to that purpose or function would be part of the expression of the idea."¹⁹⁴ From this, the court concluded that, "[w]here there are various means of achieving the desired purpose, then the particular means chosen is not necessary to the purpose; hence, there is expression, not idea."¹⁹⁵ The natural inference that resulted was that the structure and logic of the program are protectable.¹⁹⁶ Accordingly, the nonliteral translation of a program, which has substantial similarity to the original program, may be an infringement.¹⁹⁷

The *Whelan* protection of structure and sequence has been met with mixed acceptance from courts in other circuits. In *Dynamic Solutions, Inc. v. Planning and Control, Inc.*, a federal district court in New York followed *Whelan's* lead, extending protection to a program structure.¹⁹⁸ In contrast, the Fifth Circuit in *Plains Cotton Cooperative Association v. Goodpasture*

192. *Id.* at 1248.

193. *Id.* at 1234.

194. *Id.* at 1236.

195. *Id.*

196. *Id.* at 1237. The court also noted that, since structure and logic are among the more costly aspects of program development, its rule was in concert with the basic rationale of copyright: to provide the proper incentive by protecting the developer's most valuable efforts. *Id.*

197. To show infringement, a plaintiff must establish 1) that it owned the original copyright, and 2) that the defendant copied the plaintiff's program. *Id.* at 1231. Copying is established by showing access and substantial similarity. *Id.* at 1232. Hence, lack of access would constitute an affirmative defense.

In *Whelan*, the suit concerned a program which had been developed in another computer language, but which performed the same function as the infringed program. *Id.* at 1225-27. The developer of the infringing program had cooperated in writing the infringed program. His first hand knowledge of the structure and form of the infringed program satisfied the access requirement. *Id.* at 1232.

198. 646 F. Supp. 1329, 1334-36 (S.D.N.Y. 1986) (a program created in a different language which allegedly did not translate the original program's source code was found infringing).

Computer Service,¹⁹⁹ refused to extend protection to the sequence and organization in computer programs under certain conditions. As articulated by this court, if the external factors "play a significant role in determining the sequence and organization" of the program, the program is not protectable.²⁰⁰ Courts following the *Plains Cotton* test have refused to extend protection to programs where similarities in function were found to be dictated by their underlying idea²⁰¹ or to constraints inherent in computer use.²⁰²

In cases where the more limited question of infringement of screen displays are at issue, the *Whelan* holding has been followed by some courts and limited by others. In *Broderbund Software, Inc. v. Unison World, Inc.*,²⁰³ a district court in California extended the reach of *Whelan* to include the protection of the screen output.²⁰⁴ Noting that other programs existed that

199. 807 F.2d 1256, 1262 (5th Cir.) (similarities in the programs dictated by the "externalities of the cotton market" did not support charges of infringement), *cert. denied*, 484 U.S. 821 (1987). The court's holding depended on interpreting *Synercom* to stand for the proposition that organization and configuration of information fed into computers were ideas not expressions. *Id.*

A criticism of *Plains Cotton* is that it failed to distinguish that the subject of the *Synercom* holding was input formats, not true computer programs. *See supra* note 179.

200. *Id.* at 1262. This so called "merger doctrine" was developed first in non-computer related cases. *See, e.g., Baker v. Selden*, 101 U.S. 99, 103-04 (1879) (the book-keeping system explained in a copyrighted book was not copyrighted); *Morrissey v. Procter & Gamble Co.*, 379 F.2d 675 (1st Cir. 1967) (similar set of rules for a sales promotional sweepstakes did not infringe). The First Circuit explained its underlying rationale:

When the uncopyrightable subject matter is very narrow, so that "the topic necessarily requires," . . . if not only one form of expression, at best only a limited number, to permit copyrighting would mean that a party or parties, by copyrighting a mere handful of forms, could exhaust all possibilities of future use of the substance.

Id. at 678; *see also Herbert Rosenthal Jewelry Corp. v. Kalpakian*, 446 F.2d 738 (9th Cir. 1971) (infringement of jewelry design).

201. *Data East USA v. Epyz, Inc.*, 862 F.2d 204, 207-09 (9th Cir. 1988) (similarities in video games were found because both portrayed a karate contest).

202. *Telemarketing Resources v. Symantec Corp.*, 12 U.S.P.Q.2d (BNA) 1991, 1995 (N.D. Cal. 1989) (the need to access existing files, edit the work, and print the work is fundamental to a host of programs and so is unprotectable).

203. 648 F. Supp. 1127 (N.D. Cal. 1986).

204. The subject of the suit was a menu-driven program which assisted users in creating customized greeting cards, signs and other graphics. The court distinguished the "idea" of a program for assisting the creation of greeting cards from the expression in the program. Critical evidence introduced by the plaintiff was a third program, created

performed the same function as the programs at issue, the California court concluded that there existed expressions in the screen output separable from the idea of the original program.²⁰⁵ Conversely, the district court in Connecticut, in *Manufacturers Technologies, Inc. v. CAMS, Inc.*,²⁰⁶ refused to extend protection to screen display formats and conventions which were adopted "from a very narrow range of possibilities."²⁰⁷

3. Establishing Infringement

As in copyright cases for the more traditional types of works,²⁰⁸ to establish a claim of infringement of a program, the plaintiff must prove copying by showing that (1) the defendant had access to a copyrighted program²⁰⁹ and (2) a substantial similarity exists between the plaintiff's and defendant's program.²¹⁰ Generally, since programs tend to be complex, courts follow a two-part test for similarity.²¹¹ First, a court uses expert testimony to determine whether there is sufficient similarity between the non-protected aspects of the two works to establish copying.²¹² If so, the fact finder must then determine, "[f]rom

by another party, which performed the same function but had totally different structure and audiovisuals. The court concluded that the overall structure, sequencing and arrangement of screens was protectable by copyright. *Id.* at 1132.

Video game screens produced by programs had been established as copyrightable as audiovisual works in other decisions. See *M. Kramer Mfg. v. Andrews*, 783 F.2d 421 (4th Cir. 1986) (copyright infringement of both the program and audiovisuals of a video poker game); *Williams Elec., Inc. v. Artic Int'l, Inc.*, 685 F.2d 870 (3d Cir. 1982) (copyright infringement of both the program and audiovisuals of a video action game).

205. *Broderbund*, 648 F. Supp. at 1132.

206. 706 F. Supp. 984 (D. Conn. 1989) (copyright infringement of screen displays of a program which estimated the cost of machining a manufactured part).

207. *Id.* at 995.

