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**APPLE COMPUTER, INC. v. FRANKLIN
COMPUTER CORPORATION PUTS THE BYTE
BACK INTO COPYRIGHT PROTECTION FOR
COMPUTER PROGRAMS**

I. INTRODUCTION

A. The Problem: Protection for Computer Software

The computer is becoming more a part of our lives, from leisure to business, education and science. For a computer to perform such varied tasks, programs must be written. The need for these programs has created an enormous industry for their development, sales, and implementation, and, as a consequence, there is a need by the creators of software to protect their proprietary interests.¹ Because the development of a computer program is so costly, the unlicensed use and sale of such software deprives its owners of rightful profits and decreases the incentive to invest in the development of programs.² Thus, while some form of reliable legal protection should be available to proprietors of software, the traditional legal remedies found in copyright, patent and trade secret have been questioned as to whether they guarantee effective protection against misappropriation.³

While the law has developed in favor of protection for computer software, until recently there has been substantial argument over which type of protection should govern the various phases and types of computer programs.⁴ The Third Circuit's decision in *Apple Computer, Inc. v. Franklin Computer Corporation*⁵ is significant because it held that all computer pro-

1. Software is the generic name for programs.

2. *Apple Computer, Inc. v. Formula International, Inc.*, 562 F. Supp. 775, 781-82 (C.D. Cal. 1983), *aff'd*, No. 83-5875, slip op. (9th Cir. Feb. 8, 1984) [hereinafter cited as *Formula*]; Final Report of the National Commission on New Technological Uses of Copyrighted Works 10-11 (July 31, 1978) (available in Golden Gate University School of Law Library) [hereinafter cited as *CONTU Report*].

3. See *infra* note 7. There is the ever-increasing problem of knowing when a program has been misappropriated. Larson, *Stiffened Software-Copyright Protection By the Court Isn't Expected to Thwart Pirates*, WALL. ST. J., Sept. 6, 1983, at 2, col. 2.

4. See *infra* text accompanying notes 58-95, 107-122.

5. 714 F.2d 1240 (3d Cir. 1983) [hereinafter cited as *Franklin*].

grams, whether expressed in object code embedded in ROM or expressed as an operating program, are copyrightable subject matter.⁶ Thus, by granting copyright protection to all programs, the *Franklin* opinion has helped stabilize copyright law in relation to computer software and has allowed copyright to become the most effective, most easily obtainable, and most preferred form of legal protection for computer programs.⁷

6. *Id.* at 1253-54. See *infra* text accompanying notes 11-29 for an explanation of these computer terms.

7. Trade secret protection is not as effective as copyright since if the program's content is discovered by another and publicly displayed, trade secrecy ends. Most computer programs are mass distributed to the public for use in their own computers. The user can easily view the program instructions and, thus, the content of the program is no longer kept secret. This rules out trade secrecy protection for a large segment of the computer software market. The software proprietor who desires trade secret protection is usually limited to signing personal licensing agreements with a small identified user market. Brief for Amicus Curiae Association of Data Processing Service Organizations, Inc. at 6, *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240 (3rd Cir. 1983) [hereinafter cited as ADAPSO Brief]. See Keplinger, *Computer Software—Its Nature and Its Protection*, 30 EMORY L.J. 483, 492 (1981) for a discussion on trade secrecy protection.

Likewise, patent protection could extend to computer software if the program were characterized as an idea or a process, but such a program would have to meet the rigorous tests of utility, novelty, and non-obviousness to be patentable. This is a stringent standard applied by the Patent Office which very few ideas can meet. Even if a program does meet this test, it has not yet been settled in the courts whether computer programs are even patentable. *Franklin*, 714 F.2d at 1251. In *Diamond v. Diehr*, 450 U.S. 175 (1981), the United States Supreme Court held only that a patent invention was not unpatentable because it used a computer program. See *infra* text accompanying notes 86-93. Programs in general are not considered to be ideas; however, if there are so few ways to express an idea, so that to protect the expression would also protect the idea, the expression is considered to have merged with the idea and patent protection is appropriate.

Patent is also an unmanageable form of protection, for a computer program is constantly revised in order to "debug," improve, or incorporate new features. A new patent may have to be filed after every major revision. As a consequence, this slows down the development of new programs and discourages upgrading them. Also, it takes several years between the time the program is registered and a status of patent is granted. During this time, legal remedies are not available, and by the time the patent is granted, the program will have almost certainly gone through a revision. Copyright, on the other hand, allows the new revision to be separately copyrighted the instant it is fixed in a tangible medium, and enforcement by court order becomes possible when a copy is filed with the Copyright Office. Therefore, legal remedies are instantly available to the owner of a copyrighted program and when actual injury is difficult to prove, copyright provides a statutory damage award for copyright infringement regardless of whether there was actual monetary damage. Thus, copyright may be the only chance one has to recover a monetary damage award and to receive immediate injunctive relief.

In addition, under the Copyright Act of 1976, 17 U.S.C. section 302, copyright protection exists for the life of the author plus fifty years, and if the programmer has been hired to create the work, protection extends to seventy-five years from the date of the original publication or 100 years from the date of the original creation of the program. In contrast, patent will protect a computer program for only seventeen years and limits the

This Note presents the areas in which the copyrightability of a computer program has been questioned and it explains the reasoning used by the Third Circuit in *Franklin* to reject arguments that not all computer programs are copyrightable.⁸ Although there is no longer any doubt whether a computer program may be the subject of copyright, fundamental issues involved in copyrighting a work may pose barriers to a program being protected.⁹ These issues will be discussed in light of the Third Circuit's opinion in *Franklin* and the future directions which copyright law may take.¹⁰

B. *The Logistics of Computer Software*

To grasp software protection issues it is necessary to understand the computer concepts behind the debate. "Computer hardware" is the "mechanical, magnetic, electrical, and electronic parts" to a computer,¹¹ made up of the central processing unit (CPU), which does the actual processing of the programs and data, and peripheral devices which input, output and store this information.¹² In contrast, "computer software" refers to the

right of another to independently develop the same program based on the same idea, while copyright allows competitors to develop the same program independently.

Internationally, patents are not often recognized and when they are, a patent must be separately obtained in that country according to their procedures. In contrast, copyright automatically protects the copyrighted work in almost every industrialized nation. ADAPSO Brief, *supra*, at 7-9. See Root, *Protecting Computer Software in the '80's: Practical Guidelines for Evolving Needs*, 8 RUTGERS COMPUTER AND TECHNOLOGY L.J. 205, 225-230 (1981); Keplinger, *supra* note 7, at 484-493, for a discussion of the recent United States Supreme Court decisions on patent protection. See CONTU Report, *supra* note 2, at 16, where in analyzing the protection provided by patent, trade secret, and unfair competition, CONTU stated that these forms of protection inhibit the dissemination of information and restrict competition to a greater extent than copyright.

8. See *infra* text accompanying notes 58-100.

9. See *infra* note 126 and accompanying text.

10. See *infra* text accompanying notes 123-126.

11. H. KATZAN, JR., INTRODUCTION TO COMPUTERS AND DATA PROCESSING 23 (1979).

12. J. FRATES & W. MOLDRUP, INTRODUCTION TO THE COMPUTER: AN INTEGRATIVE APPROACH 96 (1980).

Presently, a program can be input by means of either a keyboard terminal, a punched card reader, a punched tape reader, a magnetic tape or disk unit, a magnetic character reader, or an optical scanner. *Id.* The information is output by using either a printer device or the same devices that were used to input the information. *Id.* at 99. Audio input and output devices are being developed. R. VERZELLO & J. REUTTER, III, DATA PROCESSING SYSTEMS AND CONCEPTS 152 (1982).

Information is either stored internally, linked directly to the CPU in a magnetic core, on magnetic film or on monolithic memory chips, or outside the CPU in an auxiliary or external storage device. Auxiliary storage devices, such as magnetic disks, tapes,

set of instructions, or the "program," which the programmer writes in order to tell the computer what to do; the software makes the hardware run to solve a given problem.¹³ Thus, computer hardware is no more than idle machine equipment with the potential to perform actual processing of given instructions once a software program has been input into the computer hardware.¹⁴

There are two types of computer software: "operating programs" which direct the internal operations of the computer, and "application programs" which direct the computer to solve specific user problems.¹⁵ The function of the operating program is to control the execution of application programs and allow the hardware to be utilized efficiently.¹⁶ Thus, when an application program is written, the programmer need only concern himself with setting up the instructions to solve a specific user-oriented problem, such as producing images on a video screen or calculating a mathematical problem. An operating system program, a type of operating program, enables the computer to schedule work in the most efficient manner possible by supervising the overall operation of the computer, controlling the input and output devices, controlling the flow of the program or data through the computer, and managing where the program or data will be stored and retrieved when needed. The programmer is thereby

drums, film or cards are located outside the CPU, but are connected to it, while external storage devices are not even connected to the CPU. Common external memory devices are floppy disks, punched cards, paper tape, magnetic tape, and magnetic disks. J. FRATES & W. MOLDRUP, *supra* at 97. Storage devices are also referred to as memory devices. See R. VERZELLO & J. REUTTER, III, *supra* at 193-222, for more detail.

