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SECTION 117 OF THE COPYRIGHT ACT: CHARTER OF THE SOFTWARE USERS' RIGHTS OR AN ILLUSORY PROMISE?

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SECTION 117 OF THE COPYRIGHT ACT: CHARTER OF THE SOFTWARE USERS' RIGHTS OR AN ILLUSORY PROMISE?†

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I. INTRODUCTION

Congress has had a great deal of difficulty deciding what, if anything, to do about computer software.¹ After years of inconclusive discussion preceding the 1976 revision of the copyright laws,² Congress decided to punt. It passed a law creating a National Commission on New Technological Uses of Copyrighted Works (CONTU).³ CONTU

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1. The terms "computer software" and "computer program" are hereinafter used synonymously.

2. 17 U.S.C. §§ 101-810 (1976).

3. NATIONAL COMMISSION ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS, Pub. L. No. 93-573, 88 Stat. 1873 (1974)(hereinafter CONTU).

members were to be appointed by the President, and were to include authors, users of copyrighted works, and the public. Congress created CONTU to advise Congress with respect to the existing copyright law and the proposal of amendments to that law.⁴ The commissioners studied the matter for several years and drafted a final report to Congress.⁵ CONTU recommended adding to the existing copyright law a definition of computer programs, which had the effect of manifesting the Congressional intent to protect computer programs. Furthermore, CONTU recommended the enactment of section 117 of the Copyright Act,⁶ which is the focus of this article.⁷

II. THE LEGISLATIVE HISTORY OF SECTION 117

When Congress eventually enacted section 117 in late 1980, it did so essentially in the form that CONTU recommended.⁸ Unfortunately, however, it acted in haste at the very end of the second session of the 95th Congress. Congress attached the copyright measure to a very substantial modification of the patent laws which occupied the attention of Congress far more than did section 117. In its haste, Congress failed to provide any legislative history for section 117.⁹

As enacted, section 117 provides:

Notwithstanding the provisions of § 106 [dealing with the exclusive rights of a copyright owner], 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:

4. *Id.* Although CONTU's membership was distinguished, not one of the commissioners was an electrical engineer, a computer scientist, or an official of a computer manufacturing company. See FINAL REPORT OF THE NATIONAL COMMISSION ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS, 107-09 (1978)(hereinafter CONTU REPORT). Many of the witnesses who appeared before the commission, however, did have such credentials. *Id.* at 113-16. For a general critique of the work of CONTU, see Samuelson, *CONTU Revisited: The Case Against Copyright Protection for Computer Programs in Machine-Readable Form*, 1984 DUKE L.J. 663.

5. CONTU REPORT, *supra* note 4.

6. *Id.* at 38.

7. CONTU also recommended the repeal of former § 117 which had preserved the status of computer programs as it was prior to enactment of the 1976 Copyright Act. CONTU REPORT, *supra* note 4, at 38. All subsequent references to § 117 are to the 1980 enactment.

8. The only significant change was to restrict the benefits of § 117 to "owners" of copies of computer programs, rather than "rightful possessors" of such copies. See CONTU REPORT, *supra* note 4, at 12-13.

9. This is unfortunate because the absence of an official legislative history has caused litigants and the courts much difficulty in interpreting the ambiguous language in § 117. See *infra* notes 10 & 11 and accompanying text.

- (1) that such new a [sic] 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 a new copy or adaptation is for archival purposes only

Adaptations so prepared may be transferred only with the authorization of the copyright owner.¹⁰

The language of section 117 is ambiguous. It uses terms that the act does not define and that are not explained in a legislative history. It is little wonder that the judicial opinions interpreting section 117 tend only to obscure it further.¹¹ Scarcely four years after its enactment, section 117 has been interpreted so maladroitly that legislative oversight hearings are already necessary. Congress should determine whether it wishes to have the law interpreted as the courts have interpreted it to date and whether the law needs clarification or complete rewriting. Some kind of amendment is probably necessary because, as section 117 now stands, it is practically useless.

A. *Why Did CONTU Recommend Section 117?*

Section 117 was part of a compromise within CONTU. On one hand, there was considerable pressure to bring computer programs within the scope of the copyright law. Computer programs had received only inhospitable treatment under existing patent laws,¹² were probably preempted from state law protection,¹³ and, unless protected under the copyright laws, would probably remain vulnerable to piracy. The prospect of persuading Congress to enact a special law for computer programs seemed unlikely to CONTU, despite the Supreme Court's repeated urging that Congress consider legislation specifically directed to computer programs.¹⁴ CONTU believed that fairness and

10. 17 U.S.C. § 117 (1980).

11. See, e.g., *Micro-Sparc, Inc. v. Amtype Corp.*, 592 F. Supp. 33 (D. Mass. 1984); *Midway Mfg. Co. v. Strohon*, 564 F.Supp. 741 (N.D. Ill. 1983); and *Hubco Data Prod. Corp. v. Management Assistance, Inc.*, 219 U.S.P.Q. (BNA) 450 (D. Idaho 1983).

12. See, e.g., *Parker v. Flook*, 437 U.S. 584 (1978); *Dann v. Johnston*, 425 U.S. 219 (1976); *Gottschalk v. Benson*, 409 U.S. 63 (1972).

13. See, e.g., *Compco Corp. v. Day-Brite Lighting, Inc.*, 376 U.S. 234 (1964); *Sears, Roebuck & Co., v. Stiffel Co.*, 376 U.S. 225 (1964); *Synercom Technology, Inc. v. University Computing Co.*, 474 F. Supp. 37 (N.D. Tex. 1979); see also 17 U.S.C. § 301 (1976). *But see Goldstein v. California*, 412 U.S. 546 (1974).

14. See, e.g., *Parker v. Flook*, 437 U.S. 584, 595 & n.19 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 73 (1972). The majority of the CONTU commissioners decided against recommending enactment of a special law. See CONTU REPORT, *supra* note 4, at 6. CONTU supported the enactment of an amendment to the existing copyright law to include protection of computer programs. *Id.* at 12-13. Commissioner Hersey dissented

the importance of encouraging investment in program development required some form of protection for the creators of computer programs.

On the other hand, CONTU believed that extending the copyright law in full to proprietors of computer programs might unduly hamper competition and user-exploitation of computer technology for the public good. Furthermore, CONTU feared that such an extension might deprive computer program users of their ability to get the benefit of the bargain struck when they purchased programs. CONTU, therefore, recommended a compromise. It gave something to each group:¹⁵ Computer programs were to be explicitly brought within the Copyright Act but section 117 would protect the legitimate interests of the users.

The CONTU report explained section 117 and the rationale for the compromise by positing that "the placement of a work into a computer is the preparation of a [potentially infringing] copy."¹⁶ Unfortunately, CONTU began its analysis with a defective (or at least questionable) initial premise. Placement of a work such as a computer program into a computer¹⁷ is an act of copyright infringement¹⁸ only when the work is placed into the computer in a "fixed" form. That is to say that the embodiment of the computer program in the computer "is sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration."¹⁹ Yet a computer program or other work may be placed into a computer system in a variety of ways. It may be copied onto a tape or diskette or photochemically imprinted onto a silicon chip. When either process has been completed, the work is "fixed," and there is a potentially infringing "copy."²⁰ But the computer program may simply be placed into the temporary read/write memory

from the majority's report, and in a preliminary version of the report he proposed a separate computer program law. He omitted that proposal, however, from his dissent to the CONTU REPORT. In retrospect, CONTU's timidity was a serious mistake.

