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Katrine Levin

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INTELLECTUAL PROPERTY LAW

MAI v. PEAK: SHOULD LOADING OPERATING SYSTEM SOFTWARE INTO RAM CONSTITUTE COPYRIGHT INFRINGEMENT?

I. INTRODUCTION

In MAI Systems Corp., v. Peak Computer Inc. (hereinafter “MAI”), the Ninth Circuit held that the loading of computer operating system software into RAM creates a copy of this software in RAM and, in the absence of a valid license, constitutes copyright infringement under § 101 of the Copyright Act.

Computer operating system software, essential to the operation of the computer, is automatically loaded into RAM when the computer is turned on. This loading reproduces in RAM the information stored in the operating software, creating a representation of the operating software in RAM. All representations


2. Random Access Memory (“RAM”) is a computer component which temporarily stores information from programs loaded into the computer. When the computer is turned off, the information in RAM is erased. Apple Computer v. Formula Int’l, 594 F. Supp. 617, 622 (C.D.CA 1984).


4. Operating system programs manage the internal functions of the computer and translate application programs from a human-readable source code to a machine-readable object code. This makes possible the use of application programs, which perform specific tasks, such as word processing. Christian H. Nadan & James W. Morando, How Courts Encourage Standardization and Interoperability, 10 COMPUTER LAWYER 12, 13 (1993).

5. MAI 991 F.2d at 518.
6. Id.
in RAM are only temporary because they are lost when the computer is turned off. However, the Ninth Circuit decided that the representation of the operating software was sufficiently permanent to constitute a "copy" under § 101 of the Copyright Act. Without considering the possible justifications for making a copy under the Copyright Act, the court held that the making of this copy resulted in copyright infringement.

The Ninth Circuit's holding means that any time a third party, such as a computer maintenance technician, turns on a computer, she is infringing the operating system software's copyright unless she has previously purchased a license to use that software. In addition to producing counterintuitive results, this holding appears to contradict several Ninth Circuit cases decided last year.

7. See supra note 2.
8. MAI, 991 F.2d at 518. Section 101 of the Copyright Act defines a copy as a tangible medium of expression that is sufficiently permanent or stable to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration. 17 U.S.C. § 101 (1980). This comment is partially premised on the argument that a temporary representation in RAM should not be considered a copy under the Copyright Act; see infra notes 113-118 for a brief discussion of the matter.
10. "She" and "he" will be used interchangeably throughout this article.
12. The holding in MAI increases the amount of copyright protection afforded to computer software, while recent holdings in other cases decided by the Ninth Circuit decrease such protection. See, e.g., Computer Assocs Int'l v. Altai, Inc., 23 U.S.P.Q. 2d (BNA) 1241 (2d Cir. 1992) (establishing a new substantial similarity test which decreases software copyright protection); Sega Enters. Ltd. v. Accolade, Inc., 977 F.2d 1510 (9th Cir. 1992) (excusing reverse engineering under the Doctrine of Fair Use if disassembly is the only means of accessing noncopyrightable elements of a computer program); Lewis
II. FACTS AND PROCEDURAL HISTORY

MAI Systems Corporation ("MAI") is a former computer hardware and software manufacturer that continues to service its computers and operating system software.  

Peak Computer, Inc. ("Peak") is a computer maintenance company which also services MAI computers for over one hundred clients in southern California. Clients who use MAI computers account for between fifty and seventy percent of Peak's computer maintenance business. When clients with MAI computers asked for Peak's services, Peak technicians often had to turn the MAI computers on to determine the cause of the malfunction. When Peak technicians turned these computers on, MAI operating system software was automatically loaded into RAM. When so loaded, the operating system software produced an error log which could be read on the computer monitor screen and which Peak technicians used as an aid in diagnosing the problem.  

Peak's base of MAI customers surged when, in August of 1991, it enticed MAI's customer service manager, Eric Francis, to leave MAI and join Peak. Three other MAI employees followed Francis. In addition, Francis successfully solicited other MAI clients to switch to Peak for computer maintenance.