13. H. KATZAN, JR., *supra* note 11, at 83; J. FRATES & W. MOLDRUP *supra* note 12, at 241. CONTU has defined a computer program as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." CONTU Report, *supra* note 2, at 12. This was the definition later adopted by the legislature in the Act of December 12, 1980, Pub. L. No. 96-517, 96th Cong., 94 Stat. 3015, 3028 (codified in 17 U.S.C. § 101 (1980)), see *infra* text accompanying notes 36-37.

Do not confuse an algorithm with a program. An algorithm is a specific set of rules for solving a problem, while a program is a set of instructions open to variation which is written in a specially formulated language to achieve the programmer's desired result. A computer program can be comprised of a variety of algorithms. J. FRATES & W. MOLDRUP, *supra* note 12, at 427-428.

14. R. VERZELLO & J. REUTTER, III, *supra* note 12, at 230; J. FRATES & W. MOLDRUP, *supra* note 12, at 242.

15. J. FRATES & W. MOLDRUP, *supra* note 12, at 242. These terms are also referred to as *applications software* and *operations software*. *Id.*

16. *Id.* at 240.

relieved of these "housekeeping" functions.¹⁷

Software is usually first written in source code. Source code is known as a "high-level" computer language because it is in an English-like symbolic form. Consequently, by writing the set of instructions in source code, the programmer's job is greatly simplified. There are several hundred such high-level programming languages, such as FORTRAN, BASIC, COBOL and PASCAL.¹⁸ Next, the assembler-compiler program (also part of the operations software) translates the source code into "machine language," a combination of "ones" and "zeros" known as the object code. The assembler language takes the English-like source code and converts it into its machine language equivalent.¹⁹ Finally, the object code, the binary form of the program, communicates directly with the computer hardware by translating the machine language into a series of electrical impulses allowing the computer to solve the problem.²⁰

For example, the word ADD is a symbolic version of a program instruction in source code. The assembler-compiler program converts the mnemonic symbol ADD into its binary equivalent of 0001. The translated version 0001 is now in object code. The binary symbol 0001 will then send an electrical impulse to the CPU telling the computer to add. When the processing of the program is complete, a similar process occurs to convert the program's results back into English-like readable form. Note, however, that each phase of the program, whether in source code or object code, is an accurate rendition of the computer program with the capacity to be printed out and read.²¹ The ability to understand the writing, whether it be in source code or object code, depends on the training of the reader.²²

17. *Id.* at 242-243.

18. R. VERZELLO & J. REUTTER, III, *supra* note 12, at 260. Traditionally, the first phase was the development of a flow chart; a schematic presentation of the program's logic or the steps involved in order to solve the problem. Today, since programmers use interactive keyboards with terminal screens, it is rarely necessary for a programmer to work the problem through this stage. If flow charts are used, they are reduced to source code by the programmer.

19. *Id.* at 262. Although it is a tedious task, a program can be written in object code.

20. *Id.* at 260-262.

21. Koch, *Copyright-Intellectual Property in the Information Age*, 21 JURIMETRICS J. 345, 353 (1980-81).

22. *Apple Computer, Inc. v. Franklin Computer Corp.*, 545 F. Supp. 812, 821 (E.D. Pa. 1982), *rev'd*, 714 F.2d 1240 (3rd Cir. 1983).

Often computer programs, while in object code, are imprinted onto silicon chips and stored internally within the CPU. This saves one the trouble of copying the program from the computer's memory banks into the CPU each time the program is needed and is especially helpful with programs that need to be run frequently or quickly.²³ This memory device is referred to as Read Only Memory (ROM), because it is a particular microcircuit configuration on a silicon chip that can hold an object code program permanently so that the program cannot be changed or erased.²⁴

Unlike ROMs, Random Access Memory (RAM), another type of memory device, allows the stored programs or data to be altered as desired.²⁵ The user can read the program into the memory, read it back out, and change or erase it at will.²⁶ When the program is in this RAM state it is volatile, meaning that when the power to the device is turned off, all the information contained within the RAM is lost. ROM, on the other hand, is nonvolatile because the program has been imprinted onto the memory chip.²⁷

When the computer program is "in ROM," that is, when the software is placed on this hardware element, the configuration is sometimes referred to as "firmware," so named because the object code program is made "firm" by imprinting it onto the ROM chip.²⁸ The term firmware is misleading, insofar as it implies that programs in ROM are different than programs in RAM. ROM can be programmed in the same languages and with

23. R. VERZELLO & J. REUTTER, III, *supra* note 12, at 181.

24. J. FRATES & W. MOLDRUP, *supra* note 12, at 353-354; R. VERZELLO & J. REUTTER, III, *supra* note 12, at 180. Programmable Read Only Memory (PROM) is a similar memory device, but differs from ROM in that the program is placed on the silicon chip after its manufacture. Like ROM, once the program is imprinted onto the PROM the program cannot be changed or erased, but there are also Erasable Programmable Read Only Memory devices (EPROM) which do allow the program to be erased or reprogrammed. These are all ROMs of one sort or another and for simplicity they will all be referred to as "ROMs." See Franklin, 714 F.2d at 1243, citing the lower court, 545 F. Supp. at 813.

25. J. FRATES & W. MOLDRUP, *supra* note 12, at 353-354; R. VERZELLO & J. REUTTER, III, *supra* note 12, at 181.

26. J. FRATES & W. MOLDRUP, *supra* note 12, at 353.

27. *Id.*

28. M. Carrington & J. Pooley, Advanced Business Law Series Protection of Technology 20 (Jan./Feb. 1983) (California Continuing Education of the Bar Program Material).

the same instructions as RAM.²⁹ The only essential difference between the two is that ROM is a nonvolatile memory device and RAM is volatile.

The overwhelming majority of the courts, including the Third Circuit in *Franklin*, have interpreted Congress' directive under the Federal Copyright Act to include all computer programs as copyrightable. In order to understand how the courts have come to this conclusion, a brief discussion of the evolution of the Copyright Act as it relates to computer programs is necessary.³⁰

C. *Historical Overview*

In 1976, Congress wrote a comprehensive revision of the Copyright Act of 1909,³¹ but the new act did not specifically address what copyright protection was to be afforded computer programs.³² This was because the National Commission on New Technological Uses of Copyrighted Works (CONTU), created by Congress to study the matter of copyright protection for computer programs,³³ had not completed its study.³⁴ Therefore, com-

29. *Id.* See Kirchner, *Not Eligible for Patent Honeywell Firmware is Software: U.S. Brief*, *COMPUTERWORLD*, July 21, 1980, at 10, who points out that the United States Patent and Trademark Office and Court of Customs and Patent Appeals considers that firmware is software, rather than being considered something in between software and hardware.

30. For a detailed review on the history of the issue, see Comment, *Protection of Proprietary Rights in Computer Programs: A "Basic" Formula for Debugging the System*, 57 *ST. JOHN'S L. REV.* 92 (1982); Rose, *Protection of Intellectual Property Rights in Computers and Computer Programs: Recent Developments*, 9 *PEPPERDINE L. REV.* 547 (1981-1982); Keplinger, *Computer Software—Its Nature and Its Protection*, 30 *EMORY L.J.* 483 (1981); Root, *Protecting Computer Software in the '80's: Practical Guidelines for Evolving Needs*, 8 *RUTGERS COMPUTER & TECHNOLOGY L.J.* 205 (1980-1981); Koch, *Copyright-Intellectual Property in the Information Age*, 21 *JURIMETRICS J.* 345 (1980-1981); Koenig, *Software Copyright: The Conflict Within CONTU*, 27 *BULL. COPYRIGHT SOC'Y OF THE U.S.A.* 340 (1980).

31. Act of October 19, 1976, Pub. L. No. 94-553, 90 Stat. 2541 (codified as 17 U.S.C. §§ 101-810) [hereinafter cited as the 1976 Act].