15. CONTU asserted that it had considered the interests of the producers and manufacturers of computer software, as well as the interests of the software users. CONTU REPORT, *supra* note 4, at 16-18.

16. *Id.* at 13. 17 U.S.C. §§ 106(1) and 501(a) (1982) make it a copyright infringement to reproduce a work in copies. It is not an act of copyright infringement to use a copy of a computer program without reproducing it in a new copy. *See, e.g., Foreign & Domestic Music Corp. v. Licht*, 196 F.2d 627 (2nd. Cir. 1952).

17. "Inputting" the computer program.

18. "Reproduction" in a copy. *See* 17 U.S.C. § 106(1) (1982).

19. 17 U.S.C. § 101 (1982).

20. Usually, the software proprietor makes the software available to customers in the form of machine-usable tapes, diskettes, or chips, so that the customers do not need to make additional fixed copies merely to input the software into the machine.

(RAM) of the computer, in which the computer program is "read" from a fixed copy or is entered by key strokes. In that case, the computer program in RAM will *not* be fixed; it will simply be a transitory and ephemeral writing, like a message written in sand. When the electrical power for the computer is turned off, the work will vanish from the RAM of the computer. That is not a potentially infringing copy. Computer programs are most frequently placed into computers in RAM, only transitorily and ephemerally, rather than "fixed" into permanent memory.²¹ Therefore, most of the time, the act of inputting a computer program does not involve an act of copyright infringement.²²

In any event, the CONTU rationale for enacting section 117 began with the following premise: A need exists for permitting owners of copies of programs to place them into computers and yet avoid the risk of copyright infringement liability when doing so.²³ Regardless of whether the premise was sound, CONTU concluded that this was one reason why section 117 was needed: "One who rightfully possesses a copy of a program, therefore, should be provided with a legal right to copy it to that extent which will permit its use by that possessor."²⁴

But making copies by loading or inputting the program is not a computer program owner's only problem. CONTU articulated a second need for section 117:

Because of a lack of complete standardization among programming languages and hardware in the computer industry, one who rightfully acquires a copy of a [computer] program frequently cannot use it without adapting it to that limited extent which will allow its use in the possessor's computer. The copyright law, which grants to copyright proprietors the exclusive right to prepare translations, transformations, and adaptations of their work, should no

21. A familiar example of this occurs every morning in offices, when users of word processing equipment turn microcomputers on, insert diskettes containing a word processing program, and "boot up" the programs.

22. It is unclear why CONTU created the "straw man" problem of risk of copyright infringement liability for inputting computer programs into computers. Perhaps, CONTU sought to influence courts to find copyright infringement liability for *unauthorized* acts of inputting computer programs into the RAMs of computers, despite the difficulty under the present copyright statute of doing so. Unauthorized inputting of a computer program into RAM *should* be an act of infringement of the computer program owner's rights, but it is *not* under present law.

23. CONTU did not consider whether the customer of the owner of the copyright in a computer program has a license implied by law to use the computer program in the manner that the copyright owner and the customer contemplated when they entered into the initial transaction.

24. CONTU REPORT, *supra* note 4, at 13.

more prevent such use than it should prevent rightful possessors from loading programs into their computers. Thus a right to make those changes necessary to enable the use for which it was both sold and purchased should be provided.²⁵

CONTU gave two examples of the need for an adaptation right. First, it said that "[t]he conversion of a program from one higher-level language to another to facilitate use would fall within this right"²⁶ By this, CONTU meant rewriting a computer program that has been written in one computer language, such as BASIC,²⁷ Pascal,²⁸ COBOL,²⁹ FORTRAN,³⁰ APL,³¹ PL/1,³² C,³³ or Forth,³⁴ into another such language to facilitate the program's ability to run in another computer. This is not a major practical problem, but it deserves consideration.³⁵

25. *Id.*

26. *Id.*

27. See SIPPL & SIPPL, *COMPUTER DICTIONARY AND HANDBOOK* (1980). The authors describe BASIC (acronym for Beginner's All-purpose Symbolic Instruction Code) as "one of the easiest computer programming languages to learn and master." *Id.* at 35.

28. *Id.* at 379. Pascal is a language "designed to enable teaching of programming as a systematic discipline and to do systems programming." *Id.* Nonetheless, Pascal is widely used in writing applications programs.

29. *Id.* at 82. COBOL (acronym for COMmon Business Oriented Language). "This is a common procedural language designed for commercial data processing as developed and defined by a national committee of computer manufacturers and users." *Id.*

30. *Id.* at 213-14. Fortran (acronym for FORMula TRANslation) is "[a] compiler language developed by the IBM Corporation, originally conceived for use on scientific problems but now widely adapted for most commercial problems as well." *Id.*

31. *Id.* at 20. APL (acronym for A Programming Language) was developed by Iversen. "An unusually extensive set of operators and data structures are used to implement what is considered by many to be the most flexible, powerful, and concise algorithmic/procedural language in existence." *Id.*

32. *Id.* at 387. "This language has some features that are characteristic of FORTRAN and incorporates some of the best features of other languages, such as string manipulation, data structures, and extensive editing capabilities." *Id.*

33. *Id.* at 55. C has been defined as "[a] somewhat structured high-level programming language designed to optimize run time, size, and efficiency. It was developed as the systems programming language of the UNIX operating system on the PDP 11/70 minicomputer from Digital Equipment Corp." *Id.*

34. *Id.* at 213. "Forth is a programming language system which can be implemented readily on microcomputers, and which offers high-level means of expressing solutions to a wide range of problems." *Id.*

35. The rewriting with which CONTU concerned itself has not yet created any litigation or threats of litigation of which the author is aware. Usually, if there is a problem, it is in the translation of a computer program into a different machine language (object code) to permit the program to run on a second machine; or to rewrite the program to run under a different operating system that is used in the second machine. This can be quite burdensome in the case of computer programs that were written in assembly language to enable faster execution, rather than in high-level language as CONTU contemplated. For a discussion of the latter problem, see generally *Digidyne Corp. v. Data General Corp.*, 734 F.2d

Second, according to CONTU, the adaptation right is necessary to give software users "the right to add features to the program that were not present at the time of rightful acquisition."³⁶ This has become a vital issue; much of the litigation arising under section 117 has concerned the user's right to alter the computer program. For example, a word processing program may not contain a dictionary when it is acquired, so that the human operator must provide the hyphenation and make spelling checks. A billing program may lack the necessary means for charging different clients different hourly rates, or for preparing summaries. The user may very much want to enhance the function of the computer program by adding features that adapt the program to carry out these additional tasks. The enhancement aspect of the adaptation right is the major value of section 117 to users.³⁷

Curiously, CONTU considered these rights of adaptation of a computer program to be "necessarily more private in nature than the right to load a program by copying it."³⁸ Therefore, they should be exercised only by the original customer and the programs should not be resold with the adaptations unless the copyright proprietor has consented.³⁹ The CONTU report does not explain why a computer program is more "private in nature" than the hardware used to run it. Nor does it explain why a computer program is more private in nature than the pens, paper, typewriters, and calculators it replaces.⁴⁰ In any event, the rights articulated in section 117 do not extend to the user's resale of a modified computer program. Moreover, CONTU said, "[s]hould [copyright] proprietors feel strongly that they do not want rightful possessors of their programs to prepare such adaptations, they could, of course, make such desires a contractual matter."⁴¹ Like the privacy in the nature of computer programs, the significance of the desires of sellers as to what their customers may do (and why these desires deserve deference in the face of an apparently contrary statutory policy) is unexplained.

