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# COPYRIGHT LAW—THE EXTENSION OF COPYRIGHT PROTECTION TO COMPUTER OPERATING PROGRAMS—*Apple Computer v. Franklin Computer*, Copyright L. Rep. (CCH) 25565, 18337, 18345, 219 U.S.P.Q. (BNA) 113, 119 (3d Cir. August 30, 1983)

Richard G. Weber

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COPYRIGHT LAW—THE EXTENSION OF COPYRIGHT PROTECTION TO COMPUTER OPERATING PROGRAMS—*Apple Computer v. Franklin Computer*, 714 F.2d 1240 (3d Cir. August 30, 1983)

I. INTRODUCTION

In the last eight years the growing popularity of video game and personal computers has created a recognized need to protect the developers of the computer programs used in machines. Congress recognized the problem by revising the Copyright Act in 1976<sup>1</sup> and appointing the National Commission on New Technological Uses of Copyrighted Works (CONTU).<sup>2</sup> In 1980, Congress adopted the recommendations of CONTU and amended the 1976 Copyright Act specifically to include computer programs.<sup>3</sup> Notwithstanding the clear statement that computer programs were protected by copyright, questions arose as to the extent of the protection intended by Congress. The court in *Apple Computer v. Franklin Computer*<sup>4</sup> answered one question by holding that the copyright law protected<sup>5</sup> fourteen computer operating programs, developed for use in the Apple II personal computer and copied by Franklin for use in its ACE 100 personal computer.<sup>6</sup> The court concluded that Congress intended to protect all computer programs: those that interacted with humans, or application programs, and those that interacted only with machines, or operating programs.<sup>7</sup>

In order to understand the importance of *Franklin* both legally and commercially, this note will discuss briefly the way in which personal computers operate. Next, this note will examine the legislative and case law developments of copyright protection for computer programs from the advent of computers in the late 1940's to the decision

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1. 17 U.S.C. (1982); (Copyright Act of 1976). Congress originally enacted Title 17 in July, 1947, and revised it in its entirety by Pub. L. 94-553, 90 Stat. 2541, effective January 1, 1978.

2. *Final Report of the National Commission on New Technological Uses of Copyrighted Works* (July 31, 1978) (hereinafter CONTU REPORT).

3. See H.R. REP. NO. 1307, 96th Cong., 2d Sess. 23, reprinted in 1980 U.S. Code Cong. & Ad. News 6460, 6482.

4. 714 F.2d 1240 (1983).

5. *Id.* at 1242-45.

6. *Id.* at 1253.

7. *Id.* at 1248-49.

in *Franklin* in September of 1983. Finally, this note will consider the decision in *Franklin* as following the implied intent of Congress to grant copyright protection to all computer programs.

## II. TECHNICAL SUMMARY

The technological development in the 1970's of using silicon chips to encode operating instructions for electronic devices initially lead to the widespread use of hand calculators and in the 1980's to the broad popularity of personal computers. Personal computers are presently widely used by small businesses for such things as inventory control or billing as well as for entertainment and educational instruction in the home. Growing computer use has created a growth market for software and peripheral modules, or hardware, which expands the use of the computer system.<sup>8</sup> The expanded popularity of computers is creating the demand for adaptable personal computers that perform a wide variety of functions.<sup>9</sup> Thus, the marketability of personal computers clearly corresponds to their ability to adapt to available software and hardware packages.

Programs in a computer's Central Processing Unit, or CPU, determines its adaptability. The CPU contains a system of operating programs<sup>10</sup> that instructs the computer as to how and in what sequence certain operations will occur.<sup>11</sup> In order for software or hard-

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8. "Software" is a computer program that instructs the computer how to perform a specific function, such as balancing a checkbook or playing a video game. "Peripheral modules" are components that expand the functional flexibility of the personal computer and includes such items as a "disk drive" for reading data stored magnetically on a "floppy disk" and phone modules for connecting to commercial data bases or printers. "Floppy disks" are thin flexible magnetic disks used to store computer programs and data base sets, which are not part of the Central Processing Unit (CPU) of the computer but which interact with the CPU. See *infra* note 11, and accompanying text.

9. Families use personal computers for such diverse functions as typing a term paper, arranging a musical score, calculating the monthly mortgage payments for homes being sold, or performing a statistical analysis on the results of all the NFL football games played in a given week.

10. Two general categories of computer programs exist: (1) The operating program which contains instructions for the internal operation of the machine and of which the user is normally unaware; and (2) application programs which generally interact with the user, allowing the user to provide or obtain information or select alternate paths of the program. See *Apple Computer, Inc. v. Franklin Computer*, 545 F. Supp. 812, 814 (E.D. Pa. 1982), *rev'd*, 714 F.2d 1240 (3d Cir. 1983).

11. For example, the CPU instructs the computer how to:

- 1) access outside information for temporary storage in its internal memory;
- 2) structure the internal memory in various configurations to maximize memory capacity;
- 3) communicate with the user on either a printer or a video cathode ray (VCR), which is essentially a T.V. screen.

ware components to be compatible<sup>12</sup> with a particular computer, they must be able to interact with the computer's CPU.<sup>13</sup> In theory, a complex operating program such as exists in a CPU may be written in an almost infinite number of ways and result in a nearly identical functional capacity.<sup>14</sup> The theory is particularly true when no external limitations exist on any of the variables to be used. As more programming parameters become limited by outside factors,<sup>15</sup> however, the more limited become the number of alternate methods in which a program can be written and still maintain wide adaptability.<sup>16</sup> Only two choices remain to a manufacturer trying to enter the field of personal computers.