Galoob Toys, Inc. v. Nintendo of Am., Inc., 964 F.2d 965 (holding that a derivative work does not constitute a copyright infringement).

13. MAI Sys. Corp. v. Peak Computer, Inc., 991 F.2d 511, 513 (9th Cir. 1993). MAI's operating system software is compatible only with MAI computers. MAI computers cannot operate without this software.  

14. Id. The worldwide market for service and maintenance of MAI computers produces revenues in excess of 50 million dollars per year. Approximately 90 percent of this market is controlled by MAI. Independent computer maintenance companies share the remaining 10 percent of the market. Advanced Computer Serv. v. MAI Sys. Corp., 1993 WL 522850 1 (E.D.Va. 1993).  

15. MAI, 991 F.2d at 513.  

16. Computer malfunctions are often related to the failure of circuit boards inside the computers. Id. Maintenance technicians can more easily determine the cause of the malfunction if they view the error log which is produced on the monitor screen when the operating system software is loaded into RAM. See Katz & Bayha, supra note 11.  

17. MAI, 991 F.2d at 518.  

18. Id.  

19. Id.  

20. Id.  

21. Id.
On March 17, 1992, MAI filed suit in the United States district court, for copyright infringement, seeking a temporary restraining order (hereinafter "TRO") and a preliminary injunction to enjoin Peak, Peak's president, and Francis from servicing any MAI computer systems. The district court granted the TRO and subsequently issued a preliminary injunction against Peak. The Ninth Circuit stayed the preliminary injunction in part.

After the Ninth Circuit denied Peak's motion to stay the district court's proceedings, the district court heard a motion for summary judgment on some of the same issues raised in the motion for the preliminary injunction. The district court granted partial summary judgment for MAI and granted a permanent injunction, which was stayed in part by the Ninth Circuit.

22. Id. at 519. The complaint also alleged misappropriation of trade secrets, trademark infringement, false advertising, and unfair competition. Id. This comment will evaluate only the copyright infringement claim.

23. Id. The written version of the preliminary injunction was issued on April 15, 1992. Id. Section A(1) of the preliminary injunction prohibited Peak from "infringing MAI's copyrights in any manner and from using, publishing, copying, selling, distributing or otherwise disposing of any copies or portions of copies of the following MAI copyrighted computer program packages: 'MPx,' 'S x,' 'GPx40,' and 'GPx70' (collectively hereinafter, 'the Software')." Id. at 513-14.

Section A(3) of the preliminary injunction prohibited Peak from maintaining any MAI computer systems. In section A(3)(a) the injunction defined maintenance as "service, repair, or upkeep in any manner whatsoever that involves . . . the use of MAI's operating system, diagnostic, utility, or other software." "Use" was defined in section A(3)(b) as "the acts of running, loading, or causing to be run or loaded, any MAI software from any magnetic storage or read-only-memory device into the computer memory of the central processing unit of the computer system." Finally, "computer system" was defined in section A(3)(c) as a "MAI central processing unit in combination with either a video display, printer, disk drives, and/or keyboard." Id. at 514.

24. MAI, 991 F.2d at 514. On June 9, 1992, the Ninth Circuit stayed section A(1) of the preliminary injunction to the extent that it prohibited Peak from operating MAI computers in order to maintain them. Section A(3), enjoining Peak from maintaining any MAI computer system, was stayed in its entirety, including subsections (a), (b), and (c). Id.

25. Id. at 515.

26. Id. Section A(1) of the district court's permanent injunction, issued on February 2, 1993, enjoined Peak from "[C]opying . . . MAI's copyrighted works, or any derivatives thereof . . . . The 'copying' enjoined herein specifically includes the acts of loading, or causing to be loaded, directly or indirectly, any MAI memory device in to the electronic random access memory of the actual processing unit of a computer system." Id. Section A(2) of the permanent injunction enjoined Peak from the misappropriation of trade secrets. Id. On February 4, 1993, the Ninth Circuit stayed Sections A(1) and A(2) to the extent that they prohibited Peak from loading MAI software or operating MAI's computers in order to maintain them. MAI, 991 F.2d at 515-16.
Peak appealed both the permanent injunction and parts of the preliminary injunction.27 Only the appeal of the permanent injunction was considered with respect to copyright infringement issues.28