Most curiously, CONTU failed to consider specifically "debug-

1336 (9th Cir. 1984), *petition for cert. filed*, 53 U.S.L.W. 3406 (U.S. Nov. 9, 1984) (No. 84-761).

36. CONTU REPORT, *supra* note 4, at 13.

37. This article is only peripherally concerned with the right under § 117(2) to make archival copies. *See supra* text accompanying note 10.

38. CONTU REPORT, *supra* note 4, at 13.

39. *Id.*

40. The resale, in modified form, of pens, paper, typewriters, and calculators is not restricted by law.

41. CONTU REPORT, *supra* note 4, at 13.

ging,"⁴² a truly essential adaptation of computer programs. The literal language of the adaptation rights provision of section 117 appears to extend as much to debugging, however, as to other adaptations.

Finally, CONTU said that users need to make "backup" or "archival" copies of computer programs "to guard against destruction or damage."⁴³ Having another copy available when the regular working copy is damaged permits the computer program owner to continue to use the computer in the owner's business, despite the damage. The owner might otherwise suffer serious disruption to its regular business. Making archival copies would probably be held an act of copyright infringement, because it involves making a "fixed" reproduction of the work. But the argument might prevail that in such circumstances backup copying is a "fair use" of the copyrighted work, or that the customer has an implied license to make backup copies. Still, it is obviously better to avoid uncertainty on this point.⁴⁴

The above is a complete summary of the very limited pre-Congressional legislative history of section 117.⁴⁵ CONTU desired to compromise its proposed grant of copyright protection to proprietors of computer programs with some sort of guarantee to users that their rights would also be safeguarded. To balance the grant to proprietors, CONTU sought to deal with two largely nonexistent problems of users (inputting computer programs into computers and making high-level language translations) and with a third problem that is of considerable importance to users (enhancements). It failed to consider debugging, an equally serious problem, but by fortunate accident covered it anyway. Finally, it dealt with the potentially serious issue of backup copies. The question remains, however, whether the users of programs received meaningful benefits from this compromise.

42. "Bugs" are mistakes made by computer programmers. Bugs must be removed or corrected to prevent such disasters as occasionally writing paychecks for one hundred times their proper amount. "Debugging" is the removal of the computer programmer's errors. See Bender, *Software Protection: The 1985 Perspective*, 7 W. NEW ENG. L. REV. 405, 409 (1985).

43. CONTU REPORT, *supra* note 4, at 13.

44. Case law arising under § 117 illustrates the danger of uncertainty. See, e.g., *Hubco Data Prods. Corp. v. Management Assistance Corp.*, 219 U.S.P.Q. (BNA) 450 (D. Idaho 1983); *Midway Mfg. Co. v. Strohon*, 564 F. Supp. 741 (N.D. Ill. 1983); *Micro-Sparc, Inc. v. Amtype Corp.*, 592 F. Supp. 33 (D. Mass. 1984). These decisions illustrate how § 117 has fueled litigation and has been the subject of perplexing judicial interpretation.

45. The legislative history of § 117 exists only in the recommendations made by CONTU. Congress passed § 117 based on the CONTU recommendations with only one change. See *supra* note 8 and accompanying text. See also *infra* note 46 and accompanying text.

B. *What Congress Did*

Congress passed section 117 with one change from the version recommended by CONTU. Without explanation why, the rights of "rightful possessors" of computer programs became the rights of "owners."⁴⁶ This modification left the door open to extensive sleight of hand in the name of bailments, leases, licenses, and other putatively *nonsale* transactions. Whether the courts will interpret section 117 to permit marketers of software to withdraw the benefits of the section from customers when the marketers denominate the transaction as something other than a sale and when the customer becomes, at least in name, something less than an owner,⁴⁷ remains to be seen.⁴⁸

Aside from this modification there is no formal legislative history for section 117. Congress simply followed CONTU's recommendations without further explanation.⁴⁹ As several courts have noted, there is no legislative history in the ordinary sense, and aside from the "plain" meaning of the statute, the CONTU report is all the guidance to which the courts can look.⁵⁰ To be sure, there is always the possible "common sense" approach to statutory interpretation; however, such considerations have not been paramount in the judicial interpretation of section 117.

III. SECTION 117 IN THE COURTS

A. *"Essential Step"*

A major problem left unresolved by section 117 is what it means for an adaptation of a computer program to be "created as an essential step in the utilization of the computer program in conjunction with a machine."⁵¹ It may mean, as at least one court has concluded, that the adaptation is "indispensable" to the use of the computer program⁵² and, therefore, that the adaptation may not be a mere "conven-

46. 17 U.S.C. § 117 (1982). See *supra* text accompanying note 10.

47. For instance, the customer becomes less than an owner in bailment, license, and lease arrangements.

48. See generally *United States v. Masonite Corp.*, 316 U.S. 265 (1942) (patent license case); Stern, *Shrink-Wrap Licenses of Mass-Marketed Software in the United States*, 1 *ASIAN PAC. REV. OF COMPUTERS, TECHNOLOGY, & LAW* 13 (1984) (discussing copyright considerations and § 117).

49. See *supra* note 45 and accompanying text.

50. See, e.g., *Atari, Inc. v. JS&A Group, Inc.*, 1984 *COPYRIGHT L. REP. (CCH)* ¶ 25,613 (N.D. Ill. Dec. 6, 1983); *Midway Mfg Co. v. Strohon*, 564 F. Supp. 741, 750 (N.D. Ill. 1983).

51. See *supra* note 10 and accompanying text.

52. *Apple Computer, Inc. v. Formula Int'l, Inc.*, 594 F. Supp. 617, 622 (C.D. Cal. 1984).

ience" to the use of the program.⁵³ Another court has perhaps so held by implication.⁵⁴

Yet this interpretation of "essential" undermines the principal benefit (or privilege) that the user was supposed to receive under section 117—the right to enhance computer programs. CONTU said that section 117 was necessary to permit users to add to programs the enhancements that were lacking when the user originally acquired the program.⁵⁵ Enhancements, however, are not indispensable. If they were, the user would not have bought the unenhanced program in the first place.

B. *Who May Adapt?*

Another difficulty that remains unresolved by section 117 is in determining who may adapt a computer program to add enhancements. Section 117 permits the owner of a computer program to "authorize the making of another copy or adaptation of that computer program."⁵⁶ A large number of computer program owners, perhaps the overwhelming majority, are not capable of making their own adaptations to their computer programs. Typically, such users are not computer programmers, and they lack the skills and equipment necessary to make adaptations to existing computer programs. In the few cases involving vicarious activity that have been decided under section 117 to date, the courts have held that it is copyright infringement for a third party to adapt or copy a computer program for the owner of a computer program.⁵⁷ The effect is to make the adaptation right under section 117 an illusory promise. The following cases illustrate the trend in judicial interpretation of section 117.

C. *The Hubco Case*

The first case in which the section 117 adaptation right was urged as a defense to a claim of infringement of a copyrighted computer program illustrated several of the difficulties faced by those who seek to invoke section 117. In *Hubco Data Products Corp. v. Management*

53. *Id.*

54. *See* Midway Mfg. Co. v. Strohon, 564 F. Supp. 741 (N.D. Ill. 1983).

55. CONTU REPORT, *supra* note 4, at 13.

56. *See supra* note 10 and accompanying text.