New entrants into the personal computer field may choose to develop and manufacture entirely innovative systems not compatible with any previously existing software or hardware packages. They would have both to develop and to manufacture a large number of products<sup>17</sup> that would meet great consumer resistance if the components were not compatible with equipment and application programs<sup>18</sup> already available. More likely, however, new entrants would want to capitalize on the already existing market and make their products as compatible as possible with software and hardware already available.

The most efficient way to achieve compatibility with a large percentage of available software and hardware consists of copying some of the key operating programs from the CPU of a popular personal computer because, by definition, a wide range of support packages already exists for it. A more difficult as well as more expensive way to achieve compatibility consists of developing a completely new operating system that precisely duplicates the functional aspects of a CPU from a popular personal computer. Franklin Computer faced precisely this choice when it decided to enter the personal computer mar-

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12. "Compatible" means that the particular component can be used with a particular computer.

13. The computer and the CPU must speak the same language in order to be compatible. Small differences in the dialect of the language may preclude the use of specific desirable software or hardware components.

14. See Note, *Copyright Protection of Computer Program Object Code*, 96 HARV. L. REV. 1723, 1736 (1983).

15. Outside factors include particular application programs and peripheral components already in existence and with which a new program must be compatible.

16. Franklin essentially used this argument in its case. See *Franklin*, 714 F.2d at 1245.

17. For instance, the new manufacturer would have to develop and manufacture its own CPU, disk drive, and printer, as well as create its own version of the popular application programs including video games, word processing, and graphics.

18. See *supra* notes 8-10 and accompanying text.

ket in 1981.<sup>19</sup>

### III. DEVELOPMENT OF COPYRIGHT PROTECTION FOR COMPUTER PROGRAMS

#### A. 1909 Copyright Act

The first commercial computers were built shortly after World War II and were so large and expensive that only the federal government and the largest corporations considered owning them. Programs created exclusively for the particular computer controlled the early computers.<sup>20</sup> As the technology progressed, size and cost of operating computers decreased to the point that homes and small businesses now widely use them.<sup>21</sup> With the increased use of computers came the commercial need to protect the computer programs that operated the machine. Since copyright protection gave the holder the exclusive right to reproduce, adapt, publish, perform or display the work,<sup>22</sup> software producers sought its protection.<sup>23</sup> The copyright law of 1909, however, extended protection only to "copies which were perceptible to humans—things written or printed . . . in intelligible notation."<sup>24</sup> The Copyright Act of 1909 codified the rule laid down by the Supreme Court of the United States in *White-Smith Music Co. v. Apollo Co.*,<sup>25</sup> in which the Court held that a piano roll was not a copy of a musical composition since it would not be intelligibly perceived by a human observer.<sup>26</sup>

The statutory language limited copyright protection to computer programs written in "high-level" or programmer language.<sup>27</sup> Before a computer can use a computer program, however, it must be written in

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19. See *Apple Computer, Inc. v. Franklin Computer*, 545 F. Supp. 812, 812-16 (E.D. Pa., 1982), *rev'd* 714 F.2d 1240 (3d Cir. 1983).

20. See CONTU REPORT, *supra* note 2, at 9.

21. *Id.*

22. 17 U.S.C. § 106 (1981).

23. Chandler, *Proprietary Protection of Computer Software*, 11 U. BALT. L. REV. 195, 214 (1982).

24. *Apple Computer, Inc. v. Formula International Inc.*, 562 F. Supp. 775, 779 (C.D. Cal. 1983), *aff'd*, 725 F.2d 521 (9th Cir. 1984) (quoting *White-Smith Music Co. v. Apollo Co.*, 209 U.S. 1, 17 (1908)).

25. 209 U.S. 1 (1908).

26. *White-Smith*, 209 U.S. at 17. Only state law protected musical recordings until Congress passed the Sound Recording Act of 1971. CONTU REPORT, *supra* note 2, at 10.

27. Programmer languages include BASIC for personal computers, COBOL for business computers, and FORTRAN for scientific computers. Languages employ English-like words and syntax and are easily understood by one trained in the language. Note, *Copyright Protection of Computer Program Object Code*, 96 HARV. L. REV. 1723, 1725 (1983).

“machine” language or object code.<sup>28</sup> Since copyright protection did not extend to the computer program in its useful form the value of the copyright protection was dubious. The Registry of Copyrights expressed these doubts when it decided to accept computer programs for registration in 1964.<sup>29</sup> Tenuous protection continued until Congress modernized the copyright law in the 1976 Copyright Act.