32. CONTU Report, *supra* note 2, at 1. See S. REP. No. 473, 94th Cong., 1st Sess. R. (1975); H. R. REP. No. 1476, 94th Cong., 2d Sess. R. (1976); H.R. REP. No. 1733, 94th Cong., 2d Sess. R. (1976), where Congress considered the matter and decided that it needed more information.

33. Act of December 31, 1974, Pub. L. No. 93-573, section 201, 88 Stat. 1873 (1974).

34. CONTU Report, *supra* note 2, at 1; Koenig, *supra* note 30, at 340.

CONTU was created by the 93rd Congress in 1974, through the Library of Congress, as part of the effort to revise the present copyright laws. CONTU was to make recom-

puter programs were not explicitly defined as copyrightable under the 1976 Act, and section 117 was enacted to maintain past copyright law as it related to the scope of protection to be accorded copyrighted works when input into a computer.³⁵

recommendations for changes in copyright law or procedure that were found necessary to assure public access to copyrighted works used in conjunction with computer and machine duplication, and to provide recognition of the rights of copyright owners. CONTU Report, *supra* note 2, at 1. The eleven members of CONTU were appointed by the President, and were to be composed of authors and other copyright owners, users of copyrighted works, and the general public. At least one member was to be an expert in consumer protection affairs.

CONTU studied two broad areas involving computers and copyright: the creation of new works with computer assistance and the use of copyrighted works in conjunction with computers. In relation to the latter category, CONTU considered the placement into computers of any copyrighted works, the use of automated data bases, and *copyright protection for the intellectual property in computer programs*. CONTU Report, *supra* note 2, at 9. CONTU recognized the importance of making copyright an available means of protection for computer programs. CONTU Report, *supra* note 2, at 11. On July 31, 1978, CONTU submitted its recommendations in a final report to Congress. See *infra* text accompanying notes 36-40.

35. Franklin, 714 F.2d 1240, 1247 (3rd Cir. 1983); Tandy Corp. v. Personal Micro Computer, 524 F. Supp. 171, 174-75 (N.D. Cal. 1981) [hereinafter cited as Tandy]. *Accord* Williams Electronics, Inc. v. Artic International, Inc., 685 F.2d 870, 877 (3rd Cir. 1982) [hereinafter cited as Williams].

This version of section 117 reads:

Scope of exclusive rights: Use in conjunction with computers and similar information systems.

Notwithstanding the provisions of sections 106 through 116 and 118, this title does not afford to the owner of copyright in a work any greater or lesser rights with respect to the use of the work in conjunction with automatic systems capable of storing, processing, retrieving, or transferring information, or in conjunction with any similar device, machine or process, than those afforded to works under the law, whether Title 17 or the common law or statutes of a state, if in effect on December 31, 1977, as held applicable and construed by a court in an action brought under this title.

17 U.S.C. § 117 (1976), *repealed by* Act of December 12, 1980, Pub. L. No. 96-517, 94 Stat. 3015 (1980), (codified as 17 U.S.C. § 117 (1980)). See *infra* note 38 for new section 117.

The Copyright Office was originally uncertain whether computer programs were to be afforded copyright protection, but the Office had a policy of resolving doubtful issues in favor of registration. United States Copyright Office, *Announcement*, 11 BULL. OF THE COPYRIGHT SOC'Y OF THE U.S.A. 361 (1964). Thus, in 1964, the Copyright Office began to accept computer programs for copyright registration. The Office, however, applied its "Rule of Doubt" policy to all registered programs. The Rule of Doubt permitted the registration of a computer program as a copyrightable work when there was no law on the subject, but the Copyright Office advised the author that the legitimacy of the registration was in doubt. Bigelow, *Special Report: PTO Issues Guidelines for Software Examinations; Copyright Office Finalized Notice Rules, Objects to Object Code*, 8 No. 6 COMPUTER LAW AND TAX REPORT 4 (1982). Bigelow explains that the Copyright Office will not accept the object code program as the filed registered copy if a source code copy

On December 12, 1980, Congress amended the 1976 Act to include CONTU's recommendations,³⁶ specifically the addition of CONTU's definition of a computer program to section 101³⁷ and the repeal and replacement of old section 117 with entirely new language addressing the rights of computer program owners to make back-up and archival copies.³⁸ The legislature did not

can be made and filed. This is due to the difficulty the copyright examiners have in trying to decide whether a program contains copyrightable authorship when the program is in all ones and zeros. Prior to this rule, there had been a tendency to file the object code, since all filed copies can be examined by the public, computer software proprietors did not want their programs available to be easily read by their competitors. When a copy of the source code program is unavailable, or the proprietor is unwilling to file it in source code, the Copyright Office will accept the object code program as the registered copy to be filed "upon receipt of a letter from the applicant that the work as deposited contains copyrightable authorship . . . [i.e.] that the work is original and not a copy of someone else's program." *Id.* If the object code is filed, the Copyright Office applies their Rule of Doubt to the program. *Id.* The Copyright Office has special procedures to prevent someone from viewing the source code in its entirety, such as blocking out every third program instruction.

36. Act of December 12, 1980, Pub. L. No. 96-517, 94 Stat. 3015 (1980) [hereinafter cited as the 1980 Amendment]; for a discussion of its passage through Congress, see Keplinger, *supra* note 30, at 502.

37. 1980 Amendment, *supra* note 36, at 3028 (codified in 17 U.S.C. § 101 (1980)). See *supra* note 13, for CONTU's definition of a computer program.

38. 1980 Amendment, *supra* note 36, at 3028 (codified in 17 U.S.C. § 117 (1980)). See *infra* text accompanying note 65, where the Third Circuit in *Franklin* found that the language of new section 117 indicates that programs are to be copyrightable. 714 F.2d 1240, 1248 (3rd Cir. 1983).

New section 117 allows program copyowners to make certain program modifications and back-up copies for operational and archival purposes, and clarifies transfer provisions and rights when an owner of a copyrighted work leases, sells, or transfers his program and any additional copies that were made from it. New section 117 reads:

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

(1) that such a new copy or adaptation is created as an essential step in the utilization of the computer program in conjunction with a machine and that it is used in no other manner, or (2) that such new copy or adaptation is for archival purposes only and that all archival copies are destroyed in the event that continued possession of the computer program should cease to be rightful.

Any exact copies prepared in accordance with the provisions of this section may be leased, sold, or otherwise transferred, along with the copy from which such copies were prepared, only as part of the lease, sale, or other transfer of all rights in the program. Adaptations so prepared may be transferred only with the authorization of the copyright owner.

17 U.S.C. § 117 (1980).

See Boorstyn, *Copyrights, Computers and Confusion*, 63 J. PAT. OFF. Soc'y 276

debate its acceptance of CONTU's recommendations as an amendment to the Copyright Act, but found that CONTU's recommendations clarified the 1976 Act with respect to programs and thereby eliminated confusion on the legal status of computer software.³⁹ CONTU's majority position accordingly reveals the legislative intent behind the 1980 Amendment — that all computer programs be explicitly considered the proper subject matter of copyright.⁴⁰

However, it was unnecessary to amend the statutory language to list computer programs as copyrightable works; they were already copyrightable under the 1976 Act for three reasons.⁴¹ First, the legislature expressly considered a computer program to be included within the definition of a "literary work," one of the seven categories of copyrightable "works of authorship."⁴² Second, the doctrine of *White-Smith Publishing*

(1981), in which the author points out that the language of new section 117 is confusing. The section only extends the right to make a copy or adaptation to the "owner" of a program copy, whereby the owner must destroy the archival copy or adaptation when use of the purchased copy ceases to be "rightful." It is unclear under what circumstances the owner of the program copy may acquire possession of the program itself and how that possession could become wrongful. As well, only the archival copy is required to be destroyed, but the "use" copy, which may have been made to assist the purchased copy in running within the computer, is not required to be destroyed. The reason for this distinction is not explained. Furthermore, a distinction is drawn between "exact" copies and adaptations. Under new section 117 "exact" copies can only be transferred when all rights in the owners purchased copy are transferred. This requirement is to prevent the sale of the owned copy while the exact copy of it is retained and used to make additional copies. This is in conflict with 17 U.S.C. section 109(a), which authorizes the owner of a copy to sell or otherwise dispose of copies. It would seem logical to assume that the owner may not sell the owned copy and keep the exact copy for use, even in view of section 109(a), but this is not made clear. Adaptations, on the other hand, are transferable, but only with the copyright owner's approval. *See also*, NIMMER, TREATISE ON THE LAW OF LITERARY, MUSICAL AND ARTISTIC PROPERTY, AND THE PROTECTION OF IDEAS, Section 8.08 *Limitations on the Reproduction Right—Computer Uses* 8-103-8-110 (1983).