208. See *supra* note 117 and accompanying text.

209. See, e.g., *Manufacturers Technologies, Inc. v. CAMS, Inc.*, 706 F. Supp. 984, 1000-02 (D. Conn. 1989) (in considering copyright infringement of both a program and screen output, the court considered access to the screen displays and reproductions of them and to the source code of the original program).

210. *Id.* For use of this analysis in a case dealing with copyright protection for programs, see *GCA Corp. v. Chance*, 217 U.S.P.Q. (BNA) 718, 720 (N.D. Cal. 1982).

211. This test was established in *Arnstein v. Porter*, 154 F.2d 464, 468-69 (2d Cir. 1946) (alleged infringement of musical composition).

212. *Id.* at 468-69, 473; see also *Walker v. Time Life Films, Inc.*, 784 F.2d 44, 51-52 (2d Cir.), *cert. denied*, 476 U.S. 1159 (1986) (discussing continuing validity of the *Arnstein* test).

the perspective of a reasonable lay observer,"²¹³ whether there are substantial similarities with the protected aspects of the original work which would indicate "illicit copying" by the allegedly infringing work.²¹⁴

Establishing infringement of a program is complicated because more than one program can produce virtually identical screen output.²¹⁵ Indeed the *Whelan* court noted that similarities between screen displays are not direct evidence of infringement of the underlying program.²¹⁶ Nevertheless, the *Whelan* court noted that such similarities do have some probative value because they are "caused" by the program.²¹⁷ Other courts required more exacting standards of proof. For example, a district court in Georgia not only held that resemblances between screen displays were insufficient to establish infringement but required, as a *prima facie* case, evidence of copying source and object codes, as well as structure, sequence, and organization of the program.²¹⁸

More recently, developers are trying to force courts into a different conceptual framework. By claiming copyright infringements on the screen design itself, developers are arguing that the display is a separate entity rather than merely the output of a program.²¹⁹ Under this type of analysis, activities that consisted of a pirating of screen output, without access to the source or object code of the program, would constitute infringement.²²⁰

213. *Manufacturers Technologies*, 706 F. Supp. at 1001 (court applies the *Arnstein* test); see also *Whelan Assocs. v. Jaslow Dental Laboratory*, 797 F.2d 1222, 1232 (3rd Cir. 1986) (court applies the *Arnstein* test), *cert. denied*, 479 U.S. 1031 (1987).

214. See *Walker*, 784 F.2d at 51-52.

215. See, e.g., *Whelan*, 797 F.2d at 1244-45; *Broderbund Software, Inc. v. Unison World*, 648 F. Supp. 1127, 1133 (N.D. Cal. 1986); *Manufacturers Technologies*, 706 F. Supp. at 991.

216. *Whelan*, 797 F.2d at 1244 (3rd Cir. 1986).

217. "Insofar as everything that a computer does, including its screen outputs, is related to the program that operates it, there is necessarily a causal relationship between the program and the screen outputs . . . and therefore they have some probative value." *Id.*

218. *Digital Communications Assoc. v. Softklone Distrib.*, 659 F. Supp. 449, 455-56 (N.D. Ga. 1987) (use of an identical screen display by a "clone" program that was otherwise independently created did not constitute infringement).

219. See, e.g., *Manufacturers Technologies*, 706 F. Supp. at 993 (court treats program and its screen displays as two interrelated but distinct entities to the extent that each contains copyrightable subject matter).

220. *Id.* at 1002.

At least one court has accepted this rationale. In *Lotus Development Corp. v. Paperback Software International*,²²¹ infringement of both the menu command structure and the presentation of these commands on the screen was established on the grounds that Paperback had copied substantial copyrightable elements from Lotus' copyrighted work.²²²

B. Section 117 Issues

1. Ownership

Section 117 reserves to an owner the right to copy programs. The language of the statute limits the extent of the grant in two ways. First, by specifying "owner," the statute excludes lessees or others in lawful possession from those who may copy without violating the copyright owner's rights.²²³ Second, under section 117, the right to copy is limited to that which is necessary "as an essential step" in using the program.²²⁴

Courts have construed both limitations strictly. In *GCA Corp. v. Chance*,²²⁵ a federal district court in California dismissed a claim by ex-GCA employees that their use of GCA's copyrighted program in their own maintenance business was permitted under section 117.²²⁶ As the court noted, the employees were not rightful owners of the program and their use of the program was not intended by section 117.²²⁷ In *Apple Computer, Inc. v. Formula International, Inc.*,²²⁸ the court established that, although a party could be a rightful owner, making copies for non-essential purposes, such as marketing the program to

221. 740 F. Supp. 37 (D. Mass. 1990).

222. *Id.* at 70.

223. 17 U.S.C. § 117 (1988) (reproduced at notes 138, 140 and accompanying text); see also notes 138 & 140 for a discussion of the term "owner."

224. 17 U.S.C. § 117(1) (1988) (reproduced at notes 138, 140 and accompanying text).

225. 217 U.S.P.Q. (BNA) 718 (N.D. Cal. 1982).

226. The suit concerned the use of GCA diagnostics and operating systems by former employees of GCA in the derivative business they had created repairing the GCA machines. The employees admitted copying but claimed that § 117 gave them statutory license to copy GCA's diagnostic and operating system programs. *Id.* at 719-20.

227. The court found that GCA employees were "not rightful owners within the meaning of § 117, nor are the copies they make and make use of for the purposes intended by § 117." *Id.* at 720.

228. 725 F.2d 521 (9th Cir. 1984).

others, was not permitted.²²⁹ In *Micro-Sparc, Inc. v. Amtype Corp.*,²³⁰ the federal district court in Massachusetts further limited the rights of owners; owners could not authorize other parties to make their copies for them.²³¹

2. Using Licenses to Establish Ownership

The three early cases discussed in the preceding section, *Formula*, *Micro-Sparc*, and *GCA*, used the principle of ownership to determine the rights of the parties. However, they did not elaborate the criteria used to determine who the "owner" was.²³² Within the last two years, courts have begun to more rigorously analyze the question of ownership as determined by the terms of the underlying license. In so doing, some courts have challenged current marketplace licensing practices.²³³

The Fifth Circuit, in *Vault Corp. v. Quaid Software Ltd.*,²³⁴ considered the issue of ownership in the context of a program provided under an unsigned, shrink-wrap license under which the developer retained ownership of the copy.²³⁵ The court nullified the entire license on the theory that it was a contract of

229. Formula sold silicon chips containing copies of Apple's copyrighted programs. Purchasers were instructed to insert the silicon chips into computers manufactured by Formula. The copied programs then resided permanently on the computer. *Id.* at 522-23. Although Formula claimed rightful ownership of diskettes containing Apple's programs, the court held that Formula was not an owner-user under the usage of § 117. *Id.* at 524-25. Since the copying done by Formula was not "essential" but merely convenient, the § 117 exception did not apply. *Id.* at 525.