III. BACKGROUND

A. PURPOSE AND DEVELOPMENT OF COPYRIGHT LAW

The authority for the development of American copyright law lies within the Constitution of the United States, which provides that Congress shall have the power to “promote the progress of science and useful arts, by securing for a limited time to authors and inventors the exclusive right to their respective writings and discoveries.”29

The Copyright Clause was included in the United States Constitution to encourage the widest possible production and dissemination of literary, musical, and artistic works.30 The United States Supreme Court has stated: “The immediate effect of our copyright law is to secure a fair return for an author’s creative labor. But the ultimate aim is, by this incentive, to stimulate artistic creativity for the general public good.”31 Thus,

27. Id. at 516.
28. Id. Since the issue of copyright infringement was identical in the motions for both preliminary and permanent injunctions, there was no need to consider an appeal of both injunctions. Id.
29. U.S. CONST. art. I, § 8. This section of Article I is also known as the “Copyright Clause.”
30. 1 PAUL GOLDSTEIN, COPYRIGHT PRINCIPLES, LAW, AND PRACTICE § 1.1, at 4 (1989). During the Constitutional Convention debates on the Copyright Clause, James Madison wrote that the right to useful inventions reasonably belongs to the inventors, and that the public good fully coincides with such rights. THE FEDERALIST, No. 43, at 267 (James Madison) (H.C. Lodge ed., 1888).
31. Twentieth Cent. Music Corp. v. Aiken, 422 U.S. 151, 156 (1975). See also Sony Corp. v. Universal City Studios, 464 U.S. 417, 429 (1984) (“[The purpose of the Copyright Act is to] motivate the creative activity of authors and inventors by the provision of special reward, and to allow the public access to the products of their genius after the limited period of exclusive control has expired.”). According to MELVILLE B. NIMMER, COPYRIGHT AND OTHER ASPECTS OF LAW § 1.03, at 1-44.13, 1-44.14 (2d ed. 1993), these statements mean that “the primary purpose of copyright is not to reward the author, but is rather to secure the general benefits derived by the public from the labors of the authors.” But cf.: Despite what is said in some of the authorities that the author’s interest in securing an economic reward for his labors is a secondary consideration, it is clear that the real purpose of
the copyright law balances two competing interests: motivating creative work by providing a temporary monopoly to its authors, yet promoting broad public availability of the creative work.\textsuperscript{32}

Under authority of the Copyright Clause, Congress enacted the first Federal Copyright Act in 1790.\textsuperscript{33} In 1964, with the advance of modern technology, the Copyright Office recognized that the authors of computer programs were entitled to protection under copyright law and began to accept computer programs for registration under the category of books.\textsuperscript{34} Ten years later, Congress established the National Commission on New Technological Uses of Copyrighted Works (hereinafter "CONTU") to research and recommend legislation for copyright protection of computers and computer programs.\textsuperscript{35} In 1976, while still awaiting CONTU's final recommendations, Congress enacted the Copyright Revision Act of 1976, which provided that computer programs and data bases, "to the extent that they incorporate authorship in the programmer's expression of the original ideas, as distinguished from the ideas themselves," are copyrightable as literary works under § 102(a)(1) of the Act.\textsuperscript{36}
Congress also enacted an interim § 117, which maintained the status quo of programmers' rights until CONTU published its final recommendations.\(^{37}\)

In 1978, CONTU issued its Final Report, in which it recognized that "the cost of developing computer programs is far greater than the cost of their duplication, . . . [making] some form of protection necessary to encourage the creation and broad distribution of computer programs in a competitive market."\(^{38}\) However, after acknowledging the interest of proprietors in obtaining reasonable protection, CONTU recommended the repeal of § 117 (the interim provision).\(^{39}\) In its place, CONTU suggested that Congress enact a new § 117 which would limit the copyright owner's exclusive rights by permitting rightful possessors of a copy of a program to make or authorize the making of another copy if required as an essential step in utilizing the program or for archival purposes only.\(^{40}\) In 1980, Congress

\(^{37}\) Interim § 117 provided that:

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.