### B. 1976 Copyright Act

In 1976, Congress greatly expanded the scope of material that could be protected by copyright. Instead of limiting protection to written or printed copies intelligible to human beings, Congress extended protection to all “original works of authorship fixed in any tangible medium of expression” that could be perceived, reproduced, or otherwise communicated “either directly or with the aid of a machine or device.”<sup>30</sup> Under section 102 of the Copyright Act, the inability of a human being to understand binary code readily did not prevent its copyright protection, provided that a copy of the work could have been perceived or reproduced with the aid of a machine or device. Thus, an application program or software generally perceivable with the assistance of a computer would have been subject to copyright protection.<sup>31</sup> Congress, however, left unanswered the question whether the addition of section 117 to the 1976 Copyright Act would protect computer programs.<sup>32</sup> Section 117 specifically preserved the existing

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28. In object code, also known as binary code, the programmer reduces all instructions of the program to clusters of “ones” and “zeros” which the machine can interpret as a gate that is either open or closed. While a patient individual trained in the field could theoretically read the clusters, as a trained individual could decode a piano roll, humans do not normally nor easily read binary code. *Id.* For additional discussion see H. BRUNNER, INTRODUCTION TO MICROPROCESSORS, 1-12 (1982).

29. Chandler, *Proprietary Protection of Computer Software*, 11 U. BAL. L. REV. 195, 214 (1982).

30. 17 U.S.C. § 102 (1981).

31. *See supra* note 10. A user perceives an application program through the computer or machine in use.

32. 17 U.S.C. § 117, as originally enacted by Pub. L. 94-553, 90 Stat. 2541, 2565 (1976). The original § 117 stated:

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, in effect on December 31, 1977, as held applicable and construed by a court in an action brought under this title.

Pub. L. 96-517, 94 Stat. 3015, 3028 deleted the section in 1980.

state of the law as to the extent of copyright protection for the use of computer programs, without defining the law's status.<sup>33</sup> Congress chose to wait and review the findings of CONTU before specifically extending full copyright protection to computer programs.<sup>34</sup> During the period of vagueness, the United States district courts reached the conflicting opinions of *Data Cash System, Inc. v. JS&A Group, Inc.*<sup>35</sup> and *Tandy Corporation v. Personal Microcomputers, Inc.*<sup>36</sup>

In *Data Cash*, a district court in Illinois found that section 117 of the Copyright Act of 1976 prohibited applying the rest of the 1976 Copyright Act to computer programs.<sup>37</sup> The court held that under traditional common law a program stored on ROM was not a copy, since it could not be interpreted by a human being, and thus the Copyright Act did not protect it.<sup>38</sup> A California district court, however, reached the opposite conclusion on substantially the same facts in *Tandy Corp.*<sup>39</sup>

In *Tandy Corp.* the court found that section 117 did not deny all copyright protection to programs but did limit the rights of a copyright holder for copyrighted material used in a computer.<sup>40</sup> The court determined that a program was a work of authorship under sections 101 and 102 of the Act.<sup>41</sup> The court further found that a ROM is a

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33. *Apple Computer, Inc. v. Formula International, Inc.*, 562 F. Supp. 775, 779 (C.D. Cal. 1983), *aff'd*, 725 F.2d 521 (9th Cir. 1984).

34. See CONTU REPORT, *supra* note 2 at 1. Congress specifically created CONTU to investigate the desirability of extending copyright protection to computer programs.

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

36. *Tandy Corp. v. Personal Microcomputers, Inc.*, 524 F. Supp. 171 (N.D. Ca., 1981).

37. *Data Cash*, 480 F. Supp. at 1066-68. Data Cash had marketed Compuchess, a hand-held computer capable of playing chess at six different levels of difficulty. The instructions for playing were encoded on a ROM chip in each machine. A ROM, or Read Only Memory, is an integrated circuit, or silicon chip, from which a computer can read a program but which cannot be altered in any way. *Franklin*, 545 F. Supp. at 813. JS&A Group began marketing a similar game containing a ROM with the identical program. Data Cash had copyrighted the "programmer language" version of the program and had marked all such copies with notice. The machine language version of the code was not copyrighted, however, and Data Cash did not include notice of copyright on the ROM, the Compuchess game itself, or its packaging. *Id.* at 1065-66.

38. *Data Cash*, 480 F. Supp. at 1068-69.

39. See *Tandy Corp.*, 524 F. Supp. 171.

40. *Id.* at 174. the court in *Tandy Corp.* observed that § 117 did not apply to §§ 101 and 102, which identify the scope of copyrightable material, but applied only to §§ 106 through 116 and 118, which identify the scope of copyright protection. *Id.* See *supra* note 32.

41. *Tandy Corp.*, 524 F. Supp. at 173. Section 102 states:

Copyright protection subsists . . . in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they

“tangible medium of expression” within the meaning of the Act such that the Act protects a computer program embedded on a ROM.<sup>42</sup> The court reasoned that since programs were copyrightable under sections 101 and 102, Congress must have intended to grant the ROMs some measure of protection.<sup>43</sup> The court read section 117 as providing limited protection to the use of an authorized copy of the program in a computer, but fully protecting against the unauthorized copying of a properly copyrighted work.<sup>44</sup>

### C. 1980 Amendment to the Copyright Act

Congress settled the disagreement over the copyrightability of computer programs in 1980 when it amended the 1976 Copyright Act.<sup>45</sup> CONTU in its final report had recommended that the copyright law be amended to include computer programs explicitly.<sup>46</sup> CONTU had further recommended the deletion of section 117, so that protection would extend “to all computer uses of copyrighted programs.”<sup>47</sup> In 1980 Congress wrote CONTU’s recommendations into law virtually verbatim.<sup>48</sup> As a result, although no longer did any issue exist as to whether computer programs enjoyed copyright protection,<sup>49</sup> the issue did arise as to the extent of the protection.