57. *See* Apple Computer, Inc. v. Formula Int'l, Inc., 594 F. Supp. 617, 622 (C.D. Cal. 1984); *Hubco Data Prods. Corp. v. Management Assistance, Inc.*, 219 U.S.P.Q. (BNA) 450 (D. Idaho 1983); *Midway Mfg. Co. v. Strohon*, 564 F. Supp. 741 (N.D. Ill. 1983).

Assistance, Inc.,⁵⁸ the alleged infringer (Hubco) sought to circumvent a marketing strategy that a copyright owner (MAI) had devised for charging its customers what the traffic would bear.⁵⁹ MAI marketed the same operating system⁶⁰ software to computer owners whose computer systems varied widely in cost and capability.⁶¹ Perhaps one hypothetical customer's computer system would have one megabyte of memory and cost \$100,000.⁶² A second customer's system might have ten megabytes of memory and cost \$300,000. A third customer's system might have 100 megabytes of memory and cost \$1,000,000.

Clearly, the third customer can and will pay much more for the operating system than the first, barring unrestricted competition or arbitrage, because the value of the benefit conferred on the third customer is much greater. MAI, therefore, would configure its operating system software for the first of these hypothetical customers to support only one megabyte of memory. MAI would charge its customer (let us say) \$10,000 for that operating system. For the second customer, MAI would have configured the operating system software to support only ten megabytes and charged \$50,000; and for the third, a 100-megabyte memory limit and a \$100,000 charge. By employing such a marketing strategy, MAI was able to exact prices in accordance with value rather than setting a uniform price for the product. Under a uniform price, MAI would probably charge some customers too little (i.e., less than they might be induced to pay), while perhaps deterring other customers from buying the product because the uniform price was excessive compared to the value that the customer received.

MAI, therefore, configured the operating systems differently for each customer to support use of only the specified (and paid-for) amount of memory. It did so by inserting "governors" into the software.⁶³ MAI delivered the operating system to the customer as a disk or tape in which the software was stored in machine-readable machine language.⁶⁴ The governors were portions of that machine

58. 219 U.S.P.Q. (BNA) 450 (D. Idaho 1983). No appeal was prosecuted in the *Hubco* case.

59. *Id.* at 452.

60. An operating system is a set of computer programs that govern the internal operation of a computer system. For example, the operating system allocates access to the central processing unit of the computer among various tasks, in accordance with a predetermined task priority ranking.

61. *Hubco*, 219 U.S.P.Q. (BNA) at 452.

62. Hypothetical customers and figures in connection with the *Hubco* case are provided in this article to illustrate the author's point more conveniently.

63. *Hubco*, 219 U.S.P.Q. (BNA) at 452.

64. Machine-readable machine language (object code) is a sequence of magnetized

language encoded in the disk or tape, and forming part of the computer program. They limited the memory access and other capabilities of the system.⁶⁵

A customer wishing to upgrade its computer system to contain more memory than the computer could originally access would have to allow MAI to perform a reconfiguration. If the customer wanted to upgrade from one megabyte to ten megabytes of memory for example, MAI might charge the hypothesized \$40,000 differential between the prices of a one and ten megabyte operating system. Upon being paid, MAI would modify the governor to permit access to the upgraded memory limit.

Hubco decided to circumvent this marketing strategy by decoding and "reverse engineering"⁶⁶ MAI's governor system. Hubco became a competitor with MAI in the upgrade business.⁶⁷ Clearly, Hubco could undersell MAI for upgrade services.⁶⁸ Not having had to make the initial investment in developing the operating system, Hubco was a lower-cost operation; at least it was willing to charge less for the same service. Of course, MAI, the copyright owner, considered Hubco's form of business competition "piracy," and it sought legal redress against the wretched "free rider."

One way to analyze the problem that the *Hubco* case presented would have been to ask whether the copyright owner's marketing program was objectionable. It had a product that was valued differently by different customers, because each customer used that product differently — as one customer might use gasoline to operate a Rolls Royce while another uses the same grade gasoline to operate a Volkswagen. Apparently, it was impractical for MAI to install a meter on each customer's computer and to charge the customer a monthly rate in accordance with the number of bits of information processed that month. Instead, MAI used the governors and upgrade fees to accom-

and unmagnetized domains on the disk or tape, corresponding to the 0s and 1s of the symbolic machine language or object code version of the computer program.

65. *Hubco*, 219 U.S.P.Q. (BNA) 542. In effect, the governors were lines of computer code inserted into the operating system computer program at an appropriate point, that directed the computer not to attempt to access more than *x* megabytes of memory. In the course of "obeying" the other operational commands of the operating system, the customer's computer system would also obey this command.

66. *Hubco*, 219 U.S.P.Q. (BNA) at 452. The term "reverse engineering" refers to the technique of ascertaining how a product is made, by studying the product. See *Kewanee Oil Co. v. Bicon Corp.*, 416 U.S. 470, 476 (1974) (reverse engineering is accomplished by "starting with the known product and working backward to divine the process which aided in its development or manufacture").

67. *Hubco*, 219 U.S.P.Q. (BNA) at 452.

68. *Id.* at 452, 457.

plish the same purpose — to fine tune the price to the value of the product to each customer, which is to say the price which that customer was willing to pay. Although in principle this practice is probably not objectionable, the means selected for executing the practice may be questionable.

The argument might be advanced that it is objectionable to sell a product to a customer while keeping that product on a string — to exercise remote control over the customer's use of its property once it has purchased that property.⁶⁹ Furthermore, one might argue that the customer has an adaptation right under section 117, and that unless the customer has explicitly contracted that right away the seller has no business limiting the customer's adaptation of the property. Even if the contract⁷⁰ expressly forbids the customer from modifying the computer program, one might even argue that the contract should not be enforced, because it derogates from section 117.⁷¹

If the customer has circumvented the governors to do a "self-help" upgrade of the operating system software, it would seem preferable to remit the matter to contract law rather than to regard it as copyright infringement. While there is no objection in principle to letting the copyright owner charge its customers what the traffic will bear, there is no reason for the government to enforce the marketing program by making it an act of copyright infringement to circumvent the program. Accordingly, if the customers have made their own adaptations to the software (without breaching a contractual provision not to do so) they should be left alone. That appears to be one of the primary purposes of section 117.

Of course, that is not what happened in *Hubco*. The customers were not going to reverse engineer and decode the computer programs in order to modify the governors, any more than they were going to build their own computers. The only way MAI customers could get a cheap upgrade was to hire Hubco, the alleged infringer. Hubco had two different techniques. One method was to go to the customer's

69. That is the theory behind the "exhaustion doctrine" and 17 U.S.C. § 109(a) (1982). See also 17 U.S.C. § 906(b) (1984); H. Rep. No. 98-781, 98th Cong., 2d Sess. at 23 (1984).

The *Hubco* court did not indicate, however, that MAI had any contracts with its customers requiring them not to modify the governors. The exhaustion doctrine and § 109(a) are limited to restrictive agreements limiting customers' use or disposition of products that copyright owners have sold to the customers.

70. There was apparently no contract in the *Hubco* case, forbidding customers to tamper with the governors. See *Hubco*, 219 U.S.P.Q. (BNA) at 452.