39. 126 CONG. REC. S30365 (daily ed. Nov. 20, 1980) (statement of Rep. Bayh); 126 CONG. REC. S30366 (daily ed. Nov. 20, 1980) (statement of Rep. Dole); 126 CONG. REC. H29895 (daily ed. Nov. 17, 1980) (statement of Rep. Kastenmeier).

40. CONTU Report, *supra* note 2, at 12.

41. *See* H.R. REP. No. 1476, 94th Cong., 2d Sess. 51-54, *reprinted in* 1976 U.S. CODE CONG. & AD. NEWS 5659, 5664-68; S. REP. No. 473, 94th Cong., 1st Sess. 50-54 (1975), for the legislative language which supports this.

42. The term "literary works" does not connote any criterion of literary merit or qualitative value; it includes, catalogs, directories, and similar factual, reference, or instructional works and compilations of data. It also includes computer data bases, and computer programs to the extent that they incorporate authorship in the programmer's expression of original

Co. v. Apollo Co.,⁴³ requiring that copyrightable works be eye-readable, was abrogated⁴⁴ and the wording of the Act was changed to read that copyright protection subsists in works that can be "perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device."⁴⁵ Thus, even if a computer program was permanently stored in the computer on a ROM chip, and was therefore not directly eye-readable, it still could receive copyright approval on the basis that it "could be perceived, reproduced, or otherwise communicated" with the aid of an output device, such as a terminal screen or a printer.⁴⁶ Finally, a computer program meets the two requirements of the 1976 Act which allows a work to be copyrighted, for

ideas, as distinguished from the ideas themselves.

H.R. REP. No. 1476, 94th Cong., 2d Sess. 54, reprinted in 1976 U.S. CODE CONG. & AD. NEWS 5659, 5667.

43. 209 U.S. 1 (1908) [hereinafter cited as *White-Smith*]. In the *White-Smith* case, a pianola roll, which reproduced a copyrighted musical composition on the piano, was held by the United States Supreme Court not to constitute copyright infringement. The Court explained that in order for the copyrighted work to be protected under the copyright laws, the pianola roll copy must be in a form that can be perceived and understood by the human eye. *Id.* at 17-18.

44. The language of the 1976 Act was "intended to avoid the artificial and largely unjustifiable distinctions, derived from cases such as *White-Smith Publishing Co. v. Apollo Co.* . . ." H.R. REP. No. 1476, 94th Cong., 2d Sess. 52, reprinted in 1976 U.S. CODE CONG. & AD. NEWS 5659, 5665; S. REP. No. 473, 94th Cong., 1st Sess. 52 (1975). It is worth noting that the Copyright Act of 1909 partially reversed *White-Smith* by allowing copyright for "parts of musical instruments serving to reproduce mechanically the musical work." Maggs, *Some Problems of Legal Protection of Programs for Microcomputer Control Systems*, No. 2 U. ILL. L.F. 453, 461 (1979).

45. H.R. REP. No. 1476, *supra* note 44, at 52, reprinted in 1976 U.S. CODE CONG. & AD. NEWS at 5665; S. REP. No. 473, *supra* note 44, at 52. 17 U.S.C. § 102(a) reads: "(a) Copyright protection subsists, in accordance with this title, in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device . . ." 17 U.S.C. § 102(a) (1976).

Note that all published works must bear a copyright notice that can be "'visually perceived' either directly or with the aid of a machine or device." 17 U.S.C. § 401(a) (1976). Although prior to the 1976 Act only published works could be registered with the Copyright Office, today unpublished computer programs and programs of limited publication which do not bear copyright notice can be registered and protected by the Federal Copyright Act as long as they are fixed in a tangible medium of expression. 17 U.S.C. §§ 301(a), 405(a) (1976).

46. The legislature goes on to say that "it makes no difference what the form, manner, or medium of fixation may be, whether it is in words, in numbers, notes, sounds, pictures, or any other graphic or symbolic indicia, whether embodied in a physical object in written, printed, photographic, sculptural, punched, magnetic, or any other stable form, and whether it is capable of perception directly or by means of any machine or device 'now known or later developed.'" H.R. REP. No. 1476, *supra* note 41, at 52; S. REP. No. 473, *supra* note 41, at 51.

it is an "original work of authorship" when the programmer orders and arranges the program's instructions,⁴⁷ and it is "fixed in a tangible medium of expression" when it is imprinted on a ROM chip or another type of storage device.⁴⁸ The Third Circuit in *Franklin* accepted this reading of the Copyright Act when it held that all computer programs were copyrightable.⁴⁹ The following discussion explains how the court came to this conclusion.

II. DISCUSSION OF THE THIRD CIRCUIT'S OPINION IN FRANKLIN

A. Background

In *Franklin*, the defendant had copied fourteen of Apple's operating programs on ROM and on floppy disks and had used the programs in its ACE 100 microcomputer. This allowed Franklin to manufacture and sell its ACE 100 with the capability of running Apple's application software, as well as the vast quantity of application software written by third parties for the Apple computer.⁵⁰

The district court denied Apple a preliminary injunction against Franklin, finding that Apple had not made the requisite showing of a likelihood of success on the merits,⁵¹ to wit, there remained "some doubt" as to the copyrightability of the programs.⁵² Furthermore, it stated that to grant the preliminary injunction would have caused irreparable harm to Franklin which would exceed any injury suffered by Apple during litigation since the marketing and selling of "Apple-compatible" computers was Franklin's only business.⁵³

Apple moved the district court for reconsideration of its de-

47. Originality simply means that the author has not copied the expression from another. *Bleistein v. Donaldson Lithographing Co.*, 188 U.S. 239, 250 (1903).

48. See *supra* note 45, for the language of section 102(a). See *supra* note 12 and text accompanying notes 23-29, for a discussion on storage devices.

49. See *infra* text accompanying notes 59-72.

50. *Apple Computer, Inc. v. Franklin Computer Corporation*, 714 F.2d 1240, 1242-45 (3rd Cir. 1983). Because Franklin did not have operating program development costs while its computer could run all the same software as Apple's, Franklin could undercut Apple on the price of its microcomputers. *Id.* at 1254.

51. 545 F. Supp. 812, 812 (E.D. Pa. 1982). See also, 714 F.2d at 1242.

52. 545 F. Supp. at 812. See also, 714 F.2d at 1246.

53. 545 F. Supp. at 825. See also, 714 F.2d at 1246.

cision in light of the Third Circuit's opinion in *Williams Electronics, Inc. v. Artic International, Inc.*⁵⁴ The *Williams* case, which was decided three days after the district court's decision, held that object code programs in ROM were copyrightable.⁵⁵ Upon denial of its reconsideration motion, Apple appealed from the district court's opinion.⁵⁶ The Third Circuit held that the district court's denial of Apple's preliminary injunction against Franklin was unwarranted since the district court proceeded under an erroneous view of applicable law.⁵⁷ In coming to this conclusion, the Third Circuit presented four legal issues which will be discussed below.

B. *The Third Circuit Decision in Franklin*

1. A Computer Program Expressed in Object Code is Copyrightable

The Third Circuit stated that apart from a lack of a statutory basis for a finding that object code programs were not copyrightable, its decision in *Williams* had "laid to rest many of the doubts expressed by the district court."⁵⁸ A program expressed in object code was viewed as copyrightable for it was considered to meet section 102's requirement that a copyrightable work be an "original work of authorship" and "fixed in [a] tangible medium of expression."⁵⁹

54. 714 F.2d at 1245. *Williams*, 685 F.2d 870 (3rd Cir. 1982).

55. 685 F.2d at 876-77. In *Williams*, the defendant had copied plaintiff's object code programs in ROM. *Williams* brought suit against Artic for infringing upon *Williams*' copyrights in the audiovisual display of the video game "DEFENDER," and in the game's object code program in ROM. *Id.* at 871.

56. 714 F.2d at 1245.

57. *Id.* at 1242. *Accord* *Apple Computer, Inc. v. Formula International, Inc.*, 562 F. Supp. 775, 785 (C.D. Cal. 1983), *aff'd*, No. 83-5785, slip op. (9th Cir. Feb. 8, 1984).