The courts addressed the question of the scope of protection in *Williams Electronics, Inc. v. Artic International*,<sup>50</sup> in which the Court of Appeals for the Third Circuit specifically found that the 1976 Copyright Act fully protected programs written in machine language or object code.<sup>51</sup> In *Williams*, the court inferred a clear Congressional

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can be perceived, reproduced, or otherwise communicated either directly or with the aid of a machine or device. Works of authorship include the following categories: (1) literary works; . . .

17 U.S.C. § 102 (1981). Section 101 defines literary works to be “works . . . expressed in words, numbers, or other verbal or numerical symbols or indicia, regardless of the nature of the material objects . . . in which they are embodied.” 17 U.S.C. § 101 (1981).

42. *Tandy Corp.*, 524 F. Supp. at 173. Section 101 states that “a work [is] fixed in a tangible medium of expression when its embodiment in a copy . . . is sufficiently permanent or stable to permit it to be perceived, reproduced or otherwise communicated for a period of more than transitory duration.” 17 U.S.C. § 101 (1981). See *supra* note 41.

43. *Tandy Corp.*, 524 F. Supp. at 174.

44. *Id.* at 174-75.

45. Pub. L. No. 95-517, 94 Stat. 3015, 3028 (1980).

46. CONTU REPORT, *supra* note 2, at 54.

47. *Id.*

48. *Apple Computer, Inc. v. Formula International, Inc.*, 562 F. Supp. 775, 782 (C.D. Cal. 1983), *aff’d*, 725 F.2d 521 (9th Cir. 1984).

49. See *Stern Electronics v. Kaufman*, 669 F.2d 852, 855-56 (2nd Cir. 1982).

50. *Williams Electronics v. Arctic International*, 685 F.2d 870 (3rd Cir. 1982).

51. *Id.* at 876-77; See also *supra* notes 27-28 and accompanying text.

intent to grant copyright protection to programs in object code from the broad language that Congress used in defining "copy" and "fixation."<sup>52</sup> The court specifically found that the definition of a copy included a ROM since it was a "material object in which a work is fixed by *any* method . . . and *from which the work can be perceived*, reproduced . . . either directly or *with the aid of a machine or device*."<sup>53</sup> While most programs subject to litigation in this time were application programs,<sup>54</sup> some were operating programs.<sup>55</sup> In *Williams* and previous cases, however, the parties never raised the question of whether the nature of the program should affect copyrightability. In 1982, however, Franklin Computer raised the issue as its primary defense in a copyright infringement suit initiated by Apple Computer which was seeking to protect 14 computer programs that it had developed for use in its Apple II computer.<sup>56</sup>

#### IV. THE DECISION

Apple Computer, Inc., was founded in 1976 and quickly became an acknowledged leader in the field of personal computers, having sold almost 400,000 computers by mid-1982.<sup>57</sup> Franklin Computer, Inc., a small computer firm, started in 1981 and sold approximately 1000 computers by mid-1982.<sup>58</sup> Franklin Computers designed and manufactured the ACE 100 personal computer and marketed it as being capable of using the software packages and peripheral components designed for use with the Apple II.<sup>59</sup> In order to achieve compatibility, Franklin copied 14 of Apple's operating system programs.<sup>60</sup> Ap-

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52. *Id.* See also *supra* notes 41-42 and 52 and accompanying text.

53. *Id.* The court quoted the definition of copy from 17 U.S.C. § 101 (emphasis supplied by the court).

54. In *Williams*, *Stern*, and *Data Cash* the programs all concerned games that interacted with the user. See respectively: *Williams*, 685 F.2d at 872; *Stern*, 669 F.2d at 853; and *Data Cash*, 480 F. Supp. at 1066.

55. In *Tandy Corp.*, the program at issue was an "input-output routine" that translated programmer language into computer or machine language. *Tandy Corp.*, 524 F. Supp. at 173. Since any user of the machine remains unaware of the existence of the program, it is termed an operating program. See *supra* notes 10-11 and accompanying text.

56. *Franklin*, 714 F.2d at 1245.

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

58. *Id.*

59. *Franklin*, 714 F.2d at 1242-43.