71. The CONTU Report apparently condoned such contracts. See *supra* note 41 and accompanying text.

computer facility to perform the upgrade.⁷² Such an upgrade was accomplished by making a printout of the computer program.⁷³ From the printout, the program was decoded ("unscrambled") and the governors were searched out and modified or deleted.⁷⁴ The second method was to supply the customer with software that performed these same tasks, allowing the customer to perform the job itself.⁷⁵

The court found that when Hubco went to the customer's facility "to conduct on-site upgrades, it made a written printout of the unscrambled object code contained in the higher-level operating system which the computer owner desire[d]."⁷⁶ When instead Hubco supplied the customer with a computer program to perform the same task, the copying and comparison of the computer code was "done completely inside the computer by the software program," but "that . . . does not make a difference."⁷⁷ Both methods, the court held, involved the making of infringing copies of the copyrighted software.⁷⁸

As for section 117, the *Hubco* court stated "Hubco cannot avail itself of the owner exemption . . . because Hubco is not the 'owner'"⁷⁹ It is unclear whether the court found it objectionable merely because Hubco made a computer printout of the computer program to find the governors that had to be removed or because it found that Hubco had made permanent reference copies of the computer programs for study purposes. The former appears more likely, but if the latter is actually the case, there should have been an analysis to determine whether such a study is a permissible "fair use" of a copyrighted work.⁸⁰ The main point, however, is that the court would not permit a third party to set itself up in the business of facilitating customer adaptations, even though section 117 appears to guarantee to the customer

72. *Hubco*, 219 U.S.P.Q. (BNA) at 452.

73. *Id.*

74. *Id.*

75. *Id.*

76. *Id.* at 456. It is unclear whether the court means that Hubco made a printout of the customer's object code, taken from the customer's computer system, or that Hubco had previously unscrambled and made a different copy of the MAI computer program, which Hubco brought with it to the customer's site. *Id.*

77. *Id.*

78. The difference is that between direct infringement and contributory infringement. For there to be a contributory infringement, however, someone must first be held a direct infringer. See *Sony Corp. v. Universal Studios, Inc.*, 104 S. Ct. 774, 785 (1984)(copyright case); *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 340-41 (1961)(patent case). The reader is left to query whether, given § 117, the customer who used Hubco's software is a direct infringer.

79. *Hubco*, 219 U.S.P.Q. (BNA) at 456.

80. See 17 U.S.C. § 107 (1982).

the right both to make adaptations and to authorize their preparation.⁸¹ The *Hubco* opinion thus foreshadows the persistent trend of subsequent decisions to delete from section 117 the power of computer program owners to hire another to adapt programs for them.

D. *The Strohon Case*

In *Midway Mfg. Co. v. Strohon*,⁸² the court found that the defendant Slayton's "modification kit" or "enhancement kit" would infringe the plaintiff's copyright in a computer program.⁸³ Midway controlled copyrights relating to the "PAC-MAN" video game.⁸⁴ One copyright protected the audiovisual aspects of the game.⁸⁵ A second copyright protected the computer program used to operate video game machines and cause the display of the audiovisual effects.⁸⁶ Midway sold the machines to "operator" customers.⁸⁷ Players then paid quarters to use the machines to play PAC-MAN. After many plays, enthusiasts became jaded with the game; or they memorized the patterns on the screen and continued to play successfully, thus monopolizing the machine for several hours on a single quarter. At this point, the operator ceased to make a profit from the machine.⁸⁸ In an effort to recoup their investments,⁸⁹ operators sometimes dealt with this problem by inserting modification kits into machines.⁹⁰ The modification kits ena-

81. *Hubco*, 219 U.S.P.Q. (BNA) at 458.

82. 564 F. Supp. 741 (N.D. Ill. 1983). The following disclaimer is appropriate: The author was counsel to one of the parties in this case.

83. *Id.* at 753.

84. *Id.* at 743. For a discussion of the monetary impact on the public of the PAC-MAN video game, see *Pac-Man Fever*, Time, Apr. 5, 1982 at 48. Time observes:

Pac-Man is bursting out all over. Not only has the 15-month-old arcade game swallowed up an estimated \$1 billion in quarters to become the hottest item in the video-game market, but the little yellow creature is now invading homes and spawning nearly 200 offshoots ranging from jeans to a chart-busting pop song, *Pac-Man Fever*.

Pac-Man is a pie-shaped yellow figure that scores points on a video game by gobbling up dots, colorful fruits and four ghosts that inhabit its mazy world. Pac-Man, however, wilts and vanishes when one of the ghosts eats it. The game was originally developed in Japan and is based on a ravenous folk character whose appetite could never be appeased. The name comes from *paku*, the Japanese word for "to eat."

Id.

85. *Strohon*, 564 F. Supp. at 743.

86. *Id.*

87. *Id.* "Operators" purchase the machines and place them in retail locations accessible to player-customers.

88. *Id.*

89. From \$2,000.00 to \$3,000.00 per machine. *Id.*

90. *Id.* at 744. These kits usually cost up to several hundred dollars. Therefore, the

bled the operator to complicate and accelerate the action of the game, thus rendering the game more challenging to the player and more profitable to the owner.⁹¹

Defendant Slayton's enhancement kit contained five computer memory chips in which were stored computer programs to operate the game.⁹² These chips were inserted into the machines in place of some of the chips that originally came with the machine. The computer program modifications stored in the new chips altered the operation of PAC-MAN.⁹³ The modified game, CUTE-SEE, was sufficiently different in appearance from PAC-MAN for there to be no copyright infringement of the audiovisual aspects of the PAC-MAN game.⁹⁴ But the modified computer program was very similar, overall, to the computer program that it replaced. The enhancement involved only a slight adaptation of the original computer program.⁹⁵ Defendant Slayton performed the adaptation by "patching" some new lines of code in among the old, unaltered parts of the code.⁹⁶ The entire computer program, old and new parts alike, was then encoded into a new set of memory chips. Thus, the replacement ROMs contained programs that were both adaptations and substantial copies of the original computer program. That is what ordinarily happens whenever an adaptation is made. CONTU assumed that it would happen when it explained the need for section 117.⁹⁷

The court in *Strohon* found, however, that section 117 was "not authority for Slayton's sales of reproductions of Midway's program as adapted."⁹⁸ In so ruling, the court emphasized the language at the end of section 117 permitting the sale of adaptations only with the copyright owner's consent.⁹⁹ As in *Hubco*, therefore, the court in *Strohon* ruled that a third party may not go into the business of providing adaptations for those apparently entitled to make their own

cost of an enhancement kit is 10% or less than the value of a new coin-operated video game machine.

91. *Id.*

92. *Id.*

93. *Id.*

94. *Id.* at 748-49.

95. *Id.* at 752-53. The court found that 89% of the 16,000 bytes of the computer program for PAC-MAN were replicated in the computer program for CUTE-SEE. *Id.* at 752.

96. *Id.* at 753. A "patch" is a slight modification of a program, done without modifying or recompiling the rest of the program. See KELLY-BOOTLE, *THE DEVIL'S DP DICTIONARY* 99 (1981).

97. See *supra* notes 23-37 and accompanying text.

98. *Strohon*, 564 F. Supp. at 745 n.2.

99. *Id.*

adaptations.¹⁰⁰

It is unclear what room, if any, the *Strohon* court would leave for other than direct, personal exercise of the section 117 adaptation right. The *Strohon* case illustrates the usual situation of the owner of a computer program: The operators were not computer programmers; there was no way for them to develop their own enhancement kits for their machines. They did not own the equipment to program chips with computer program adaptations, even if they knew how to write them. The only way these operators were going to get enhancement kits for their machines was from someone like Slayton.¹⁰¹ For the court to rule that Slayton could not supply them with enhancement kits was to rule that the operators had no right to make or use adaptations. One may ask, then, in what circumstances, if any, the court would hold that the operators "authorized" someone to make an adaptation for them of their PAC-MAN computer programs.