58. *Id.* at 1247. *Accord*, *Formula*, 562 F. Supp. at 785.

59. 714 F.2d at 1247. *Accord*, *Williams*, 685 F.2d at 877; *Tandy*, 524 F. Supp. 171, 173 (N.D. Cal. 1981).

The Third Circuit in *Franklin* then cited the following sections of the 1976 Act: "Copyright protection subsists, in accordance with this title, in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device." 17 U.S.C. § 102(a) (1976).

"'Literary works' are works, other than audiovisual works, expressed in words, numbers, or other verbal or numerical symbols or indicia, regardless of the nature of the material objects, such as books, periodicals, manuscripts, phonorecords, film, tapes, disks, or cards, in which they are embodied." 17 U.S.C. § 101 (1976).

A work is "fixed" in a tangible medium of expression when its

A program in object code is a "work of authorship," because in passing the 1976 Act the legislature considered it within the category of "literary works."⁶⁰ A literary work was defined in section 101 as a work that can be expressed not only in words, but in "numbers or other . . . numerical symbols or indicia."⁶¹

The court also pointed to the legislative history which confirmed that computer programs were copyrightable under the 1980 Amendment.⁶² The Third Circuit examined the CONTU Report and noted that CONTU had recommended that copyright law be amended explicitly to allow computer programs to be copyrightable.⁶³ Congress then enacted the 1980 Amendment to include CONTU's recommendations, these being a definition of a computer program and the repeal and replacement of section 117.⁶⁴ The court went on to say that since section 117 had been repealed and replaced with entirely new language providing rightful possessors of copies of computer programs with the right to adapt the copies for their own use, "the language . . . by carving out an exception to the normal proscriptions against copying, clearly indicate[d] that programs [were] copyrightable and [were] otherwise afforded copyright protection."⁶⁵ The Third Circuit reiterated that they had considered the issue of copyright protection for computer programs in *Williams* and concluded that the "'copyrightability of computer programs is firmly established after the 1980 Amendment to the Copyright Act.'"⁶⁶

Next, the Third Circuit pointed out that a program in ob-

embodiment in a copy or phonorecord, by or under authority of the author, is sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration. A work consisting of sounds, images, or both, that are being transmitted, is "fixed" for purposes of this title if a fixation of the work is being made simultaneously with its transmission.

17 U.S.C. § 101 (1976).

60. 714 F.2d at 1247. See *supra* note 42 and accompanying text.

61. 714 F.2d at 1249. *Accord*, *Williams*, 685 F.2d at 875; *Tandy*, 524 F. Supp. at 173. See *supra* note 59, for this quotation within the statutory definition of a literary work.

62. 714 F.2d at 1247-1248.

63. 714 F.2d at 1247. See CONTU Report, *supra* note 2, at 1.

64. 714 F.2d at 1247. See notes 36-38 and accompanying text, where the legislature adopted CONTU's recommendations.

65. 714 F.2d at 1248.

66. *Id.* See, *Williams*, 685 F.2d at 875.

ject code does not have to be eye-readable or serve a communicative function by being designed to be read by a human reader.⁶⁷ The legislature had abrogated the doctrine of *White-Smith*⁶⁸ and had changed the statutory language of the 1976 Act to read that a work in any tangible medium of expression need only be “perceived . . . with the aid of a machine or device.”⁶⁹

Finally, the court found that the language adopted by the legislature in the 1980 Amendment to define a computer program as a set of instructions to be used *directly or indirectly* in a computer in order to bring about a certain result, makes it clear that a program in object code is intended to be copyrightable under the Copyright Act, for the object code is what is used directly by the computer in order to bring about the result.⁷⁰

2. A Computer Program Embedded in ROM is Copyrightable

The Third Circuit reaffirmed its conclusion in *Williams* that the embodiment of a program in ROM does nothing more than satisfy the statutory requirement that a copyrightable work be fixed in some tangible medium of expression, for once a program is “fixed,” it can be “perceived, reproduced, or otherwise communicated” with the aid of the computer.⁷¹ When a program is placed onto a ROM chip in order to control the activity of the machine, it therefore does not become a utilitarian object and part of the computer.⁷² Accordingly, the Third Circuit reasserted

67. 714 F.2d at 1248.

68. See *supra* note 43-44 and accompanying text, for an explanation of the case and the legislative language used to abrogate the *White-Smith* doctrine.

69. 714 F.2d at 1248. Accord, *Williams*, 685 F.2d at 877; *Tandy*, 524 F. Supp. at 173. Please note that courts have also applied this reasoning when addressing whether an object code program in ROM can be considered a “copy” under section 101. The ROM is the “copy” for it is a “material object” in which a work such as an object code program can be “fixed” and from which the program can be “perceived, reproduced, or otherwise communicated” with the aid of the computer. *Id.*

70. 714 F.2d at 1248. Accord *Midway Manufacturing Co. v. Strohon*, 564 F. Supp. 741, 750 (N.D. Ill. 1983). See *supra* note 13, for the legislative definition of a computer program.

71. 714 F.2d at 1249. Accord, *Williams*, 685 F.2d at 874; *Tandy*, 524 F. Supp. at 173. See *supra* note 59, for section 102(a) of the 1976 Act.

72. 714 F.2d at 1249. Accord, *Williams*, 685 F.2d at 876; *Tandy*, 524 F. Supp. at 173. See *infra* text accompanying note 107-108, where it is explained where such a proposition first arose.

its holding in *Williams* that programs in object code embedded in ROM are the proper subject of copyright by meeting the statutory requirements of section 102.

3. Computer Operating Programs are Copyrightable

The Third Circuit stated that whether operating programs, as distinguished from application programs, were the proper subject of copyright addressed the "heart" of Franklin's argument since the issue previously had not been raised before the court.⁷³ Franklin contended that operating programs were *per se* uncopyrightable under the principles of *Baker v. Selden*, as codified in section 102(b) of the Copyright Act.⁷⁴ The Third Circuit viewed Franklin's argument as consisting of two principle points: First, that copyright protection extends to only the expression of an "idea," "process," "system," or "method of operation" and not to the use of the system itself or to purely utilitarian uses. Second, that copyright law can be used only to obtain a monopoly over the expression of an idea and not over the idea itself.⁷⁵

"Process," "System," or "Method of Operation"

The court agreed with Franklin that the case of *Baker v.*

73. 714 F.2d at 1249. Although part of the program in *Williams* was an operating program, the issue as to its copyrightability as such was not raised or considered by the Third Circuit. *Id.*

74. 714 F.2d at 1250. In *Baker v. Selden*, 101 U.S. 99 (1879), a "peculiar" system of bookkeeping was set down in a book, including illustrating forms with which to implement the bookkeeping system. The defendant published forms slightly different than plaintiff's but which accomplished the same results. The United States Supreme Court held that copyright protection only extended to the written description in the books, the expression, and not to the actual implementation and use of the bookkeeping methods described, these being ideas. In *Mazer v. Stein*, 347 U.S. 201, 217 (1954), *reh'g denied*, 347 U.S. 949 (1954), the Court restated the rule of *Baker v. Selden*, explaining that copyright infringement can only occur when the expression of another's idea is copied and not when the underlying idea itself has been used. *Accord*, Franklin, 714 F.2d at 1252. In *Mazer*, the Court held that the patentability of a lamp, the base of which was a statuette, does not bar copyright as to the work of art, the statuette itself. 347 U.S. 201, 217 (1954).

Section 102(b) reads: "In no case does copyright protection for an original work 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." 17 U.S.C. section 102(b) (1976).

75. 714 F.2d at 1250.

Selden and section 102(b) prohibit copyrighting an "idea," "process," "system," or "method of operation;" however, it is only the programmer's written instructions which Apple sought to have protected and not the actual method which instructs the computer to perform its operating instructions.⁷⁶ An operating program does not itself become a method or process simply because its instructions may be used to activate the operation of the computer. For example, the instructions in a book may describe the steps needed to activate a machine, but this does not make the book's instructions the actual process which the machine goes through in order to run.⁷⁷ Furthermore, if an operating program could become a method or process merely because it instructs the computer to carry out various processes,⁷⁸ then both application and operating programs would be uncopyrightable since they both instruct the computer to do something; an application program may instruct the computer to prepare a tax return, while an operating program may instruct the computer to translate source code into object code.⁷⁹ Thus, the court found that Franklin's reasoning was inconsistent with its own proposition that only application programs were copyrightable. The court concluded that there was no reason to afford less copyright protection to operating programs.⁸⁰

In addition, the court reiterated the conclusion it reached in the object code context that the mere fact that a program is fixed in ROM and stored within the CPU does not make it a utilitarian object and part of the machine itself.⁸¹ The court discussed Franklin's contention further by pointing out that an operating program can be fixed in any storage device outside the

76. *Id.* at 1250-51. *Accord*, *Apple Computer, Inc. v. Formula International, Inc.*, No. 83-5875, slip op. (9th Cir. Feb. 8, 1984). The *Franklin* court states that "the method would be protected, if at all, by the patent law, an issue as yet unresolved [by] *Diamond v. Diehr*." *Id.* See *supra* note 7, where this is also pointed out as a reason to find copyright a more effective means of protection.