60. *Id.* at 1244. The 14 copied programs represented a cost of 46 man-months or \$740,000 to Apple Computer and included: Autostart ROM, which readies the various internal components of the computer when it is turned on; three versions of "Beginners All Purpose Instruction Code" (BASIC), which is used to translate instructions given by the user into low level primary code that the computer understands; and ten programs relating

ple sued Franklin, alleging copyright infringement and seeking a preliminary injunction to restrain Franklin from using, copying, or selling any of the 14 programs.<sup>61</sup> Franklin never denied that it had copied the Apple programs,<sup>62</sup> but based its defense on the non-copyrightability of operating programs<sup>63</sup> and an assertion that Franklin feasibly could not write its own programs.<sup>64</sup>

The district court focused on the first of Franklin's defenses and denied injunctive relief to Apple by concluding "that there is some doubt as to the copyrightability of the programs described in this litigation."<sup>65</sup> The court expressed doubts as to whether a program in object code embodied on a ROM could be copyrighted.<sup>66</sup> Although the third circuit in *Williams Electronics* clearly answered the question in the affirmative,<sup>67</sup> it announced its decision three days after the district court had decided *Franklin*.<sup>68</sup> The district court also concluded that operating programs "eventually become an essential part of the machinery that produces the results"<sup>69</sup> and as a part of a machine are more appropriately the subject of patent law and not copyright law.<sup>70</sup>

While the appeal of the district court's decision was pending, a district court in the ninth circuit granted a preliminary injunction to Apple Computer against Formula International, a wholesaler of personal computers, for copyright infringement of 5 of the 14 computer programs that were denied copyright protection in *Franklin*.<sup>71</sup> The court in *Formula* disagreed with the reasoning in *Franklin* and held that the 1980 Amendment to the 1976 Copyright Act<sup>72</sup> protected operating programs. Relying on the recommendations of CONTU, the

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to obtaining, storing, or manipulating application programs or information stored on a "floppy disk," a method for expanding the useful memory of a computer. *Id.* at 1244-45 & note 4.

61. *Id.* at 1244-45.

62. *Id.* at 1245.

63. *Id.*

64. *Id.*

65. *See id.* at 1246 (quoting district court opinion, 545 F. Supp. at 812).

66. *Id.* at 1246.

67. *See supra* text accompanying notes 49-55.

68. *Franklin*, 714 F.2d at 1249.

69. *Franklin*, 545 F. Supp. at 824 (quoting CONTU REPORT, *supra* note 2 at 88 (Commissioner Hershey dissenting) (emphasis deleted)).

70. *Id.* at 823-24.

71. *Apple Computer, Inc. v. Formula International, Inc.*, 562 F. Supp. 775, 778 (C.D. Cal. 1983), *aff'd*, 725 F.2d 521 (9th Cir. 1984). Formula International was selling a personal computer under the trademark Pineapple. The Pineapple kits were manufactured by independent companies in Taiwan and Hong Kong and were distributed by Formula, both at resale and wholesale. *Id.* at 777.

72. *Id.* at 779.

district court opined "that *all* computer programs . . . [should] be included within copyright protection."<sup>73</sup> Observing that Congress had enacted the recommendations of CONTU into law almost verbatim, the court inferred that Congress did not intend to distinguish "between programs which are used in the production of further copyrighted works" and those which embody "a system for the operation of a machine."<sup>74</sup>

Prior to the third circuit's decision on the appeal of *Franklin*, the computer industry faced conflicting legal theories supporting conflicting decisions as to the copyrightability of operating programs. In reversing the district court in *Franklin*, the Third Circuit Court of Appeals resolved the conflict by holding that the 1980 amendment to the 1976 Copyright Act extended copyright protection to all programs.<sup>75</sup> The appellate court raised three legal issues that would determine the copyrightability of Apple's operating computer programs: 1) Does expressing a program in object code affect copyrightability; 2) may a program embodied in a ROM be copyrighted; and 3) may an operating program be copyrighted.<sup>76</sup> Although the same court had previously dealt with the first two issues in *Williams Electronics*, it dealt separately with each issue in order to clarify its *Williams* opinion.<sup>77</sup>

#### A. *Copyrightability of a Computer Program Expressed in Object Code and Embodied in ROM*

The court followed its earlier decision in *Williams Electronics*, holding that the 1980 amendment to the 1976 Copyright Act protected programs expressed in object code.<sup>78</sup> The court acknowledged that Chapter 17 U.S.C. section 102(a) did not specifically enumerate programs within the list of works of authorship.<sup>79</sup> It found in the 1980

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73. *Id.* at 781 (emphasis supplied by the court). The court continued:

The copyright status of the written rules for a game or a *system for the operation of a machine* is unaffected by the fact that those rules direct the actions of those who play the game or carry out the process. Nor has copyright been denied to works simply because of their utilitarian aspects. It follows, therefore, that there should be likewise no distinction made between programs which are used in the production of further copyrighted works and those which are not.

*Id.* at 781-82 (quoting CONTU REPORT, *supra* note 2 at 21) (emphasis supplied by the court).

74. *Id.* at 782.

75. *Franklin*, 714 F.2d at 1253-54.

76. *Id.* at 1246.

77. *Id.* at 1249-50.

78. *Id.* at 1248.

79. *Id.* at 1247.