E. *The Micro-Sparc Case*

In *Micro-Sparc, Inc. v. Amtype Corp.*,¹⁰² the court for all practical purposes abolished the provisions in section 117 which permitted owners of copies of computer programs to "authorize" the making of a copy for use. Micro-Sparc published *Nibble* magazine, in which it printed copies of computer programs. *Nibble* subscribers could then type (enter by means of the terminal keyboard) the computer programs into their microcomputers for use.¹⁰³ Typing the programs was a tedious process, however, and one that left much room for error. Micro-Sparc, therefore, also offered to its subscribers the opportunity to purchase additional copies of the programs that were already typed (encoded) onto diskettes, which the computer could read and exe-

100. *Id.* at 746. The *Strohon* court went further and interpreted a recent Seventh Circuit decision, *Midway Mfg. Co. v. Artic Int'l, Inc.*, 704 F.2d 1009 (7th Cir. 1983), *cert. denied*, 104 S. Ct. 90 (1984), as authority for the position that there is no right of an owner to modify coin-operated video game machines to enhance the video games. *Strohon*, 564 F. Supp. at 747-48. That decision, however, involved only the audiovisual work copyright. Right or wrong as the *Artic* decision may be concerning audiovisual works, to which § 117 does not speak, *Artic* does not address computer programs, to which § 117 specifically refers.

Slayton was an operator of coin-operated video game machines, as well as a would-be supplier of enhancement kits. *Id.* at 743-44. The court's ruling, therefore, apparently prevented Slayton from modifying his own machines.

101. In point of fact, defendant Slayton was not a computer programmer either. He hired a consultant to develop the enhancement kit for him.

102. 592 F. Supp. 33 (D. Mass. 1984).

103. *Id.* at 34.

cute.¹⁰⁴ Defendant Amtype sought to market to Micro-Sparc's customers similar diskettes containing the typed programs.¹⁰⁵ It offered the same programs to purchasers of Micro-Sparc's magazine, at a much lower price than Micro-Sparc charged per program. Amtype called this a "typing service," but Micro-Sparc called it the piratical sale of infringing copies of the computer programs.¹⁰⁶

It was conceded that subscribers to the magazine were the lawful owners of copies of the computer programs purchased from Micro-Sparc, and that Amtype dealt only with such subscribers.¹⁰⁷ The question was whether section 117 permitted the subscribers to secure additional copies, in diskette form, from anyone other than the original seller, Micro-Sparc.¹⁰⁸ The court ruled that the sole purpose of section 117(1) was to authorize the owners to input computer programs into computers.¹⁰⁹ The court then reasoned that section 117 did not permit subscribers to authorize Amtype to prepare diskette copies for them, because Amtype did not itself input the copies into the subscribers' computers.¹¹⁰ Instead, the subscriber used the diskette to input the computer program into the computer.¹¹¹

F. *The Formula Case*

The decision in *Apple Computer, Inc. v. Formula International, Inc.*¹¹² illustrates several of the problems in interpreting section 117. Apple had successfully obtained a preliminary injunction that enjoined Formula from infringing the copyrights in Apple's operating system software.¹¹³ Formula attempted to avoid the impact of the injunction by purchasing copies of the operating system, on diskettes, from Wong, a licensee of Apple.¹¹⁴ Formula then supplied its customers

104. *Id.*

105. *Id.*

106. *Id.*

107. *Id.* at 34 & n.3.

108. *Id.* at 35.

109. *Id.* at 35. This, of course, flatly contradicts the CONTU Report's explanation of the need of computer program owners to make adaptations and enhancements. See *supra* notes 25-37 and accompanying text. But the adaptation issue was not directly presented in the *Micro-Sparc* case.

110. *Micro-Sparc*, 592 F. Supp. at 35.

111. *Id.* On this theory, Micro-Sparc's subscribers would not have the right to make diskette copies either. Instead, they would be obliged to retype the whole computer program each time that they wanted to use it. No appeal was prosecuted in the *Micro-Sparc* case.

112. 594 F. Supp. 617 (C.D. Cal. 1984).

113. *Id.* at 618.

114. *Id.* at 620, 622.

with the Wong diskettes. If it had stopped there, Formula probably would have prevailed.¹¹⁵ But Formula went further, in purported reliance on section 117.¹¹⁶ It copied the operating system software from the diskette into memory chips, which it supplied to its customers along with the diskette, so that the customers could insert the chips into their computers.¹¹⁷ Doing so greatly increased the convenience of using the Formula computer and thus presumably made Formula's product more saleable to customers.¹¹⁸ It also caused the court to hold Formula in contempt of the injunction.¹¹⁹

Formula sought to defend by invoking section 117.¹²⁰ The court found that section 117 was inapplicable on two distinct and independent grounds. First, Formula did not make the chip copies of the programs for its own use; it made them for its customers, to whom it sold the computer, the Wong diskette, and the chips.¹²¹ The court ruled that section 117 applies only to owner-users of computer programs, not to resellers of computer programs.¹²² Second, the court found that Formula's use of the copies in chips was not "essential" within the meaning of section 117.¹²³ The court found that customers could use the Wong diskettes by loading the software from the diskette into the RAM of the computer each time they needed it.¹²⁴ It may have been more "convenient" to have the computer programs in chip form,¹²⁵ but "a convenient method of utilizing such a diskette . . . is not 'essential'."¹²⁶ Rather, the court ruled, "'Essential' means indispensable

115. The court implied as much when it observed that "one could employ the Wong diskette in a Formula computer by use of a copying method less permanent than the one Formula has employed." *Id.* at 622. The court indicated that using the diskette to input the program into RAM (read/write Random Access Memory) would have been an acceptable less permanent method. *Id.*

116. *Id.* at 620.

117. *Id.*

118. It takes much less time and effort to start up a computer with software in chips than with software on a diskette. Formula had copied Apple's "Applesoft" and "Autosart" computer programs onto three silicon memory chips which, when inserted into the Formula computer, became "permanent and intergral" parts of the machine. *Id.*

119. *Id.* at 623.

120. *Id.* at 620.

121. *Id.* at 622. Apparently, there was one price for the whole package.

122. *Id.* at 621-22.

123. *Id.* at 622.

124. *Id.*

125. *Id.* The software would vanish each time the computer was turned off and would have to be reloaded (with some effort) each time it was needed. Making the software a part of the machine by putting the computer programs into ROM chips permitted the computer to read the programs whenever it was necessary to use them. *Id.*

126. *Id.*

and necessary."¹²⁷ Accordingly, the court held Formula in contempt of the injunction.¹²⁸

IV. THE IMPLICATION OF JUDICIAL INTERPRETATION OF SECTION 117

The implications of these decisions are disturbing. In *Apple Computer, Inc. v. Formula Int'l, Inc.* for example, Formula's customers became lawful owners of the computer programs in the Wong diskettes. Under the court's reasoning, however, the customers would have had no right to put the software on the Wong diskette into chips, because it was no more "essential" for them to do so than it was for Formula.¹²⁹ Rather it was a mere "convenience."¹³⁰ The reference to "essential step" in section 117(1) applies equally to adaptations and other copies. If the *Apple Computer* court's interpretation of "essential" under section 117(1) as meaning "indispensable" is followed, it will largely undermine the principal benefit or privilege that users were supposedly to receive from section 117(1) — the right to add enhancements to computer programs.