77. 714 F.2d at 1251.

78. *Id.*

79. *Id.* In *Formula*, the district court pointed out that it is the purpose of all computer programs to operate the computer in such a way as to "ultimately produce some useful communication to the user," whether the program directly communicates with the user or "merely direct[s] certain machine functions which eventually result in that expression." 562 F. Supp. 775, 780 (C.D. Cal. 1983), *aff'd*, No. 83-5875, slip op. (9th Cir. Feb. 8, 1984).

80. 714 F.2d at 1251.

81. *Id.*

CPU, such as on floppy disk or magnetic tape, and can be readily called into RAM in order to be read by the CPU.⁸² The Third Circuit rejected Franklin's expansive reading of *Baker v. Selden* that when a copyrightable work is put to a utilitarian use, such as to instruct a computer to carry out various operations, the work will have its copyright invalidated.⁸³ The court found such a reading to have been explicitly rejected by the United States Supreme Court, Congress and CONTU.⁸⁴

Thus, the Third Circuit applied the above analysis and found Apple's computer programs to be the proper subject of copyright.⁸⁵ The court, however, needed to address one more question raised by Franklin — would the extension of copyright protection to Apple's operating programs allow Apple to obtain and hold a monopoly over ideas?

Idea/Expression Dichotomy

As the court pointed out, the legislative history indicates that section 102(b) was intended "to make clear that the expression adopted by the programmer is the copyrightable element in a computer program, and that the actual processes or methods embodied in the program are not within the scope of the copyright law."⁸⁶ Therefore, the court rejected any reading of section 102(b) which would enlarge or contract the scope of copyright protection beyond that set out in *Baker v. Selden*: patent law protects the idea or process while copyright protects only the expression of that idea.⁸⁷

Since the line between the expression of an idea and the

82. *Id.* See *supra* text accompanying notes 11-29 for a description of these computer concepts.

83. 714 F.2d at 1251. *Accord*, *Formula*, 562 F. Supp. at 784.

84. 714 F.2d at 1251-52. The court cited *Mazer v. Stein*, 347 U.S. 201, 218 (1954) to support this conclusion. Congress was considered to have accepted this view, since it wrote into law CONTU's recommendations exactly as given.

85. 714 F.2d at 1254. The Third Circuit Court in *Franklin* cited *Formula*, 562 F. Supp. 775 (C.D. Cal. 1982), *aff'd*, No. 83-5875, slip op. (9th Cir. Feb. 8, 1984), as reaching the same conclusion, and noted that although not discussing the issue, *Tandy*, 525 F. Supp. 171 (N.D. Cal. 1981), and *GCA Corp. v. Chance*, 217 U.S.P.Q. 718 (N.D. Cal. July 12, 1982) both dealt with operating programs where the courts upheld the plaintiff's copyrights. *Id.* at 1252.

86. 714 F.2d at 1252-53.

87. *Id.* at 1252. *Accord*, *Formula*, 562 F. Supp. at 780.

idea itself is difficult to draw, the court recommended that any line drawn in regard to operating programs be a pragmatic one which balances the need for competition with the security of patent and copyright protection.⁸⁸ The court stated that the essential inquiry must be whether the expression and the idea have merged. If there are only one or two ways to express an idea so that to protect the expression will have the effect of protecting the idea itself, then the line between an idea and its expression have merged and copyright protection will be denied.⁸⁹ The court made the line dependent upon a factual determination particular to each specific computer program at issue and not to all operating programs in general.⁹⁰ Therefore, the Third Circuit remanded a determination of this issue in regard to Apple's operating programs.⁹¹

In addition, as long as Apple's operating programs could be written in more than one or two ways which would instruct the computer to carry out its process, the question of whether a program would achieve total compatibility with third party Apple-compatible application software was a commercial objective which was not to be considered by the district court in making an idea/expression merger determination.⁹² If "[t]he idea of one of the operating system programs is, for example, how to translate source code into object code . . . [and] other methods of expressing that idea are not foreclosed as a practical matter, then there is no merger."⁹³

The Third Circuit concluded that as a matter of law all computer programs were the proper subject of copyright, and the district court's denial of Apple's preliminary injunction was

88. 714 F.2d at 1253.

89. *Id.* See *Apple Computer, Inc. v. Formula International, Inc.* No. 83-5875 slip op. (9th Cir. 1984) where this language was relied upon by the Ninth Circuit.

90. *Id.*

91. *Id.* This determination will not be made since Franklin has settled with Apple Computer. *San Jose Mercury News*, Jan. 5, 1984, at 1, col. 1. *But see* *Apple Computer, Inc. v. Formula International, Inc.*, No. 83-5875, slip op. (9th Cir. Feb. 8, 1984) wherein Apple introduced uncontroverted evidence that numerous methods existed for writing operating programs.

92. 714 F.2d at 1253. See, *Formula*, 562 F. Supp. at 782, where the district court found that there were numerous ways in which the operating programs could be written that allowed them to be "98% compatible" with the Apple computer, without the need by the defendant to write or copy the same program which Apple had copyrighted. *Id.*

93. 714 F.2d at 1253.

due to an erroneous view of copyright law.⁹⁴ Furthermore, since the procedural standard used by the district court to deny the preliminary injunction was viewed as inappropriate, the Third Circuit set out the correct considerations that were to be made when granting or denying a preliminary injunction in regard to the copyright law of computer software.⁹⁵

4. The Requirement of a Presumption of Irreparable Harm

The Third Circuit found that the district court had failed to consider the prevailing view that only a presumption of irreparable harm is required to obtain a preliminary injunction. This can be made either through a showing of a prima facie case of copyright infringement or a reasonable likelihood of success on the merits.⁹⁶

The Third Circuit suggested that even without this generally applied presumption, whenever large expenditures of time and money, such as Apple had invested in developing its operating programs, is placed in jeopardy by the competitive advantage gained by an infringer such as Franklin, the irreparable harm requirement needed to support a preliminary injunction is satisfied.⁹⁷ The standard "that the strength of the required showing of irreparable injury varies inversely with the strength of a plaintiff's showing of a likelihood of success on the merits" applies only when copying is minimal or conjectural, and not when copyrighted material essential to a plaintiff's operations is concededly copied.⁹⁸

The district court's finding that Apple had not suffered irreparable harm based upon a determination that a preliminary injunction would have devastating effects on Franklin's business was unacceptable to the Third Circuit. If this were the standard,

94. *Id.* at 1253-54.

95. *Id.* at 1254.

96. *Id.*

97. *Id.* Apple had spent \$740,000 on research and development (excluding the cost of creating or acquiring earlier versions of the programs "in suit" and marketing them) and it had taken forty-six "man-months" in order to produce the programs. *Id.* at 1244. See, *Getting Tough on Software Theft*, BUS. WK., May 1982, at 28, where it is stated that Apple had spent as much as \$50 million on research and development.

98. *Id.* at 1254.

a copyright infringer would structure his business so as to meet the test, whereby the size of the infringer's business would determine the copyright holder's ability to receive prompt judicial redress.⁹⁹ Consequently, the district court's denial of Apple's preliminary injunction was reversed and the case was remanded to the trial court for further determination on the trial issues involved in copyright proceedings.¹⁰⁰

III. ANALYSIS

By holding that all computer programs were copyrightable, the Third Circuit in *Franklin* has set an appellate court precedent since previously only a handful of district courts had ruled on the matter.¹⁰¹ Although these district courts ruled in favor of copyright protection, the district court in *Franklin* had held the converse.¹⁰² While the Third Circuit's decision reaffirmed its opinion in *Williams*, this was only in finding that object code programs in ROM were copyrightable.¹⁰³ Thus, the *Franklin* decision was a higher court ruling in which all arguments against the copyrightability of computer programs were put to rest.