230. 592 F. Supp. 33 (D. Mass. 1984).

231. Amtype offered machine-readable versions of programs published by Micro-Sparc in its magazine *Nibble*. The court determined that the *Nibble* readers were the owners of the published programs. As such, the readers had the right to convert the published programs into machine-readable form. They did not, however, have the right to authorize Amtype to do the same. The court found that, while the "essential step in utilization" language in 17 U.S.C. § 117(1) permits making an "input copy" from a disk copy, it does not permit the creation of multiple copies for distribution. *Id.* at 34-35.

232. See *supra* notes 226-32 and accompanying text.

233. See *infra* note 239 and accompanying text.

234. 847 F.2d 255 (5th Cir. 1988).

235. The fact that the license was a "shrink-wrap" license is not obvious from the Fifth Circuit opinion. However, the district court of Louisiana in its earlier opinion explicitly referred to PROLOK as being "printed on each package." *Vault Corp. v. Quaid Software Ltd.*, 655 F. Supp. 750, 753 (E.D. La. 1987). It is clear, however, that under the license, Vault retained both title and ownership. The actual Vault license read, in part, "[t]itle to the Licensed Software and all copyrights and proprietary rights in the Licensed Software shall remain with VAULT." *Vault*, 847 F.2d at 257 n.2.

adhesion.²³⁶ Because the license retaining title was void, the possessor of the copy was also an owner who could exercise those rights provided in section 117.²³⁷

Using a similar license-based ownership analysis, the Ninth Circuit reached an opposite result. In *S.O.S., Inc. v. PAYDAY, Inc.*,²³⁸ the developer, S.O.S., retained ownership of the copy of the program provided to PAYDAY under the terms of a signed license.²³⁹ The court, by its interpretation, extended S.O.S.'s ownership to any copies made from the original.²⁴⁰ Thus, under section 117, it had the sole right to authorize copies or derivative works.²⁴¹ Accordingly, PAYDAY, as mere possessor, was not protected by the section 117 exceptions and "exceeded the scope of its license when it copied and prepared a modified version of the program without S.O.S.'s permission."²⁴²

236. The Fifth Circuit was following the district court's holding on this point. The district court found the PROLOK license a contract of adhesion because it was "drafted unilaterally by the dominant party and then presented on a 'take-it-or-leave-it basis' to the weaker party who has no real opportunity to bargain about its terms." *Vault*, 655 F. Supp. at 760.

The license also provided that the applicable laws under which it was to be construed were those of Louisiana. *Vault*, 847 F.2d at 257 n.3. The Louisiana License Act included as an enforceable term of a software contract a prohibition of modifying and/or adapting the program in any way, including adaptation by reverse engineering, decompilation or disassembly. LA. REV. STAT. ANN. § 51:1964 (West 1987). The Fifth Circuit conceded that the License Act should have answered any questions about the legality of the Vault license provisions. However, the court held that the provisions of the License Act which permitted a program developer to protect his program from decompilation or disassembly conflicted with the right under § 117(1) to make an "essential step" adaptation. Thus, in the court's view, the License Act "touches upon an area" of federal copyright law and so was preempted by the federal copyright statutes. *Vault*, 847 F.2d at 270.

237. That is, the right to make copies or adaptations. 17 U.S.C. § 117 is reproduced at text accompanying note 138.

238. 886 F.2d 1081 (9th Cir. 1989).

239. The fact that the license was signed may be inferred from the discussion of the contractual agreement between S.O.S. and PAYDAY for the hardware. *Id.* at 1083.

240. *Id.* at 1088. Noting that, under federal copyright policy, licenses are assumed to prohibit any use not authorized, the Ninth Circuit held that a licensee infringed the owner's copyright if its use exceeded the scope of its license. *Id.* at 1090. This is contrary to the general rule that contractual ambiguities are interpreted against the drafter. Application of this rule in situations such as these should result in the presumption that the drafter grants to the signee any right which it does not expressly retain. *See, e.g., World Wide Tracers, Inc. v. Metropolitan Protection Inc.*, 384 N.W.2d 442, 448 (Minn. 1986) (in interpreting an ambiguous term in a security agreement, the court held "[w]here there is an ambiguity in the contract, the contract will be construed against the drafter.>").

241. 17 U.S.C. § 117 (1988) (reproduced at note 138 and accompanying text).

242. *S.O.S.*, 886 F.2d at 1089.

C. *Derivative Works: The Interplay of Sections 106 and 117*

1. *Modifications for Commercial Use*

The GCA court dealt harshly with an entrepreneur who created a business opportunity for himself based on a verbatim copy of another program.²⁴³ Initially, courts seemed no less protective of the original program developer in cases in which the entrepreneur was more creative.

In an analysis grounded in the language of the Copyright Act, the Seventh Circuit held that a licensee of a video game that used a circuit board to speed up the play created a derivative work.²⁴⁴ Lacking the copyright owner's authorization, this derivative work was a direct infringement on the copyright.²⁴⁵ Critical to the court's decision that the result was a derivative work was an analysis of the economic loss accruing to the copyright owner.²⁴⁶ In the absence of express contract provisions, the copyright holder was entitled to monopolize the preparation of derivative works even for personal use by authorized licensees.²⁴⁷

A federal district court in Illinois arrived at a similar conclusion but focused more intensely on section 117 considerations. In *Midway Manufacturing v. Strohon*,²⁴⁸ a "modification kit" that complicated and accelerated the original, copyrighted PAC-MAN game program was found infringing.²⁴⁹ The court

243. *GCA Corp. v. Chance*, 217 U.S.P.Q. (BNA) 718 (N.D. Cal. 1982). See *supra* notes 225-27 and accompanying text.

244. *Midway Mfg. v. Artic Int'l, Inc.*, 704 F.2d 1009 (7th Cir.) (sale of circuit boards that speeded up the rate of play in copyrighted video games infringed on the copyright), *cert. denied*, 464 U.S. 823 (1983).

245. *Id.* at 1013-14.

246. *Id.* at 1014.

247. *Id.*

248. 564 F. Supp. 741 (N.D. Ill. 1983).

249. The original PAC-MAN program was relatively simple and the "pattern" of moves readily easy to ascertain. Players, once they had determined the pattern, either continued playing for extended periods on one quarter or lost interest because it was no longer challenging. Strohon, identifying a rather large potential market (by 1982, over 96,000 of the \$2500 game units had been sold), sold CUT-SEE modification kits to the owners of the machines. By complicating and speeding up the play, the game units again became profitable to their owners. *Id.* at 743.