\(^{39}\) Id. at 30-31. The Report reasoned that to prevent any question of impropriety or program piracy and to assure that all works of authorship are treated comparably under the new law, § 117 should be repealed. See also Vault Corp. v. Quaid Soft. Ltd., 847 F.2d 255, 259-61 (5th Cir. 1988), for a discussion of the legislative history of the present § 117.

\(^{40}\) CONTU also recommended that § 101 of the Act be amended to include the definition of a "computer program" as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." CONTU Rep., supra note 38, at 30.

CONTU's proposed § 117(1) allowed rightful possessors of a copy of software to make copies of that software as an essential step in utilizing it. CONTU reasoned that because the act of loading a program into a
enacted the Computer Software Act which adopted CONTU's recommendations.\textsuperscript{41} In enacting the new § 117, Congress made only one change, granting the limited right to copy and adopt software to "owners" of a copy of software, as opposed to "rightful possessors" as suggested by CONTU.\textsuperscript{42} However, Congress stated no reasons for this change.\textsuperscript{43} Because Congress never stated its reasons for the change, there is now some question as to whether licensees of software, as opposed to owners of software copies, are accorded the protection of § 117(1).\textsuperscript{44}

B. APPLICATION OF BASIC COPYRIGHT PRINCIPLES TO COMPUTERS AND COMPUTER SOFTWARE

Although by 1980 Congress had revised the Copyright Act to incorporate specific legislation for computer software protection, courts had little precedent to guide them in the application of basic copyright law principles to computer software.

1. Basic Copyright Principles

A fundamental principle of copyright law is that only the expression of the idea in a creative work is protected, not the computer's memory creates a copy of the program, "[o]ne who rightfully possesses a copy of a program . . . should be provided with a legal right to copy it to that extent which will permit its use by the possessor." \textit{Id.} at 31. Thus, CONTU's § 117(1) provided that "persons in rightful possession of copies of programs be able to use them freely without fear of exposure to copyright liability." \textit{Id.} In its proposed § 117(2), the "archival exception," CONTU reasoned that a person in rightful possession of a copy of a program should have the right "to prepare archival copies of it to guard against destruction or damage by mechanical or electrical failure." \textit{Id.} However, CONTU cautioned that the rightful possessor "should not, for example, make archival copies of a program and later sell some to another while retaining some for use." \textit{Id.}

\textsuperscript{41} "[T]he Act embodies the recommendations of [CONTU] with respect to clarifying the law of copyright of computer software." \textsc{H.R. Rep.} No. 1307, 96th Cong., 2d Sess., pt. 1, at 23.

\textsuperscript{42} 17 U.S.C. § 117 (1980).


idea itself. Applying this principle to computers, the uncopyrightable portion of a computer program, the idea, consists of the methodologies and processes adopted by the programmer.

"Copyright" means the right to copy. Thus, once an expression is copyrighted, the right to copy it is reserved to the copyright owner. The copyright owner can extend this right to others by means of a license which usually allows a third party to copy the protected expression under certain limited conditions. If a third party copies protectable expression under conditions beyond the scope of his license or without a license, he infringes the copyright and is liable for monetary damages.

The Copyright Act, however, contains two sections which justify unauthorized copying of protectable expression under certain conditions. The recently enacted § 117 allows the owner of a copy of a computer program to make or authorize the making of another copy of that computer program if such copying is an essential step in the utilization of the computer program or is used for archival purposes only. Furthermore, § 107, commonly called the Doctrine of Fair Use, justifies using protectable expression without the consent of the copyright owner if the use is fair — made in a reasonable manner and for equitable reasons. In determining whether unauthorized copying of protectable expression is fair use, four factors are considered: (1) the purpose and character of the use, including whether the use is of a commercial nature or is for nonprofit educational purposes; (2) the nature of the copyrighted work; (3) the amount and substan-