The opinion is of extreme importance to the computer software industry, for had the Third Circuit in *Franklin* affirmed the district court's decision, copyright protection for computer programs would have become senseless. First, programs are often manufactured, sold, and used while they are embedded in ROM in their object code form and, without copyright protection, many of the programs on the market could be copied freely.¹⁰⁴ Second, the exclusion of all operating programs from protection would have diminished the certainty of protection for

99. *Id.* at 1255.

100. *Id.*

101. *Apple Computer, Inc. v. Formula International, Inc.*, 562 F. Supp. 775 (C.D. Cal. 1983), *aff'd*, No. 83-5875, slip op. (9th Cir. Feb. 8, 1984); *Hubco Data Products Corp. v. Management Assistance, Inc.*, 219 U.S.P.Q. 450 (D. Idaho Feb. 3, 1983) (finding that operating programs are copyrightable); *Midway Manufacturing Co. v. Strohon*, 564 F. Supp. 741 (N.D. Ill. 1983); *GCA Corp. v. Chance*, 217 U.S.P.Q. 718 (N.D. Cal. July 12, 1984); *Tandy Corp. v. Personal Micro Computers, Inc.*, 524 F. Supp. 171 (N.D. Cal. 1981), (finding that programs embedded in ROM and object code programs are copyrightable).

102. 545 F. Supp. 812, 812 (E.D. Pa. 1982), *rev'd*, 714 F.2d 1240 (3rd Cir. 1983).

103. See *supra* text accompanying note 58.

104. "[I]f many technical predictions are correct most software may one day take this form [object code program in ROM]." Koch, *supra* note 30, at 353.

application programs since there is no definitive line between the two types.¹⁰⁵ As a consequence of the Third Circuit's reversal of the district court's opinion in *Franklin*, current law provides that all computer programs are copyrightable, no matter what the type or form.¹⁰⁶

The Third Circuit's conclusion that object code programs in ROM are copyrightable followed a line of reasoning set down by the majority of courts which have dealt with the issue. The argument first arose in *Data Cash Systems, Inc. v. JS&A Group, Inc.*,¹⁰⁷ where an Illinois district court stated in dictum that the 1976 Act must be interpreted to apply to a program only in its source code phase, since an object code program when embedded in ROM was a machine part engaged in the computer to be an essential part of the mechanical process.¹⁰⁸ The district court in *Franklin* adopted this reasoning even though commentators and the courts had viewed this dictum to be inaccurate and to have been overruled on appeal by the Seventh Circuit, where the court had stated that neither party briefed this issue nor defended it on appeal.¹⁰⁹ Thus, the Third Circuit's conclusion—that an object code program when embedded in ROM does nothing more than satisfy the statutory requirement of fixation — reaffirms the view previous courts and CONTU have

105. See *infra* notes 78-79 and accompanying text.

106. For these cases see *Franklin*, 714 F.2d 1240 (3rd Cir. 1983); *Williams*, 685 F.2d 870 (3rd Cir. 1982), and *supra* note 101.

107. 480 F. Supp. 1063 (N.D. Ill. 1979), *aff'd* on other grounds, 628 F.2d 1038 (7th Cir. 1980) [hereinafter cited as *Data Cash*]. The plaintiff had manufactured a hand-held computer chess game which had a built-in object code program in ROM. The defendant, according to the court, duplicated the plaintiff's ROM chip and began selling its version of a hand-held computer chess game.

108. *Id.* at 1065-66.

109. 628 F.2d at 1038, 1041 (7th Cir. 1980). For the authorities which found the case overruled see, *Formula*, 562 F. Supp. 775, 784-85 (C.D. Cal. 1983), *aff'd*, No. 83-5875, slip op. (9th Cir. Feb. 8, 1984); *Williams*, 685 F.2d 870, 877 (3rd Cir. 1982); *Midway Mfg. Co. v. Artic International, Inc.*, 547 F. Supp. 999, 1012-13 (N.D. Ill. 1982), *aff'd*, 704 F.2d 1009 (7th Cir. 1983) (where the court expressly discounted the reasoning of its own district court in *Data Cash*); *Atari, Inc. v. North Am. Phillips Consumer Electronics Corp.*, 672 F.2d 607, 617 (7th Cir. 1982); *GCA Corporation v. Chance*, 217 U.S.P.Q. 718 (N.D. Cal. July 12, 1982); *Tandy*, 524 F. Supp. 171, 175 (N.D. Cal. 1981); *Boorstyn, Copyrights, Computers and Confusion*, 63 J. PAT. OFF. SOC'Y 276 (1981); *Bigelow, Federal Court Rules Radio Shack ROM Can Be Protected Under Copyright Law*, 8 COMPUTER LAW AND TAX REPORT, Oct. 1981, at 1, 2; *Rose, supra* note 40, at 565; *Root, supra* note 30, at 222. See NIMMER, TREATISE ON THE LAW OF LITERARY, MUSICAL AND ARTISTIC PROPERTY, AND THE PROTECTION OF IDEAS, Section 2.08 [c] [3] (1978), for an explanation of utilitarian objects.

reached.¹¹⁰ It is an accurate assessment considering that an object code program is separable from the ROM device which holds it and that it is placed onto the ROM only to fix the program in a tangible medium of expression.

From an examination of the copyrightability of computer programs under the 1976 Act,¹¹¹ it is clear that the Third Circuit is accurate in its conclusion that a program in object code meets the two statutory requirements of section 102(a).¹¹² An object code program is an "original work of authorship" for it is a "literary work" and it is "fixed in a tangible medium of expression" when placed onto the ROM device, where it can be perceived, reproduced, or otherwise communicated with the aid of the computer. The court's analysis was similar to that of the Northern California district court in *Tandy Corp. v. Personal Micro Computer*,¹¹³ where it had been adopted by a majority of the courts which have decided the issue.¹¹⁴ The court in *Tandy* stated that

110. See CONTU Report, *supra* note 2, at 21; Williams, 685 F.2d at 876; Midway Mfg. Co. v. Strohon, 564 F. Supp. at 750; Tandy, 524 F. Supp. at 173.

111. See *supra* text accompanying notes 41-48.

112. 714 F.2d at 1253-54.

113. 524 F. Supp. 171 (N.D. Cal. 1981). In *Tandy*, the defendant was alleged to have duplicated the plaintiff's computer program for an input-output routine (an operations software program) which was embodied on a ROM chip. The defendants read out the program, copied it, and then placed the program in their computers for distribution and sale. See *supra* note 69 for the reasoning used in *Tandy*.

114. Williams, 685 F.2d 870 (3rd Cir. 1982); Midway Manufacturing Co. v. Strohon, 564 F. Supp. 741 (N.D. Ill. 1983); GCA Corp. v. Chance, 217 U.S.P.Q. 718 (N.D. Cal. July 12, 1982). See Stern Electronics, Inc. v. Kaufman, 669 F.2d 852 (2nd Cir. 1982); Midway Mfg. Co. v. Artic International, Inc., 547 F. Supp. 999 (N.D. Ill. 1982), *aff'd*, 704 F.2d 1009 (7th Cir. 1983), petition for cert. filed No. 82-1992; Midway Mfg. Co. v. Dirkschneider, 543 F. Supp. 466 (D. Neb. 1981); Midway Mfg. Co. v. Bandai-America, Inc., 546 F. Supp. 125 (D. N.J. 1982); Atari, Inc. v. Amusement World, Inc., 547 F. Supp. 222 (D. Md. 1981); Atari, Inc. v. N. Am. Philips Consumer Electronics Corp., 672 F.2d 607 (1982); Nintendo of America, Inc. v. Elcon Industries, Inc., 564 F. Supp. 937 (E.D. Mich. 1982). In these cases the video games' audiovisual displays were found to be copyrightable because the games' object code programs in ROM met the statutory requirements of copyrightability by being original works of authorship and fixed in a tangible medium of expression. The object code program was seen as a "copy" under section 101, for the ROM was the "material object" in which the program was fixed; the audiovisual work was fixed because it was embodied in a copy which was sufficiently permanent or stable to permit the audiovisual work to be perceived, reproduced, or otherwise communicated. Stern, 669 F.2d at 855-56. Although a game's audiovisual display varies each time it is played depending on the moves of the player, an audiovisual display is an "original work of authorship" since the content of the audiovisual display is not affected by the participation of the player but is determined by the object code program in ROM. 669 F.2d at 856. The audiovisual display is not composed simply of reappearing features determined by the computer program, but the audiovisual display that appears is an

“any other interpretation would render the theoretical ability to copyright computer programs virtually meaningless.”¹¹⁵

In addition to finding object code programs copyrightable under the 1976 Act, the Third Circuit interpreted the 1980 Amendment’s definition of a computer program in order to reaffirm the copyrightability of object code programs.¹¹⁶ In so doing, the court used a more expansive application of the Amendment than previous courts. Previously, new section 117 and the legislative definition of a computer program had been viewed simply as a clarification of legislative intent to include computer programs as copyrightable under the 1976 Act.