Amendment to the Copyright Act,<sup>80</sup> however, a Congressional endorsement of the suggestion of CONTU to extend copyright protection to programs.<sup>81</sup> The court examined the primary requirements to make a work copyrightable identified in the copyright statute; that is, the work "must be an 'original wor[k] of authorship,' and [it] must be 'fixed in [a] tangible medium of expression.'"<sup>82</sup> Section 102 next defines works of authorship to include literary works.<sup>83</sup> The section defines literary works as "works . . . expressed in words, numbers . . . or numerical symbols or indicia, regardless of the nature . . . in which they are embodied."<sup>84</sup> The court concluded that the expression of a program in object code does not negate its copyright classification as a work of authorship.<sup>85</sup> Section 101 further defines a copy to be a "material object, . . . in which a work is fixed . . . and from which the work can be perceived, reproduced . . . either directly or with the aid of a machine or device."<sup>86</sup> The court of appeals rejected the opinion of the district court that copyright protection should be "limited to works designed to be 'read' by a human reader"<sup>87</sup> by observing that the statute allows communication "either directly or *with the aid of a machine or device*."<sup>88</sup> The court concluded that copyright protection did extend, therefore, to programs expressed in object code.

### B. *Copyrightability of Computer Operating System Programs*

The court found Franklin's argument that "computer operating system programs, as distinguished from application programs, are not the proper subject of copyright 'regardless of the language or medium in which they are fixed' " to be a novel issue not previously raised with the Third Circuit Court of Appeals.<sup>89</sup> Section 102(b) of the 1976 Copyright Act provides that in "no case does copyright protection . . . extend to any idea, procedure, process, system, method of opera-

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80. Pub. L. No. 95-517, 94 Stat. 3015, 3028 (1980). Congress enacted into law the recommendations of CONTU essentially verbatim. See *Apple Computer, Inc. v. Formula International, Inc.*, 562 F. Supp. 775, 782 (C.D. Cal. 1983), *aff'd*, 725 F.2d 521 (9th Cir. 1984). See CONTU REPORT, *supra* note 2 at 1.

81. *Franklin*, 714 F.2d at 1247.

82. *Id.* (quoting 17 U.S.C. § 102(a)(1) (1981)).

83. 17 U.S.C. § 102a(1) (1981).

84. 17 U.S.C. § 101 (1981).

85. *Franklin*, 714 F.2d at 1249. The clusters of ones and zeros that represent binary or object code would qualify as "numerical symbols or indicia." See Note, *Copyright Protection of Computer Program Object Code* 96 HARV. L. REV. 1723, 1726-27 (1983).

86. 17 U.S.C. § 101 (1981).

87. *Franklin*, 714 F.2d at 1248 (quoting district court opinion, 545 F. Supp. at 821).

88. *Id.* (quoting 17 U.S.C. § 102(a) (1981)) (emphasis supplied by the court).

89. *Id.* at 1249-50 (quoting Brief of Appellee at 15).

tion . . . regardless of the form in which it is described . . . or embodied . . . .”<sup>90</sup> Franklin maintained that “an operating system program is either a ‘process’, a ‘system’ or ‘method of operation’ and thus uncopyrightable under § 102.”<sup>91</sup> In addition, Franklin suggested that section 102(b) represented a codification of the rule set down in *Baker v. Seldon*<sup>92</sup> that copyright laws may not be used to obtain and hold a monopoly over an idea.<sup>93</sup> Franklin repeated the opinion expressed by the dissenting members of CONTU that “*the instructions themselves eventually become an essential part of the machinery that produces the results. They may become . . . a permanent part of the actual machinery. . . .*”<sup>94</sup> In response to Franklin’s assertions, the court stated that copyright law protects only the specific instructions actually expressed in a program and does not protect the general process or method of operation that might result from them.<sup>95</sup> The court declared that the confusion expressed by the district court resulted from mistakenly focusing on the “physical characteristics of the instructions” and not on the instructions themselves.<sup>96</sup>

The court next addressed the issue of the copyrightability of a computer operating program as a purely utilitarian work. Franklin relied on dictum in *Baker v. Seldon* stating that “where the art it teaches cannot be used without employing the methods and diagrams used . . . such methods and diagrams are to be considered as necessary incidents to the art, and given therewith to the public. . . .”<sup>97</sup> Although a literal construction of the court’s language would apply to all operating programs, the court of appeals found a previous Supreme Court case, *Mazer v. Stein*,<sup>98</sup> controlling.<sup>99</sup> In *Mazer*, the Court stated “we find nothing in the copyright statute . . . that the intended use or use in industry of an article eligible for copyright bars or invalidates its registration.”<sup>100</sup> The court of appeals in *Franklin* also relied on

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90. 17 U.S.C. § 102(b) (1981).

91. *Franklin*, 714 F.2d at 1250.

92. 101 U.S. 99 (1974). *Baker* involved a copyright infringement suit over an accountant book that used pages ruled and arranged in a manner first described and displayed in a book explaining a particular bookkeeping system. The court in *Baker* held that “the copyright of a book does not give the [author] the exclusive right to use the system explained in the books.” *Id.* at 100.

93. *Franklin*, 714 F.2d at 1251-52.

94. CONTU REPORT, *supra* note 2, at 28 (emphasis in the report).

95. *Franklin*, 714 F.2d at 1250-51.

96. *Id.* at 1251.

97. *Baker*, 101 U.S. at 103.

98. 347 U.S. 201 (1954).

99. *Franklin*, 714 F.2d at 1252.

100. *Mazer*, 347 U.S. at 218.