Although the modification did not infringe the audiovisual aspects of the game, the enhancement itself was only a slight adaptation of the original copyrighted computer program. The PAC-MAN program was contained in four ROMs which contained over 16,000 bytes, some of which did not contain program instructions. The CUT-SEE pro-

noted that section 117 permitted owners to adapt their programs for use "in conjunction with a machine," but refused to accept this as authority for sale of the modified PAC-MAN.²⁵⁰ Ownership was crucial; mere possessors were not authorized under the statute to make adaptations.²⁵¹ Using the same rationale, the S.O.S. court enjoined PAYDAY from using a modified, pirated copy of an S.O.S. program to provide payroll services to firms in the entertainment industry.²⁵²

The district court of Idaho resorted to both sections 106 and 117 in its analysis in *Hubco Data Products v. Management Assistance, Inc.*²⁵³ Hubco offered Management Assistance (MAI) licensees a modification of the program which replaced certain "governors" in the program.²⁵⁴ This made the modified program the equivalent of a much higher priced MAI program.²⁵⁵ Granting a request for an injunction, the court held that MAI had a reasonable probability of successfully establishing infringement.²⁵⁶ Modifications of a licensee's MAI program by Hubco employees involved unlawful copying of the MAI program.²⁵⁷ Modifications the licensees performed on their own licensed copies, using a Hubco program which copied a portion of the higher

gram reproduced approximately 97% of the PAC-MAN instructions in identical locations on the CUT-SEE ROMs and then added additional instructions at some of the empty locations. *Id.* at 752-53.

250. *Id.* at 745 n.2.

251. Quoting from § 117, the court reminded Strohon that "[a]daptations . . . may be transferred only with the authorization of the copyright owner." *Id.* at 745 n.2. The court also emphasized that adaptations were permitted only because they were required to enable the programs to operate. *Id.*

252. S.O.S., Inc. v. PAYDAY, Inc., 886 F.2d 1081, 1084-85 (9th Cir. 1989).

253. 219 U.S.P.Q. (BNA) 450 (D. Idaho 1983) (preliminary injunction to restrain Hubco from offering an upgrade procedure for MAI's operating system).

254. Hubco's business opportunity was created by MAI's pricing strategy. MAI developed and sold both high-level and low-level operating systems for their computers, at different prices. The low-level system was, in fact, the high-level system with certain software blocks or "governors" which limited the processing capability of the machine. By decoding the high and low-level operating systems and comparing them, Hubco was able to pinpoint the "governors" that blocked certain operations. *Id.* at 451-52.

Initially, Hubco sent its employees to make the program modifications at MAI-owners' sites on their copies of the program. Subsequently, Hubco developed a computer program, which allowed the computer owners to perform the modification themselves. *Id.*

255. *Id.*

256. *Id.* at 455-56.

257. *Id.*

priced program into the licensee's copy, did not fall under the section 117 exemption since Hubco was not the owner of the higher priced program.²⁵⁸

The Fifth Circuit, in *Vault Corp. v. Quaid Software Ltd.*,²⁵⁹ based its analysis primarily on section 117.²⁶⁰ Quaid's program, RAMKEY, circumvented Vault's program, PROLOK, which was designed to protect other programs from unauthorized copying.²⁶¹ Having rejected the Vault license, which established Quaid's ownership by default,²⁶² the *Vault* court held that Quaid's copying of PROLOK into computer memory did not infringe on Vault's exclusive rights to reproduce copies under section 106.²⁶³ Declining to follow earlier, more restrictive interpretations of section 117, the court found that Quaid's copying of PROLOK for "the express purpose of devising a means of defeating its protective function" qualified as an "essential step" activity permitted by section 117.²⁶⁴ Under the *Vault* standard,

258. *Id.*

259. 847 F.2d 255 (5th Cir. 1988).

260. *Id.* at 260-61.

261. Vault produced computer diskettes under the registered trademark PROLOK. Each diskette was protected from copying by a physical fingerprint, a small mark physically placed on the surface of each diskette which contains unique, unalterable information, and a PROLOK program. Program developers would copy their programs on the PROLOK diskette and then market it. When a licensee of the application program tried to load the program into its personal computer, PROLOK prevented the computer from operating unless the original PROLOK diskette, with its unique fingerprint, was in the computer's disk drive. *Id.* at 256-58. Essentially, PROLOK is an asset protection device for program developers. A licensee who obtains an application program on a PROLOK diskette is prevented from making multiple copies of that application and then distributing unauthorized copies to others.

Quaid's RAMKEY could circumvent the PROLOK protection. RAMKEY was distributed on a "CopyWrite" diskette. Any user could copy an application program residing on a PROLOK diskette onto a CopyWrite diskette. The copy of the program on the CopyWrite diskette, since it was no longer protected by PROLOK, could then be run without the original PROLOK diskette in the personal computer. The user could now freely copy and distribute the application program, using the CopyWrite diskette. *Id.* at 257-58.

Two versions of RAMKEY were at issue. The 1984 version of RAMKEY contained about 30 characters of PROLOK. The 1987 version of RAMKEY did not contain any PROLOK code. *Id.*

262. See *supra* notes 234-37 and accompanying text.

263. *Vault*, 847 F.2d at 261.

264. *Id.* Section 117(1), reproduced at text accompanying note 138, permits copying of that program provided the copy "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

the test of "essential step in utilization" was not the program's intended purpose, but rather that of the copier.²⁶⁵

The *Vault* court also declined to find that RAMKEY was an adaptation of PROLOK.²⁶⁶ The court distinguished its decision from earlier cases on the grounds that RAMKEY provided a function opposite to that of PROLOK and thus did not form a substantially similar copy of Vault's program.²⁶⁷

manner." Vault argued that the phrase "no other manner" should be interpreted as permitting only copying of the program for its intended purpose. On the grounds that § 117(1) did not expressly require a copy to be made only for the use intended by the copyright owner and in the absence of clear congressional guidance to the contrary, the court refused to limit § 117. *Vault*, 847 F.2d at 261.

Vault's license read in part, "[y]ou may not transfer, sublicense, rent, lease, convey, copy, modify, translate, convert to another programming language, decompile or disassemble the Licensed Software for any purpose without VAULT's prior written consent." *Id.* at 257 n.2 (emphasis added). Since the court had found the PROLOK license void, it was not required to consider whether Quaid had breached this contract by its copying and subsequent analysis of PROLOK.

265. *Id.* at 261. This standard is questionable. Logically, a party copying a program had some purpose in mind, which, under the *Vault* standard, seems to be a sufficient justification for the activity.