45. This basic principle was first recognized in the landmark case of Baker v. Selden, 101 U.S. 99 (1879), which held that those aspects of a work which must necessarily be used in connection with the idea, system, or process described by the work are not copyrightable. Today this principle is incorporated in 17 U.S.C. § 102(b) (1976).
47. Boorstyn, supra note 33, § 1.1.
48. Id.
49. Davidson, supra note 11.
tiality of the portion used in relation to the copyrighted work; and (4) the effect of the use on the potential market for, or the value of, the copyrighted work.53

Since the method of producing and operating computer software is much different from that of conventional copyright subject matter such as literary works, the extension of copyright protection to computer programs forces the courts to face novel problems in interpreting the applicability of these fundamental copyright law principles to computer software.

2. Special Problems Posed by Applicability of Copyright Law to Computer Software

With the advent of computer software, especially operating system programs, came the issue of whether it was possible to protect a program’s expression without protecting its idea.

In Apple Computer, Inc. v. Franklin Corp.,54 the Third Circuit considered whether operating system programs were copyrightable. The defendant in that case conceded the copyrightability of application programs but argued that operating system programs represented a “process,” “system,” or “method of operation,” which is uncopyrightable under § 102(b) of the Copyright Act.55 The Apple court held that operating system programs are no different, for copyright purposes, from application programs,56 and are copyrightable unless they “represent the

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54. 714 F.2d 1240 (3d Cir. 1983).
55. Apple, 714 F.2d at 1249. “Process,” “system,” or “method of operation” are uncopyrightable because they are the ideas of the program. See supra note 45.
56. Application programs are programs which perform specific tasks, such as word processing, tax preparation, or accounting. In contrast, the role of the operating system programs is to translate application programs from the human-readable code in which they were written into the machine-readable code in which they are performed by the computer. Nadan & Morando, supra note 4. The court held that both operating system programs and application programs:

instruct the computer to do something. Therefore, it should make no difference for purposes of § 102(b) whether these instructions tell the computer to help prepare an income tax return (the task of an application program) or to translate a high level language program from source code into its binary language object code form (the task of an operating system program).

Apple, 714 F.2d at 1251.
only means of expression of the idea underlying them," constituting a merger of idea and expression.57

Four years later, in Whelan Associates, Inc. v. Jaslow Dental Laboratory, Inc.,58 the Third Circuit inquired into the scope of copyrightability of application programs. The Whelan court held that:

[T]he purpose or function of a utilitarian work would be the work's idea, and everything that is not necessary to that purpose or function would be part of the expression of the idea. . . . Where there are various means of achieving the desired purpose, then the particular means chosen is not necessary to the purpose; hence, there is expression, not idea.59

Thus, according to Whelan, copyright protection of computer programs extends not only to their literal code but to their structure, sequence, and organization.60

C. RECENT DEVELOPMENTS IN THE APPLICABILITY OF COPYRIGHT LAW TO COMPUTERS AND COMPUTER SOFTWARE

With the recent influx of breakthroughs in advanced technology, the broad protection offered by the Whelan rule has met with a less than favorable reception.61 One reason for this react-

57. Id. at 1253. A similar decision was reached by the Ninth Circuit in Apple Computer v. Formula Int'l, 725 F.2d 521 (9th Cir. 1984).
A work representing a merger of idea and expression is rendered uncopyrightable due to the impossibility of separating its uncopyrightable idea from its copyrightable expression.

58. 797 F.2d 1222 (3d Cir. 1986).
59. Whelan, 797 F.2d at 1236.
60. Id. at 1248.
61. Nimmer, supra note 31, states that the Whelan rule is incorrect because it assumes that only one idea, as this term is defined by the Copyright Law, underlies a computer program, so that once this idea is identified, everything else is protectable expression. However, Nimmer states, each subroutine has at least one idea.

The court in the landmark case of Computer Assoc's Int'l v. Altai, 23 U.S.P.Q. 2d (BNA) 1241 (2nd Cir. 1992), agreed with Nimmer's evaluation of Whelan. The lower court stated that Whelan's synonymous use of the terms "structure, sequence, and organization" demonstrated that the court was mistaken in its interpretation of a computer program's method of operation. Altai, 775 F. Supp, at 559-60.