CONTU's rejection of the *Baker* doctrine as implying congressional intent that the ultimate use of a program would not affect its copyrightability.<sup>101</sup> The *Franklin* court concluded, therefore, that limiting the use of a program to make a machine functional does not negate the protection extended to the program as a literary work of art.<sup>102</sup>

In concluding that Congress did not intend to distinguish between operating and application programs when granting copyright protection, the court of appeals emphasized the statutory definition of "computer program" added to section 101 of the Act by the 1980 Amendment.<sup>103</sup> Congress 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."<sup>104</sup> The court specifically agreed with the interpretation of the court in *Formula International*<sup>105</sup> when it stated "there is nothing in any of the statutory terms which suggest a different result for different types of computer programs based upon the function they serve in the machine."<sup>106</sup>

### C. *The Effect on Copyright Protection When the Computer Program Merges with the Idea*

Finally, the court of appeals addressed the issue of whether the expression of an idea in an operating program could become so merged with the idea it represented as to preclude copyright protection under section 102.<sup>107</sup> Traditionally, patent law protects an idea for seventeen years if the idea has been successfully reduced to practice.<sup>108</sup> Copyright, on the other hand, protects only the *expression* of an idea.<sup>109</sup> The court held that if the creation of other computer programs that performed the same function as Apple's operating system programs were possible, then the program represented only an expression of the idea and hence were copyrightable.<sup>110</sup> Since the district

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101. *Franklin*, 714 F.2d at 1252. See note 79 and accompanying text.

102. *Id.*

103. *Id.*

104. 17 U.S.C. § 101 (1981) (emphasis added).

105. *Apple Computer, Inc. v. Formula International, Inc.*, 562 F. Supp. 775 (C.D. Cal. 1983), *aff'd*, 725 F.2d 521 (9th Cir. 1984). See also notes 70-73 and accompanying text.

106. *Franklin*, 714 F.2d at 1252 (quoting *Formula International*, 562 F. Supp. at 780).

107. *Id.* at 1252. Section 102 prohibits the extension of copyright protection to any idea. See note 90 and accompanying text.

108. See CONTU REPORT, *supra* note 2 at 16.

109. *Id.*

110. *Franklin*, 714 F.2d at 1253.

court had made no finding of fact as to whether Apple's operating programs represented the only means of expressing their underlying ideas, the circuit court remanded the issue to the district court.<sup>111</sup>

## V. ANALYSIS

The traditional purpose of copyright law is to encourage disclosure of intellectual or aesthetic ideas to the public, promoting public availability of the ideas by protecting the creator's perceived rights in them.<sup>112</sup> In modern times, a secondary purpose of protecting intellectual property capable of extensive reproduction has developed.<sup>113</sup> With the recent popularity of personal computers, the need to protect computer programs has arisen out of both concerns. The development of programs requires creativity, time, and money, thus necessitating the protection of creators' investments so that they may reap the benefits of their initiative. Similarly, since programs constitute an integral part of video games, personal computers, and work processors that all enjoy increased popularity, the desire as well as ability to reproduce programs has become extensive.

Congress recognized the need for protection during its revision of the Copyright Act in 1976 and appointed CONTU to study the problem and to make commendations.<sup>114</sup> As a result of its study, CONTU recommended extending copyright protection to computer programs.<sup>115</sup> CONTU's intent to include all computer programs in the expanded protection can be inferred from the dissenting opinion of Commissioner Hersey<sup>116</sup> and the concurring opinion of Commissioner Nimmer.<sup>117</sup> Both opinions questioned CONTU's wisdom in recommending "open-ended copyright protection for all computer software."<sup>118</sup> In 1980, Congress wrote into law virtually verbatim CONTU's recommendations<sup>119</sup> including the deletion of the original section 117 and the addition of the definition of computer program in

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111. *Id.* Conflicting evidence surfaced during the trial, with Franklin presenting witnesses testifying to the impossibility of rewriting the Apple programs and Apple claiming that third parties had already produced comparable programs. *Id.* at 1245.

112. Note, *Copyright Protection of Computer Program Object Code* 96 HARV. L. REV. 1723, 1739 (1983).

113. *Id.*

114. CONTU REPORT, *supra* note 2, at 1.

115. *Id.* at 54.

116. *Id.* at 86.

117. *Id.* at 84. See *infra* notes 125-27 and accompanying text.

118. *Id.* at 85. See *id.* at 86-90.

119. See *supra* notes 71-79 and accompanying text.

section 101.<sup>120</sup> The Congressional action created a strong inference that the 1980 amendment to the 1976 Copyright Act encompassed the intent of CONTU's Report.<sup>121</sup> The court of appeals in *Franklin* recognized the inference<sup>122</sup> and honored it.<sup>123</sup> The third circuit thus agreed with the only other reported case that had addressed the issue.<sup>124</sup>

Commissioners Hersey and Nimmer of CONTU both expressed doubts about the Commission's failure to articulate any rationale that distinguished computer programs from any other "tangible expression of any and all original ideas."<sup>125</sup> In particular, Nimmer articulated his concern that such a broad construction of *literary works* could result in transforming the Copyright Act into a general misappropriation law, equally applicable to areas traditionally left unprotected as well as to areas of traditional patent protection.<sup>126</sup> Judge Newcomer, in his opinion in *Franklin*, echoed Commissioner Nimmer's concern and worried that such a wide application of copyright protection would circumvent the antimonopoly limitations established by patent law.<sup>127</sup> While the Commissioners' concerns may yet prove to be justified, Congress has chosen for the present not to institute an arbitrary limit to the copyrightability of a computer program based solely upon its characterization as either an application or operating program.