266. *Id.* at 262-68.

267. The Fifth Circuit distinguished *Whelan* as dealing with programs which performed the same function as the copyrighted work. *Vault*, 847 F.2d at 267-68. *Whelan* held that a "court must make a qualitative, not quantitative, judgment about the character of the work as a whole and the importance of the substantially similar portions of the work." *Whelan Assoc. v. Jaslow Dental Laboratory*, 797 F.2d 1222, 1245 (3rd Cir. 1986).

Midway Mfg. v. Artic Int'l, Inc., 704 F.2d 1009, 1013-14 (7th Cir. 1983) had emphasized that it is not the absolute amount of program instructions copied but the qualitative importance of those characters. The *Vault* court argued that *Midway* held that "the sale of a product which speeded-up plaintiff's programs constituted contributory infringement because the speeded-up programs were derivative works." The *Midway* court, or so the *Vault* court reasoned, did not hold that the defendant's product itself was a derivative work. *Vault*, 847 F.2d at 268.

The court also dismissed a related allegation that Quaid contributed to the infringement of copyright by the RAMKEY users. Although Quaid acknowledged that it had actual knowledge that its product was used to make unauthorized copies of application programs, the court reasoned that RAMKEY's use was non-infringing in that it permitted the making of archival copies. *Id.* According to the court, the Copyright Act "does not expressly render anyone liable for the infringement committed by another." *Id.* at 262.

The court's reasoning is troubling. Generally, the law frowns on tools whose sole purpose is to facilitate taking the property of others. See, e.g., N.Y. PENAL LAW § 140.35 (McKinney 1988) (possession of "any tool, instrument or other article adapted, designed or commonly used for committing or facilitating offenses involving forcible entry into premises, or offenses involving larceny by a physical taking" is a misdemeanor). Quaid's software facilitated the taking of programs. Nevertheless, the *Vault* court essentially encouraged such devices by refusing to enjoin the creation of the next version of the tool.

2. Modifications for Internal Use

Given that the basic policy behind copyright is economic protection, a distinction can be made between adaptations created for economic gain and adaptations made solely for the adaptor's use. The CONTU Report suggests that the latter, when required in order to facilitate the use of a program, is acceptable.²⁶⁸ Two recent decisions accept this theory.

In *RAV Communications v. Philipp Brothers*,²⁶⁹ in which the Southern District of New York denied a motion of dismissal, the court ruled that Philipp Brothers, as owner of the object code produced by RAV, was authorized to make adaptations under section 117.²⁷⁰ The court held that it was a question of fact as to whether the adaptations were "more extensive than section 117 allows."²⁷¹ In its comments, the court argued against narrowly construing the permitted "essential step" adaptations, suggesting that the CONTU Report authorized a "broader reading where the owner of a copy of a computer program adapts it for his own internal use."²⁷²

The theory for internal use of adaptations is more fully developed in *Foresight Resources Corp. v. Pfortmiller*.²⁷³ In that case, the court refused to find infringement in adaptations made by Pfortmiller to a copy of Foresight's program owned by Hall-Kimbrell.²⁷⁴ Relying on the CONTU Report, the court reasoned that section 117 "should not be restricted to prohibit owners from authorizing customer-made enhancements to their copies of computer programs."²⁷⁵ The underlying rationale, and the

268. CONTU REPORT, *supra* note 128, at 13-14.

269. 1988 Copyright L. Dec. (CCH) ¶ 26,263, at 21,780 (S.D.N.Y. April 13, 1988).

270. *Id.* at 21,781-82.

271. *Id.* at 21,783.

272. *Id.* at 21,782. The court did not take into account, however, the fact that only Philipp Brothers' ownership of the *object* code was undisputed. Ownership of the source code was undetermined. RAV argued that it "at no time sold, transferred, assigned, or otherwise conveyed to [Philipp Brothers] any copy of the source code of [the] computer program." *Id.* at 21,781. Hence, in discussing whether the adaptations were permitted under § 117, the court ignored the fact that Philipp Brothers needed to use the source code to make their modifications. Philipp Brothers might not have been the owner of that source code.

273. 719 F. Supp. 1006 (D. Kan. 1989).

274. *Id.* at 1009-10.

275. *Id.* at 1010.

means by which the court distinguished its case from *Micro-Sparc*, *Strohon*, and *Hubco*, was that the alterations were not intended for commercial use.²⁷⁶ Drawing the line at "internal use," the court struck a balance: the sophisticated user need not purchase an updated version of the program, and, on the other hand, the copyright owner's market for the improved version is not threatened by the user's efforts.²⁷⁷

V. Analysis

The purpose of the copyright law is to provide economic protection for authors.²⁷⁸ The purpose of a license is to protect the program asset.²⁷⁹ At issue is whether the copyright law, as currently interpreted, allows a developer to successfully use a license to protect his program.

A. *A Comparison of Copyright Protection and License Provisions*

1. *What is Protectable*

In the years since the enactment of the 1980 amendments to the Copyright Act of 1976,²⁸⁰ the courts have established some ground rules in the struggle to determine what parts of programs are, and are not, protectable. Courts seem to have arrived at a consensus that the medium on which the program is embodied is not an impediment to protection.²⁸¹ Courts have also generally agreed that both object and source code are protectable.²⁸² Thus, the law does not deny to a licensor the right to protect a program whether it is distributed in source or in object code form, regardless of its medium.

On the other hand, the perennial idea/expression problem remains unresolved. At one end of the spectrum, courts seem willing to extend protection to any and all aspects of a pro-

276. *Id.* at 1009.

277. *Id.* at 1010.

278. *See supra* note 91 and accompanying text.

279. *See supra* notes 70-89 and accompanying text.

280. *See supra* notes 132-38 and accompanying text.

281. *See supra* notes 173-75 and accompanying text.

282. *See supra* note 186 and accompanying text.

gram.²⁸³ At the other end, courts have refused protection because the expression is dictated by the underlying idea.²⁸⁴ In the latter case, licensing a program can ensure a developer's exclusive rights to a program only if it can establish that the program is a trade secret.²⁸⁵

2. Access Issues

To a certain extent, the license provisions restricting access to the program instructions reflect a recognition by licensors of the difficulties that idea/expression analysis may present.²⁸⁶ By distributing their programs in object code and prohibiting disassembly, licensors use the very nature of programs to provide protection. A licensee can only see the output; the actual instructions remain unintelligible.²⁸⁷ Absent breach of the license, another program performing the same function, thus expressing the same idea, could be created only by independent development.