CONTU said that section 117(1) was needed to permit users to add enhancements to programs that were lacking when the user originally acquired the program.¹³¹ No such enhancement is ever "indispensable" — for if it were, the user would not have bought the program in the first place. A program is usually good for something

127. *Id.*

128. *Id.* The court viewed the case from the standpoint that Formula was engaging in a "mere subterfuge, a clever ploy" and was trying to "hit upon a pretext to avoid the impact of the injunction." *Id.* at 622. It regarded Formula's efforts as unjustifiably based on "the fortuitous circumstances of being lawfully [able] to acquire copies of two of Apple's most valuable copyrighted programs through purchase of the Wong diskette." *Id.*

Yet, that Formula was able to buy the Wong diskette was no mere "fortuitous circumstance." Formula was able to do so because Apple chose to license Wong, without restrictions as to the use or resale of the diskettes. Apple's choice arguably was based on its desire not to so restrict Wong or on its belief that the law did not authorize or permit such restrictions. *See, e.g.*, 17 U.S.C. § 109(a). *But see* *United States v. General Elec. Co.*, 272 U.S. 476, 488 (1926) (a patentee may impose reasonable restrictions on manufacturing licensees but must not impose like restrictions on purchasers).

Once Apple licensed Wong, Apple became legally obligated to accept the consequences of that business decision, and third persons became entitled to whatever rights the statute provides in relation to such licenses and goods sold by the licensees — "fortuitous circumstance" or otherwise. It would seem that the cause of the problem here is due at least as much to the licensor's conduct as the third person's conduct. Perhaps, however, the court should have focused on the rights, if any, of customers and owners of Wong diskettes rather than on the plaintiff's or defendant's state of mind or expectations.

129. *See* *Apple Computer, Inc. v. Formula Int'l, Inc.*, 594 F. Supp. at 622.

130. *Id.*

131. CONTU REPORT, *supra* note 4, at 13.

when it is purchased, but its value can be enhanced by modification. Moreover, as time passes, the need for improvements or enhancements occurs to users of programs. The need for such improvements is not obvious to the customer or the creator when the customer begins to use the program. The improvements are not indispensable, but they foster progress in the computer software field. That is precisely what CONTU promised when it proposed section 117.

An interpretation of "essential" as meaning necessary to accomplish legitimate purposes of the owner of the computer program¹³² would be far more in keeping with the CONTU Report's explanation of section 117. To be sure, "legitimate" may beg the question, and it may be better to particularize the concept of "legitimate" in terms of improving the value or utility of the computer program to its lawful owner. That the use of the adaptation is more convenient for the owner than is the use of the unadapted version of the computer program should be deemed to satisfy this test. Given the present state of the case law under section 117, however, it is probably desirable to amend either section 101¹³³ (by adding a definition of "essential") or section 117 to accomplish this result.

Another troublesome implication of the *Formula* decision, underscored by the *Strohon*, *Hubco*, and *Micro-Sparc* decisions, is that unless third persons are permitted to make adaptations, few will be made. Section 117 expressly gives the owners of copies of the computer program the right to "authorize the making" of adaptations.¹³⁴ As a practical matter, the overwhelming majority of computer program owners can acquire adaptations *only* by authorizing someone else to make the adaptations.

The analogous rules of patent law are markedly different from those that the lower courts have established under section 117. The owner of a patented machine has an adaptation right, like that of section 117, although the patent law doctrine is not statutory but judicially decreed.¹³⁵ In confirming this adaptation right for purchasers of patented machinery, the Supreme Court has analogized the right to that of the repair of a worn machine:

Petitioners in adapting the old machines to a related use were doing more than repair in the customary sense; but what they did

132. *Id.*

133. 17 U.S.C. § 101 (1982) defines terms from "anonymous work" to "work made for hire." It does not, however, define "essential."

134. See *supra* text accompanying note 10.

135. See *Wilbur-Ellis Co. v. Kuther*, 377 U.S. 422 (1964).

was kin to repair for it bore on the useful capacity of the old combination, on which the royalty had been paid.¹³⁶

In repair cases, the owner of a patented machine is not obliged to make his own repairs. He is permitted to buy a repair kit from a third party, who is in the business of facilitating others' exercise of their right to repair.¹³⁷

The patent rule seems to make far more sense than the rule being followed under section 117. Rights frequently cannot be exercised without the aid of a third party.¹³⁸ The courts' restriction of section 117 to "do-it-yourselfers" has turned the adaptation right into an illusory promise.

It would appear that there are only two potential legitimate concerns of copyright owners with respect to the adaptation right. First, that there is an authorization for the conduct from the owner or legitimate possessor of a copy. Second, that the customer for the new copy or adaptation originally acquired a legitimate copy of the computer program. What steps are necessary for there to be an "authorization" from an owner of a copy under section 117? To the extent that the courts have considered the matter, it would appear that almost nothing will satisfy them. In the *Strohon* case, would the court have been satisfied if the defendant Slayton got a letter of agreement from each prospective purchaser of the kit?¹³⁹ In the *Formula* case, should the defendant Formula have sold its computers together with a Wong diskette and an order blank?¹⁴⁰

It is unclear what amount of ceremony, if any, would have satis-

136. *Id.* at 425.

137. In *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336 (1961), the accused contributory infringer manufactured and sold replacement parts kits for use in the repair of automobile convertible tops. *Id.* at 337-38. The court held that because the car owner did not infringe the patent when it replaced these parts, the supplier was not liable either. *Id.* at 345-36. The supplier in the *Aro* case made the kits *en masse*, in advance of orders from particular car owners.

138. See, e.g., *Barrows v. Jackson*, 346 U.S. 249 (1953); *Pierce v. Society of Sisters*, 268 U.S. 510 (1925).

139. In principle, such a letter of agreement could state:

This is to advise you that I am the lawful owner of a copy of the computer program for the PAC-MAN video game, and I hereby authorize you to make for me an adaptation of that computer program.

140. Perhaps it is unclear whether Formula should have included the following order blank:

I would like you (and I hereby authorize you, within the meaning of 17 U.S.C. § 117), to prepare for me an adaptation of the Wong diskette that you sold me for use in my Formula computer, so that the Autostart and Applesoft computer programs stored in the diskette will be placed into silicon chips that I can insert into my Formula computer, thereby saving me the bother of inputting

fied either court as to authorization. But the adaptation right of section 117 is worthless to most of the supposed beneficiaries if there is not some convenient way for them to secure adaptations from third persons. Therefore, there should be a reasonable way for owners of the adaptation right to vindicate that right. For example, the very act of purchase of the adaptation on the part of the customer makes it manifest that he wants the adaptation and, therefore, is willing to "authorize" its making and to verbalize the authorization to whatever extent the law demands. The act of purchase by the owner of a copy of the computer program should be deemed an authorization. Moreover, it should relate back however far in time is necessary to legitimize the transaction, since there is no reason to prohibit advance manufacture and stockpiling of the product in anticipation of orders.

As for the customer being a legitimate customer, it would seem to make the most sense to have a rule under which a third person who took reasonable steps to insure that he dealt only with lawful owners of a computer program could sell adaptations to them, without undue documentation or legal formalities. Under this rule, it should have been sufficient for the defendant in *Strohon* to make reasonable efforts to be sure that he sold his enhancement kits only to owners of PAC-MAN coin-operated video game machines. In the *Formula* case, the defendant knew that it was dealing with owners of the Wong diskette, because it was engaged in the act of selling Wong diskettes to them at the same time that it sold them the chips.¹⁴¹ In such a case, it should not be necessary to complete the diskette sale first, and then separately to proceed to sell the chips. Nothing is gained by requiring such separate transactions, except to harass the adaptor and customer.