As a consequence of reversing the district court and reaffirming its position in *Williams*, the Third Circuit established a uniform rule of law for the copyrightability of object code programs in ROM. This result is consistent with the CONTU Report and legislative intent allowing for an expansive application of copyright law to computer programs.¹¹⁷

Prior to the district court’s opinion in *Franklin*, distinctions between operating programs and application programs had not been made. Although some courts, in the course of deciding the copyrightability of object code programs, had previously upheld copyrights in operating programs, there was only one district court case which had specifically dealt with the issue. In *Apple*

original variation of the computer program, thereby allowing the audiovisual display to be copyrighted separately from the computer program. 669 F.2d at 856.

The National Law Journal, Aug. 1, 1983, at 44, col. 1, points out potential problems with relying solely upon the copyright in a game’s program: the same audio displays may be generated by different programs and software copyright cases are more expensive to prosecute than an audiovisual copyright case. It is wise then to copyright both the game’s audiovisual display and the object code program in ROM. See *id.* for a history of video games and copyright.

115. 524 F. Supp. at 175. The Third Circuit in *Williams* and the district court in *GCA Corp. v. Chance*, 217 U.S.P.Q. 718 (N.D. Cal. July 12, 1982), also came to this conclusion, but the *GCA* court based its decision upon a unique interpretation of the Copyright Act. The court found that since the “object code is the encryption of the copyrighted source code, the two are to be treated as one work; therefore, copyright of the source code protects the object code as well.” *Id.* at 720. Citing *Tandy*, the district court found the source code to fall within the protection of the copyright laws under the definition set out in section 102(a) of the 1976 Act. *Id.*

116. See *supra* text accompanying note 70.

117. See CONTU Report, *supra* note 2, at 1, and text accompanying notes 39-40.

Computer, Inc. v. Formula International, Inc.,¹¹⁸ the court adopted a similar analysis to that of the Third Circuit in *Franklin*. The *Formula* court found that there was no statutory basis for a distinction between computer programs based upon the function they serve within the machine.¹¹⁹ Like the Third Circuit, the *Formula* court had difficulty drawing a definitive line between the two types of programs.¹²⁰ In *Formula*, section 102(b) was found to have been established not to limit the scope of copyright, but to make it clear that copyright protection extends only to the expression of an idea, as opposed to patent protection, which extends to the ideas themselves. This section does not in itself establish that an operating program is an "idea," "process," "system," or "method of operation" simply because such a program controls the operation of the computer and does not directly produce any copyrightable output.¹²¹ Both the Third Circuit and the district court in *Formula* found copyright protection for software to reflect Congressional "receptivity to new technology and its desire to encourage, through the copyright laws, continued imagination and creativity in computer programming."¹²²

If the courts had recognized the distinctions proposed by the defendants between operating programs and application programs, a result counter to that intended by the legislature would have been realized. Refusal to extend copyright protection to operating programs would have severely limited protection to all computer programs since software technology advances rapidly and any distinctions placed upon computer programs would

118. 562 F. Supp. 775 (C.D. Cal. 1983), *aff'd*, No. 83-5875, slip op. (9th Cir. Feb. 8, 1984). The plaintiff in both the *Franklin* and the *Formula* cases was the same, the complaints were identical, and both cases involved the same Apple ROMs and floppy diskettes, whereby both defendants were accused of copying them in the production of a competing personal computer. *Id.* at 784. In *Formula*, the defendant manufactured and sold a computer kit under the trademark "Pineapple," that when assembled was virtually indistinguishable from Apple's Computer II in appearance and in its uses and capacities. *Formula's* kit and its peripheral devices contained Apple's operating programs in object code in ROM and on diskettes. See *Hubco Data Products Corp. v. Management Assistance, Inc.*, 219 U.S.P.Q. 450 (D. Idaho, Feb. 3, 1983) in which the court also found operating programs to be copyrightable. This opinion came out during the period in which the Third Circuit was deciding the *Franklin* case, therefore, this opinion was not used in the court's determination of the issue.

119. 562 F. Supp. at 780.

120. *Id.*

121. *Id.*

122. *Franklin*, 714 F.2d at 1253-54; see also *Formula*, 562 F. Supp. at 783.

soon become even more difficult to ascertain. Without a clear judicial determination that all computer programs are copyrightable, new distinctions would surely be proposed by copyright defendants in efforts to limit copyright protection further. The Third Circuit apparently realized this problem and therefore not only disaffirmed any line being placed between types of computer programs, but rejected the placement of any artificial line between ideas and the expression of those ideas.¹²³ The idea/expression merger doctrine adopted by the court is the one that is usually applied in all copyright cases to each individual work. Therefore, computer programs will not be afforded any less protection than any other type of copyrightable work.

The court's opinion contains an extremely broad characterization of the merger principle¹²⁴ based upon the fact that there are numerous ways to write an operating program which can translate source code into object code within a particular computer. In addition, the court made it clear that even if there are only one or two ways to arrange an operating program to make it compatible with certain application software, this is a commercial objective which is not to be considered when making an idea/expression merger determination.¹²⁵ As a consequence, the Third Circuit has allowed the scope of copyright to reach its broadest possible potential in regard to the protection of computer programs within the boundaries of the law as set out in the Copyright Act. The Third Circuit's approach appears to be in line with legislative intent to advance the development of computer programs by encouraging the programmer's effort through personal gain attained from the law of copyright.

While the copyrightability of computer programs now appears to be settled, questions fundamental to copyright infringement cases generally may continue to pose barriers to program protection. Previous judicial decisions in the area of computer programs have dealt with the denial or grant of a preliminary injunction against the alleged infringer and, consequently, most judicial precedent has not dealt with fundamental infringement issues. However, the fact that the subject matter in question is a

123. See *supra* text accompanying notes 88-90.

124. See *supra* text accompanying note 93.

125. See *supra* text accompanying note 92.

computer program should not keep one from a presentation of the same arguments that would be applied had the subject matter been any other work of authorship. The courts will apply the same judicial standards that apply to all other copyrightable works and the answer to *any* fundamental copyright issue which can arise in *any* copyright case will be based upon a factual determination unique to that case.¹²⁶

It is yet to be seen whether other courts will apply as broad a definition as did the Third Circuit in *Franklin* in order to decide whether an idea/expression merger issue pertains to a computer program. But, because the courts tend to favor the protection of copyrightable works, there will probably be a nonrestrictive application of the law to all fundamental issues, which includes a broad definition of when an idea has merged with an expression. Since many courts have demonstrated that they understand computer concepts, broad copyright protection for computer programs will probably be enforced in the future. As the technology of computer software develops and changes, future courts must continue to apply the Copyright Act flexibly in conjunction with these judicial precedents in order to ensure growth and progress in this important field; this will lead to

126. For example, was the defendant's infringement of the program justified under the doctrine of fair use? See 17 U.S.C. § 107 (1976). Did the plaintiff properly affix a copyright notice to the program and register the program within the five-year statutory limitation period? See 17 U.S.C. § 405 (1976). Is there "substantial similarity" between the plaintiff's computer program and the alleged infringer's program? See *Midway Manufacturing Co. v. Strohon*, 564 F. Supp. 741, 752 (N.D. Ill. 1983), where the court dealt with this issue. Once it was established that the defendant had access to plaintiff's video game ROMs, copying could be inferred if defendant's programs were "substantially similar" to plaintiff's. Defendant's programs contained all the same instructions used to direct the movement of the game and some of the same directions to display messages on the video screen. Defendant's programs had similar storage requirements (number of "bytes" used). Eighty-nine percent of the defendant's program instructions were in the same sequential order as plaintiff's and, in isolation, ninety-nine percent of the program instructions were the same. Thus, the programs were considered by the court to be too substantially similar to have been independently created. In addition, plaintiff added certain information to the end of its programs which was not essential to program the game. Defendant's programs also had this information "patched on" to the end of its programs, which led the court to infer that the programs were copied. *Id.*

greater developments in the field of computers in general and consequently benefit society as a whole.

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