In *Foresight Resources Corp. v. Pfortmiller*,²⁸⁸ the court questioned the enforceability of provisions for reverse assembly and decompilation.²⁸⁹ If such provisions were unenforceable, then program developers could not prevent their licensees from analyzing the unique expressions of their programs. In an area where the idea/expression line is indistinct, this would considerably increase the risk of piracy.

3. Establishing Infringement

As established by court decisions, proof of copying requires proving both access and substantial similarity.²⁹⁰ Licensing provisions restricting third party access²⁹¹ do not depend on these decisions themselves, but on the self-evident rationale behind them; access to the original work is required to create the in-

283. See *supra* notes 191-98 and accompanying text.

284. See *supra* notes 199-202 and accompanying text.

285. See *supra* note 68.

286. See *supra* notes 76-77 and accompanying text.

287. See *supra* notes 76-77 and accompanying text.

288. 719 F. Supp. 1006 (D. Kan. 1989).

289. *Id.* at 1010.

290. See *supra* note 117 and accompanying text.

291. See *supra* note 78 and accompanying text.

fringing work. By prohibiting the licensee from distributing or even allowing a third party to access a program, the number of parties with access to the program, potential infringers, is limited.

4. *The Ownership Issue*

Together, sections 106 and 117 provide owners with certain exclusive rights.²⁹² In *GCA Corp. v. Chance*,²⁹³ *Apple Computer, Inc. v. Formula International, Inc.*,²⁹⁴ and *Micro-Sparc v. Am-type Corp.*,²⁹⁵ the courts limited the rights of the defendants on the grounds that, while they were possessors who used the programs, they were not owners. These cases are silent, however, on the grounds on which they determined ownership status.

In *Hubco Data Products v. Management Assistance, Inc.*,²⁹⁶ the court was somewhat more forthcoming. In its decision, the court clearly stated that Hubco was not the owner of the MAI code.²⁹⁷ While it did not directly state the basis for this opinion, it did discuss the restrictive MAI licensing agreements.²⁹⁸

Under this line of cases, a developer must retain ownership in order to retain his statutory rights. Since title is transferred by a sale, the developer cannot sell the program, but must market it under a contract or license retaining title.²⁹⁹ Thus, licensing provisions that retain title establish a basis for a claim of ownership and allow the developer to restrict the right to copy and/or create derivative works.³⁰⁰

5. *Copying*

Under sections 106 and 117, the owner of a program has the exclusive right to make copies. As CONTU had noted, however,

292. See *supra* notes 136-37 & 140 and accompanying text.

293. 217 U.S.P.Q. (BNA) 718, 720 (N.D. Cal. 1982).

294. 725 F.2d 521, 524-25 (9th Cir. 1984).

295. 592 F. Supp. 33, 34-35 (D. Mass. 1984).

296. 219 U.S.P.Q. (BNA) 450 (D. Idaho 1983).

297. *Id.* at 455-56.

298. *Id.* at 455.

299. See UCC § 2-106 (1987) ("sale" consists in the passing of title from the seller to the buyer for a price"); see also BLACK'S LAW DICTIONARY 1200 (5th ed. 1979) (a sale results in a transfer of title).

300. See *supra* notes 72-74 and accompanying text.

using a program requires copying the program from the medium on which it was distributed into the computer.³⁰¹ Thus, users must have the right to copy a program in certain situations for that program to be marketable. In the court decisions, the distinction between forbidden and permitted copying often involved a standard based on the copy's commercial use.³⁰² The reasoning was based on the initial purpose of copyright: protecting the economic rights of the owner.³⁰³ Copying another's program to market it deprives the developer of an opportunity to market his own program.

License provisions reflect the same reasoning. By retaining ownership, the licensor has reserved to himself the exclusive right to create copies of the program. To allow use, the licensor gives to the licensee limited rights.³⁰⁴ Copying for commercial distribution is prohibited.³⁰⁵

6. *Derivative Work*

Under section 106(2) of the Copyright Act of 1976, the copyright owner has the exclusive right to "prepare derivative works" from the copyrighted original.³⁰⁶ CONTU had identified the logical problem; some adaptation may be necessary in order to use a program on a computer.³⁰⁷ Section 117 reserved to the owner of a copy of a program the right to make adaptations necessary to use the program in a computer.³⁰⁸

In analyzing court decisions, a fundamental distinction that must be made is whether the derivative work was used internally by the licensee or whether there was a commercial enterprise developed around the derivative work.

If the fact pattern of the case falls into the latter category,

301. CONTU REPORT, *supra* note 128, at 12-13.

302. *See, e.g., Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1254-55 (3d Cir. 1983) (copying of an Apple operating system to produce Apple compatible personal computers for commercial use infringed Apple's copyright), *cert. denied*, 464 U.S. 1033 (1984).

303. *See supra* note 91 and accompanying text.

304. *See supra* notes 81-82 and accompanying text.

305. *See supra* notes 81-82 and accompanying text.

306. 17 U.S.C. § 106(2) (1988).

307. CONTU REPORT, *supra* note 128, at 12-13.

308. 17 U.S.C. § 117 (1988) (reproduced at notes 138, 140 and accompanying text).

the courts generally protect the economic rights of the original developer. Thus, for example, *Midway*,³⁰⁹ *Hubco*,³¹⁰ and *S.O.S.*³¹¹ protect economic rights of authors against those who created businesses based on modifications made to another developer's work. An exception to this rule is carved out in *Vault Corp. v. Quaid Software Ltd.*³¹² Under the *Vault* rationale, a fundamentally different purpose saves a work from infringement even when the work is being commercially marketed.³¹³

On the other hand, if the case deals with a derivative work which is restricted to internal use, the court will not find an infringement. *RAV Communications v. Philipp Brothers*³¹⁴ and *Foresight Resources Corp. v. Pfortmiller*³¹⁵ both stand for the proposition that adaptations for internal use are allowable since they cause no economic harm.

Distinguishing between internal and external use can be more difficult than is initially apparent. For example, in both *RAV* and *Foresight* adaptations were performed by outside consultants.³¹⁶ The *Foresight* court enjoined the marketing of a specific adaptation elsewhere.³¹⁷ Neither it nor *RAV* considered the consequences of the consultant performing a similar task for other customers. Since identifying two programs as similar is extremely difficult, one can envision situations in which a consultant creates for a business a "new" adaptation which consists of merely cosmetic changes to an adaptation made for a prior

309. *Midway Mfg. v. Strohon*, 564 F. Supp. 741, 744 (N.D. Ill. 1983) (sale of modification kit to owners of Midway's PAC-MAN game).