That is one view of the adaptation right. Another view is that the seller of adaptations is a parasite who seeks a free ride on the ingenuity and investment of the first comer and, therefore, deserves to encounter all possible obstacles in his path. In a case such as *Formula*, perhaps such an argument has some appeal — but only if the court focuses on the sale of Apple and Apple-imitator computers. Yet, the computers were not the products protected by copyright. The programs in the Wong diskette were the only copyrighted products. The court, therefore, went too far in considering any equities but those relating to the marketing of the programs as such. There was no copyright equity in

("booting up") those computer programs every time that I want to use them. I enclose 25 cents to cover postage and handling.

Would such a ceremony have changed the situation?

141. *Apple Computer, Inc. v. Formula Int'l, Inc.*, 594 F. Supp. 617, 620 (C.D. Cal. 1984).

the hardware. Certainly, Apple did not attempt to impose a tie-in between its hardware and software, and there is no reason for a court to impose one indirectly.¹⁴²

As far as the marketing of the Wong diskettes was concerned, the apparent effect of the unrestricted license to Wong is as if Apple had sold the diskettes outright to Formulas's customers — not by mere fortuity of circumstance as the court said, but because that is how Apple chose (presumably, wisely) to run its business. Despite the possible "free rider" argument in the *Formula* case, therefore, the better view would be that Apple effectively sold the diskettes to the customers (or caused the diskettes to be sold to them), and the only question left regards *their* right to secure an adaptation. Whether the customer's supplier is a parasite, free rider, or secret disrespector of intellectual property rights is beside the point. If the customer is lawfully entitled to have the adaptation, the supplier commits no wrong by providing the customer with what the customer may rightfully possess.

In a case such as *Strohon*, the parasite/free rider argument has even less force. The operators desired to obtain enhancements to profit on their investments, or to reduce their losses. An operator could perhaps salvage a useless machine and turn it into a money-producer by making an investment of about ten per cent of the cost of the original or a new machine. Rather than calling the act of supplying operators with such kits piracy, parasitism, or free-riding, one could equally well call it meeting an expressed public need that section 117 purports to satisfy.

The equities of cases such as *Micro Sparc* and *Hubco* are less clear. The question is whether the courts should lend their support to the copyright owner in enforcing his marketing program, or whether instead they should leave him to consensual arrangements and whatever the market place provides. Whichever way that issue is decided, however, the section 117 analysis used by the courts in those cases is inadequate.

Not many decisions have been rendered so far under section 117. But every one of them seems to be faulty, and to presage further interpretations that will belie the promises of the CONTU compromise. Perhaps legislative oversight hearings might lead to future interpretations of section 117 that are more consistent with the CONTU Report. Perhaps, however, that is too optimistic. Given the development of the case law, it seems unrealistic to expect a change in the interpreta-

142. If anything, the court should do the opposite. See *Digidyne Corp. v. Data General Corp.*, 734 F.2d 1336 (9th Cir. 1984).

tion of section 117. It is already clear that section 117 needs rewriting. It has not proved to be the charter of the software user's rights that it was designed to be. Its promises have been illusory.

V. IMPLEMENTATION OF PROPOSALS

Whether amendment of the present copyright law to correct the shortcomings of section 117 is appropriate raises broader questions. The entire treatment of computer programs in the present copyright law is unsatisfactory. In some ways, copyright law gives too little to software creators (or to proprietors who invest in causing software creation or distribution) and in some ways it gives too much. Large areas, such as expert systems, languages, and algorithms, are left unattended as supposed "mere ideas." The incentives to creation and investment that copyright law should give in those areas are withheld. The treatment of enhancements and compatibility under the present Copyright Act is questionable. The test for determining whether there is copyright infringement when there is not a case of slavish copying is probably useless. Generally, the balance struck among the rights of users, creators, investors, competitors, and the public is borrowed from a distant field of activity (in the main, creation of *belles lettres* and the printing and sale of books) and is inappropriate in the software context. These problems are beyond the scope of this article. Their existence, however, raises the question of whether it is worthwhile to make incremental improvements in the existing copyright law.

The social and political implications of that question are too complex to discuss here. The question should not be ignored, but it cannot be answered in the present context. Suffice it to say, therefore, that *something* is always better than *nothing*. If the transaction cost is not greater than the value of the change and if there are not more pressing concerns, it is better to improve the present unsatisfactory copyright law in small ways rather than not at all. On the basis of that logic, or perhaps that *assumption*, this author proposes the following group of changes to implement the proposals discussed above.

1. Add a new section 106(6) to make execution (use) of a computer program a violation of the exclusive rights of the copyright owner, regardless of whether inputting the computer program involves the reproduction of the work in a fixed copy. As amended, section 106¹⁴³ would read:

143. Compare *supra* note 16.

§ 106 EXCLUSIVE RIGHTS IN COPYRIGHTED WORKS

[T]he owner of copyright under this title has the exclusive rights to do and authorize any of the following:

- (1) to reproduce the copyrighted work in copies . . . ;
- (2) to prepare derivative works based upon the copyrighted work;
- (3) to distribute copies . . . ;
- (4) in the case of literary, musical, dramatic . . . works, to perform the work publicly;
- [and]
- (5) in the case of literary, musical . . . or sculptural works . . . to display the copyrighted work publicly[.]; *and*
- (6) *in the case of computer programs, to cause the execution of the program in a machine by means of a copy that the actor knows or should know was reproduced or distributed without the authorization of the owner of copyright.*

2. Amend section 117 to permit adaptations and copies that are beneficial to the customer, regardless of whether they are indispensable and even though a third party prepares them. Moreover, third parties should be permitted to distribute adaptations irrespective of whether they are encoded in or along with the original media and original encoding, if the copyright owner has received one royalty (or *the* royalty, when a lump-sum or paid-up license is involved) for each copy of the program so distributed. One possible version of such an amended section 117¹⁴⁴ would read as follows:

§ 117. LIMITATIONS ON EXCLUSIVE RIGHTS: COMPUTER PROGRAMS

(a) Notwithstanding the provisions of section 106, but subject to subsection (b), the owner of a copy of a computer program or other person to whom the copyright owner has passed or caused to be passed possession and control of a copy of the computer program, or any person in lawful custody of a copy who has a right to use it, collectively referred to hereinafter in this section as "customers," is permitted:

- (1) to reproduce or authorize the reproduction of another copy;
- (2) to prepare or authorize the preparation of a derivative work based on the computer program; and
- (3) to execute or cause the execution of the computer program by means of the original copy or a copy authorized by this section.

(b) Any further copy or derivative work authorized by this

144. Compare *supra* text accompanying note 10.

section must be for archival purposes only or for the purpose of effectuating legitimate purposes of the customer. Legitimate purposes include convenient execution of the computer program and improving the value or utility of the computer program to customers.

(c) A third party may reproduce a copy or prepare a derivative work authorized by this section, or distribute the copy or derivative work, without liability to the copyright owner, if the third party:

- (1) takes reasonable steps to insure that it distributes copies only to customers; and
- (2) does not otherwise use or dispose of copies.

(d) A customer may distribute or redistribute a copy or derivative work authorized by this section only in combination with the original copy, unless the original copy has been destroyed. In no case may the customer distribute copies or derivative works to a number of different persons greater than the number of legitimate original copies that the customer acquired.

In conclusion, the current copyright laws must be amended in order to fulfill the stated intentions of CONTU and, by incorporation, those of the Congress. Judicial interpretation of section 117 has deprived the software user of the right of adaptation, and rendered Congressional intent a mere illusory promise.