The court of appeals in *Franklin* did, however, recognize at least one limitation to the copyrightability of programs under existing law. The court found that section 102 of the Act prohibited copyright protection if the program, or expression of the idea, so merged to the idea that they became inseparable.<sup>128</sup> If other programs could be created that would duplicate the functions of the existing program, however, then the original program would be only an expression of the idea

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120. Pub. L. No. 95-517, 94 Stat. 3015, 3028 (1980). The original § 117 limited the copyright protection available to computer programs. See *supra* notes 32-44 and accompanying text.

121. *Formula International*, 562 F. Supp. at 781.

122. *Franklin*, 714 F.2d at 1247.

123. *Id.* at 1253-54.

124. *Id.* at 1252 (citing *Apple Computer, Inc. v. Formula International, Inc.*, 562 F. Supp. 775 (C.D. Cal. 1983), *aff'd*, 725 F.2d 521 (9th Cir. 1984)).

125. CONTU REPORT, *supra* note 2 at 84-85.

126. *Id.* at 85 (emphasis in the report).

127. *Franklin*, 545 F. Supp. at 824. "A submission for patent protection must be novel, useful and non-obvious." Chandler, *Proprietary Protection of Computer Software*, U. BALT. L. REV. 195, 231 (1982). In addition copyright protection lasts for the life of the author plus at least 50 years, while patent protection is limited to 17 years. CONTU REPORT, *supra* note 2 at 72.

128. *Franklin*, 714 F.2d at 1252; see *supra* notes 105-107 and accompanying text.

behind the program and capable of copyright protection.<sup>129</sup> Although the court's limitation appears to be a straightforward mechanical test, a court retains a degree of flexibility in applying the limitation, since its applicability will hinge on how broadly or narrowly the court defines the primary function of the program. The narrower or more specific the functions defined as primary to the program, the more difficult it will be to demonstrate the possibility of alternate programs.

The court of appeals in *Franklin* found that compatibility with Apple II software and hardware was not a primary function of the programs but rather "a commercial and competitive objective" of *Franklin* and, therefore, not pertinent to the question of whether the programs had merged with the ideas.<sup>130</sup> The court did not clearly articulate the test it had applied nor did it indicate what facts would be necessary to find that compatibility with existing software and hardware had been a primary function of a program. Such a finding would increase the probability that a court would then find a merger between the program and the idea, thereby barring copyrightability. Thus, while the court of appeals in *Franklin* extended copyright protection to include operating programs, it also recognized a statutory limitation to the copyrightability of programs that courts in the future may use to deny the full protection of copyright law in a case in which such extensive protection would prove to be detrimental to the public good.

In his concurring opinion in the CONTU report, Commissioner Nimmer observed that Congress possesses the ability to modify the extent of copyright protection offered programs if the present law proves unduly restrictive.<sup>131</sup> Nimmer recommended that a logical line of demarcation is to limit copyright protection to only those programs that produce works that themselves qualify for copyright protection.<sup>132</sup> Thus, programs designed to operate in conjunction with a data retrieval system or video game would be copyrightable but a program that turns lights on and off in an office building or regulates the mixture of air and fuel in an engine would not. Commissioner Nimmer's limitation is particularly appropriate in light of the recent *Diamond v. Diehr*<sup>133</sup> decision in which the Supreme Court rejected the patent examiner's conclusion that because a process used a computer program to achieve its result it fell outside patent law.<sup>134</sup> Since a to-

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129. *Id.* at 1252-53.

130. *Id.*

131. CONTU REPORT, *supra* note 2 at 26.

132. *Id.*

133. 450 U.S. 175 (1981).

134. *Id.* at 175; *see* The Patent Act of 1952, 35 U.S.C. § 101 (1981).

tally utilitarian program may now be protected as it is actually used in a patentable machine or process, the value of copyright protection, which is limited only to the expression and not the idea embodied in the program,<sup>135</sup> apparently is diminished. If full copyright protection for all programs proves to be too cumbersome, Congress may well decide that patent law adequately protects utilitarian programs and, therefore, deny additional protection under copyright law.

## VI. CONCLUSIONS

With the decision of the Third Circuit Court of Appeals in *Franklin*, federal courts apparently are following a uniform interpretation of the 1976 Copyright Act, as amended in 1980, and are extending copyright protection to all computer programs. The judicial interpretation is based upon the clear recommendations made by CONTU. Copyright protection extends only to the expression of instructions of the computer program itself and not to the ideas, systems, or processes it represents. If a particular computer program constitutes the only possible method for expressing its underlying idea, then the theory states that the expression merges with the idea and copyright protection is not available. If Congress eventually decides that the broad inclusion of all computer programs under the Copyright Act is unduly restrictive, it may decide to limit protection to computer programs that produce works that themselves qualify for copyright protection.

*Richard G. Weber*

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135. Patent law protects the idea as actually used in the invention, independent of its form. See *supra* notes 126-27 and accompanying text.