310. *Hubco Data Prod. v. Management Assistance, Inc.*, 219 U.S.P.Q. (BNA) 450 (D. Idaho 1983). Hubco focuses particularly on the economic damage caused by the adaptation, viz., the irreparable harm to MAI from the loss of potential customers when Hubco performs MAI operating system upgrades. *Id.* at 456-57.

311. *S.O.S. v. PAYDAY*, 886 F.2d 1081, 1083-84 (9th Cir. 1989) (former S.O.S. employees create a modification of S.O.S.'s program and market it to PAYDAY).

312. 847 F.2d 255 (5th Cir. 1988).

313. See *supra* notes 266-67 and accompanying text.

314. 1988 Copyright L. Dec. (CCH) ¶ 26,263 at 21,780, 21,782 (S.D.N.Y. April 13, 1988) (section 117 "should be given a broader reading where the owner of a copy of a computer program adapts it for his own internal use").

315. 719 F. Supp. 1006 (D. Kan. 1989).

316. See *Foresight*, 719 F. Supp. at 1010 and *RAV*, 1988 Copyright L. Dec. (CCH) at 21,781-82.

317. *Foresight*, 719 F. Supp. at 1010.

customer.³¹⁸

License provisions suggest that developers have come to essentially the same conclusion as the courts; those licenses that permit the creation of derivative works do so only if those works are restricted to internal use.³¹⁹ In a related fashion, the provisions restricting access to the program by third parties attempt to forestall an entrepreneurial consultant. Their effectiveness, however, is questionable. It can be argued that, in such a role, the consultant is the agent of the licensee and becomes subject to the license.

7. License Validity

Underlying any analysis of licensing provisions is the assumption that the license is valid. Without a valid license, title is not retained by the developer.³²⁰ Accordingly, the customer is not a licensee, but an owner, with all of the rights granted to an owner.

Grounds for arguing the validity of the use of licenses are found in the CONTU Report where it is suggested that the rights provided by statute can be varied by agreement between the parties.³²¹

In *Vault*, however, the court held that the shrink-wrapped license used was invalid.³²² As a result, the defendant, became the owner, with all the exclusive rights guaranteed by sections 106 and 117. While not explicitly ruling on license validity, the *Foresight* court also questioned the enforceability of the agreement, citing the *Vault* decision.³²³ Unfortunately, although the facts suggested a signed agreement, the case is silent on whether the license at issue was signed or shrink-wrapped.³²⁴ As a result,

318. See *supra* notes 52-53 and accompanying text.

319. See *supra* note 82 and accompanying text.

320. See *supra* notes 72-74 & 299 and accompanying text.

321. CONTU REPORT, *supra* note 128, at 13-14.

322. *Vault Corp. v. Quaid Software Ltd.*, 847 F.2d 255, 269 (5th Cir. 1988). See *supra* note 235 and accompanying text.

323. *Foresight Resources Corp. v. Pfortmiller*, 719 F. Supp. 1006, 1010 (D. Kan. 1989).

324. The case explicitly refers to a license. *Id.* Since *Foresight* was involved in seemingly large projects involving modifications by written purchase orders, it seems reasonable to assume that the license, like most contracts, was signed.

the *Foresight* court may have unwittingly extended the *Vault* decision beyond the limits envisioned by the Fifth Circuit. Whatever the nature of the license, however, the court seemed to intend to curtail the licensor's rights. It reasoned, in the alternative, that even if the agreement was enforceable, "the court [did] not believe that plaintiff's right to improve or enhance its products was exclusive."³²⁵

These cases present significant problems to a would-be licensor. Implicit in the use of a license is the belief of the licensor that the license under which he distributes his programs is valid. To the extent a court invalidates a license, or refuses to enforce some of its provisions, the licensor will not have the protection he deems necessary and licenses will cease to be a viable method for program protection.

B. *A Re-examination of the CONTU Intent*

One standard against which to judge the current status of the copyright law as applied to programs, is the original intent of the legislature. Congress' only modification of the CONTU proposal was the substitution of the term "ownership" for the term "rightful possessor."³²⁶ The legislative history does not explain the reason for this change. However, when section 117 is juxtaposed against section 106 (which it references), it seems likely that the term "ownership" was used so that the terms in both sections matched. If this is true, then Congress' purpose was not to modify CONTU's original intent.

As enunciated in the CONTU Report, it was intended to give both greater and fewer rights to program users. CONTU intended greater rights in that it wanted to enable a user without ownership to copy and adapt programs. CONTU intended to grant fewer rights by restricting such activities to "essential steps." Considering its goal of protecting the economic rights of authors, it would seem CONTU was trying to prohibit economic

325. *Id.* The conclusions on licenses reached by the Kansas district court are inconsistent with its supposed reliance on the CONTU REPORT. Although the court quotes CONTU's statement that program developers could prevent adaptations by contract, it refuses to enforce such agreements when confronted with them. *Id.* at 1009.

326. See *supra* notes 144-45 and accompanying text.

exploitation of works, as occurred in *Hubco*,³²⁷ *Midway*,³²⁸ and *Vault*,³²⁹ while permitting those adaptations which did not economically affect the program developer, as in *RAV*³³⁰ and *Foresight*.³³¹

The CONTU Report also supports the position that program developers could use licenses to protect their programs.³³² What neither CONTU, nor anyone else at the time, envisioned was a need for unsigned agreements.

C. *Alternatives to Returning to the CONTU Position*

Two alternative methods are available to returning to the policy established in the CONTU Report. One method would be to modify section 117,³³³ replacing "owner" with "rightful possessor." A clarifying restriction could then be added to the statute to ensure that the permitted "essential steps" may be performed only for purposes of "internal use." The goal of this method would be to provide sufficient protection in the statute and eliminate the need for licenses, unsigned or otherwise.

Another approach is to simply put the onus of protecting the programs on the industry participants themselves. By enforcing the provisions of the licenses, developers would be responsible for articulating the limits of use. However, if the *Vault*³³⁴ and *RAV*³³⁵ line of decisions is continued, this alternative would require a federal statute³³⁶ validating licensing provisions.³³⁷ Such a statute would be necessary to ensure the validity

327. *Hubco Data Prod. v. Management Assistance, Inc.*, 219 U.S.P.Q. (BNA) 450 (D. Idaho 1983).

328. *Midway Mfg. v. Artic Int'l, Inc.*, 704 F.2d 1009 (7th Cir. 1983).

329. *Vault Corp. v. Quaid Software Ltd.*, 847 F.2d 255 (5th Cir. 1988).

330. *RAV Communications v. Philipp Brothers*, 1988 Copyright L. Dec. (CCH) ¶ 26,273, at 21,780 (S.D.N.Y. April 13, 1988).