The district court in Apple Computer v. Microsoft Corp., 799 F. Supp. 1006 (1992), cited Altai in support of its criticism of Whelan, stating that although the purpose of the
tion is that the staggering variety of computer software on the market has caused courts to call for interoperability between computers and computer programs, necessitating the reduction of protection under the Copyright Act. A few landmark cases decided last year are illustrative of this trend.

In Computer Associates International v. Altai, Inc., the Second Circuit rejected the Whelan rule and established a new, three-step test of abstraction, filtration, and comparison for determining whether non-literal structures of computer programs are substantially similar. The Second Circuit explained the sig-

Copyright Act is to prevent individuals from copying creative expression without putting the effort into its creation, overly broad copyright protection may inhibit the adoption of compatible standards, as well as inhibiting the incentive to create new expression.


Consider, for example, the standard typewriter (called the "QWERTY" typewriter for the first six keys along the top row of letters). Since all typewriters use this QWERTY key arrangement, one only need learn to type once, and then can type no matter whose typewriter is available. If typewriter companies were forbidden from copying the QWERTY format, one would need to learn to type several different ways, or could not use different typewriters in different places. This example illustrates the efficiency gained by standard typewriter interfaces.

Id.

Also, decreased copyright protection allows computer engineers access to a greater variety of programs which they can modify to create a new product, benefitting the public. See Sega Enter. Ltd. v. Accolade, Inc., 977 F.2d 1510 (9th Cir. 1992); Lewis Galoob Toys, Inc. v. Nintendo of America, Inc. 964 F.2d 965 (9th Cir. 1992).

63. 23 U.S.P.Q. 2d (BNA) 1241 (2d Cir. 1992). Computer Associates developed a job scheduling program which contained an interface component called ADAPTER. Claude F. Arney III, the employee who developed this program, later left Computer Associates and joined Altai, taking the source code of ADAPTOR with him in breach of his employee agreement. At Altai, Arney developed a job scheduling program with an interface component called OSCAR 3.4. Unknown to Altai, Arney copied about thirty percent of OSCAR's source code from the ADAPTER source code. After Computer Associates filed suit as a result of this infringement, Altai used a "clean room" technique to develop a new version of OSCAR, called OSCAR 3.5. This version did not contain any ADAPTER source codes and was developed by programmers who were neither involved in the development of OSCAR 3.4 nor were allowed access to it while developing OSCAR 3.5. Nonetheless, Computer Associates insisted that OSCAR 3.5 was substantially similar in its structure, sequence, and organization to ADAPTER. Id. at 1243.

64. Abstraction is a process where the allegedly copied program's structure is analyzed, isolating each level of abstraction within the program. The lowest level is "a set of individual instructions organized into a hierarchy of modules," while the highest level is "the ultimate function of the program." Altai, 23 U.S.P.Q. 2d (BNA) at 1253.

Filtration is a process where the structural components of a program are examined at each level of abstraction in order to:
nificantly reduced protection offered by its test in comparison with the *Whelan* rule by stating that the main goal of copyright law is to "stimulate artistic creativity for the general public good,"65 rather than to reward the labor of authors.66 The court further noted that the decreased protection offered by its test of abstraction, filtration, and comparison may do more to stimulate artistic creativity than the extremely protective *Whelan* rule, which "enables first comers to 'lock up' basic programming techniques."67

The Ninth Circuit's decision in *Sega Enterprises Ltd. v. Accolade, Inc.*,66 approved of the *Altai* holding while further reducing the protection offered by the *Whelan* rule. The Ninth Circuit held that, although intermediate copying of a program

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determine whether their particular inclusion at that level was 'idea' or was dictated by considerations of efficiency, so as to be necessarily incidental to that idea; required by factors external to the program itself; or taken from the public domain and hence . . . non-protectable expression.

*Id.*

After determining the abstraction levels and filtering the non-protectable elements at each of those levels, the test calls for a comparison of the remaining "core of protectable expression" to determine if any part of this core was copied into the allegedly infringing program. *Id.* at 1256.