331. *Foresight Resources Corp. v. Pfortmiller*, 719 F. Supp. 1006 (D. Kan. 1989).

332. CONTU REPORT, *supra* note 128, at 13-14.

333. 17 U.S.C. § 117 (1988) (reproduced at note 138, 140 and accompanying text).

334. *Vault Corp. v. Quaid Software Ltd.*, 847 F.2d 255 (5th Cir. 1988).

335. *RAV Communications v. Philipp Brothers*, 1988 Copyright L. Dec. (CCH) ¶ 26,273, at 21,780 (S.D.N.Y. April 13, 1988).

336. Only federal actions are viable. Any state sponsored statutes in the copyright area run the risk of being preempted by federal law. *See, e.g., Vault*, 847 F.2d at 271.

337. The following is a proposed statute for addressing this problem in the area of shrink-wrap licenses. It is based on the Louisiana License Act (LA. REV. STAT. ANN. § 51:1962-64 (West 1987), held preempted by federal copyright law. *Vault*, 847 F.2d at 271.

of the developed licenses.³³⁸

The problem with the first proposal is that it does not address the problem of an entrepreneur who legitimately licenses a program, modifies it for "internal use," and then markets his know-how to other licensees.³³⁹ According to the CONTU Report, this is one of the situations the statute was designed to prevent.³⁴⁰

Another concern with the first proposal is that a critical factor in the formulation of a statute is that it contain a clear definition of what constitutes "internal use." Given the infinite mutability of the industry, to say nothing of the innovation shown in infringement, the difficulties involved in clearly articulating permitted and forbidden uses are significant. This suggests that relying on Congress' ability to successfully create more precise language in the copyright statutes might be futile.

Self-help has an advantage in that it places the considerable burden of finding adequate protection provisions on the market participants themselves. By allowing many different provisions to be developed and tested in the market, it would permit an evolutionary process which would result in an adequate solution.

There is, of course, a genuine risk inherent in authorizing

(A) One who acquires a copy of a program will be deemed to have accepted the terms of a license agreement by opening the package or using that copy provided that the licensing agreement is affixed prominently to the package or is otherwise clearly communicated to the person acquiring the copy.

(B) If the licensor retains title to copies of the program licensed, the licensor may include the following provisions in his license:

- 1) prohibition or limitation of copying the original copy of the program for any purpose other than backup or archival storage;
- 2) limitations on the purposes for which copies of the program can be made;
- 3) limitations on the purposes for which copies of the program can be used or adapted;
- 4) prohibition or limitation of rights to modify and/or adapt the program in any way, including, without limitation, prohibitions on viewing, analyzing, translating, reverse engineering, decompiling, disassembling, and/or creating derivative works based on the program; and/or
- 5) prohibition or limitation of the right to distribute copies of the program.

In the event that the license limits copying the program such limitation may not impair use of the program for business purposes internal to the customer.

338. With this approach, § 117 would remain as currently enacted. The concept of ownership could be used as the first test in determining control of the adaptation right.

339. This is just a variation of the *Hubco* strategy. See *supra* notes 257-61 and accompanying text.

340. CONTU REPORT, *supra* note 128, at 13.

such self-help. Giving developers control may result in oppressive licensing provisions which place unreasonable restrictions on the rights of users. While this risk exists, it is countered by two forces. First, there is the structure of the marketplace. With its many competitive entrepreneurs, all jostling for a market share, a program developer who uses oppressive provisions will be muscled out of the market by other developers who are willing to take a more reasonable position. In fact, given the competition, the result is more likely to be the general use of licenses with no more than minimal protection provisions. Second, articulate and powerful industry groups exist which counter-balance the developers interests. These groups have already shown their ability to protect their rights ridding themselves of unwanted provisions.³⁴¹

On balance, relying on the market forces to shape the required language seems a more viable approach. If nothing else, developers and their licensees have an understanding of the problems involved that Congress lacks.

VI. Conclusion

The purpose of copyright law is to assure economic protection for authors in order to encourage them to produce their works for the benefit of society.³⁴² For a program developer, the need for such protection is not theoretical; program piracy has reached significant proportions.³⁴³

Licenses are often employed by developers to protect their assets. Their provisions delineate the areas the developers wish to protect. In the ten years since the current statute was amended, a number of cases have been decided which test those boundaries. Some courts have agreed with developers. Others are more restrictive. Still others would suggest that such boundaries are unenforceable. Industry dissatisfaction and concern with the results of this evolution is considerable.³⁴⁴

341. See *supra* note 69.

342. See *supra* note 3 and accompanying text.

343. See *supra* note 66 and accompanying text.

344. See, e.g., S. Peterson, *Ashton-Tate President Calls for Software Law*, COMPUTER SYSTEM NEWS, May 22, 1989, at 4 (categorizing copyright law as "inadequate", ADAPSO called for the development of a new law); Lewis, *When Computing Power is Generated by the Lawyers*, N.Y. Times, July 22, 1990, at F4, col. 2 (industry executives

It is not surprising that the 1980 statutes are no longer fully in line with marketplace requirements. They were developed at a time when the current structure of that market was not fully formed.³⁴⁵ Even the experts who formulated these statutes suggested that their work be viewed not as a final product, but as something that should be continually reviewed and refined.³⁴⁶ Therefore, if copyright protection is to continue to be useful in the programming industry, alternatives must be sought to bring the law and the marketplace into alignment.

One alternative would be to allow the marketplace itself to find the acceptable limits of license protection. In the absence of this, or other such action, the viability of licenses as a means of protection seems uncertain.

If the existing structure cannot be repaired by the above alternatives or by other proposals, then it seems likely that the programming industry will be forced to use other, more burdensome means to protect its assets.³⁴⁷ The associated costs may force many of the smaller players out of the market.

The programming industry has been successful precisely because of its intensely competitive, entrepreneurial nature. It would be unfortunate if these characteristics, and the growth they foster, were to be limited by a failure to address a requirement identified a decade ago — the need to continually update the law to match an ever changing environment.

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fear that the results of the court decision in *Lotus Development Corp. v. Paperback Software International* will have a chilling effect on product development).

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

346. Noting the kaleidoscopic, if not chaotic, status of computer and software technology, CONTU recommended in its report that "[a]ny legislation enacted as a result of these recommendations should be subject to a periodic review to determine its adequacy in the light of continuing technological change." CONTU REPORT, *supra* note 128, at 2. The commission went on to specify that "[t]his review should especially consider the impact of such legislation on competition and consumer prices in the computer and information industries and the effect on cultural values of including computer programs within the ambit of copyright." *Id.*

347. For example, it could use patents or technological solutions. See *supra* notes 67 & 69.

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