After applying the three-part test of abstraction, filtration, and comparison, the Second Circuit affirmed the district court's decision that OSCAR 3.5 did not infringe Computer Associate's copyright in the ADAPTER. *Id.* at 1262.

65. *Id.* at 1256-57.
68. 977 F.2d 1510 (9th Cir. 1992). Sega is a manufacturer of both video games and the Genesis console. Only Sega-manufactured video games are compatible with the Genesis console because only Sega-manufactured video games comprise an object code which contains the "key" that unlocks the "door" to the Genesis console. The object codes of games not manufactured by Sega do not contain this "key" and thus can't operate with the Genesis console. Accolade, a video game manufacturer, wanted to make its games compatible with the Genesis console but the only way it could obtain the "key" to this console was through reverse engineering. *Id.* at 1514-15.

Reverse engineering is the translation of a machine-readable object code into a human-readable source code. A source code is a computer program written in any of several programming languages employed by computer programmers. An object code is the version of a program in which the source code language is converted or translated into the machine language of the computer with which it is to be used. CONTU Rep., supra note 38, at 21. Thus, if the "key" to the Genesis console was buried within the object code of Sega-manufactured video games, the only way Accolade could obtain this key was to translate the object code back into the source code; in other words, to reverse engineer. The engineering process requires making intermediate copies of the object code.
object code in the process of reverse engineering “falls squarely within the acts that are prohibited by the [Copyright Act],” this copying may be excused under the Doctrine of Fair Use.” After reasoning that both equitable factors and policy considerations weighed in favor of Accolade, the court found that:

69. Sega, 977 F.2d at 1518.
In order to constitute a “copy” for the purposes of the Act, the allegedly infringing work must be fixed in some tangible form, “from which the work can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or a device.” 17 U.S.C. § 101. The computer file generated by the disassembled program, the printouts of the disassembled code, and the computer files containing Accolade’s modifications of the code that were generated during the reverse engineering process all satisfy that requirement.

70. Sega, 977 F.2d at 1522. 17 U.S.C. § 107 (1976) provides:
[T]he fair use of a copyrighted work . . . is not an infringement of copyright. In determining whether the use made of a work . . . is a fair use the factors to be considered shall include:

(1) the purpose and character of the use, including whether the use is of a commercial nature or is for nonprofit educational purposes,
(2) the nature of the copyrighted work,
(3) the amount and substantiality of the portion used in relation to the copyrighted work, and
(4) the effect of the use on the potential market for, or the value of, the copyrighted work.


The Ninth Circuit noted that these statutory factors are not exclusive, and the fair use doctrine is essentially an “equitable rule of reason.” Sega, 977 F.2d at 1522.

71. As to the first factor of the Fair Use analysis, the purpose and character of the use, the court stated that Accolade’s purpose for copying Sega’s code, to determine the functional requirements needed to achieve compatibility with the Genesis console, was legitimate. Sega, 977 F.2d at 1522-23.

As to the second factor of the Fair Use analysis, the nature of the copyrighted work, the Ninth Circuit approved Altai’s approach to the idea/expression distinction and approved of Altai’s criticism of Whelan. The court then held that reverse engineering of the object code was the only way to gain access to the many functional, and thus non-protectable, aspects of Sega’s program. Since reverse engineering requires copying the object code, the court reasoned that such copying constituted fair use. Id. at 1524-26.

The court weighed the third factor of the Fair Use analysis, the substantiality of the portion used, in favor of Sega, since Accolade copied Sega’s programs in their entirety. Id. at 1524-27.

As to the fourth factor of the Fair Use analysis, the effect of the use on the potential market, the court found in favor of Accolade, reasoning that since video game customers usually purchase more than one video game, there is no reason to assume that Accolade’s production of video games for the Genesis console would affect the market for Sega’s games. Id. at 1523-24.
Where disassembly is the only way to gain access to the ideas and functional elements embodied in a copyrighted computer program and where there is a legitimate reason for seeking such access, disassembly is a fair use of the copyrighted work, as a matter of law.

The Ninth Circuit justified reducing the amount of copyright protection afforded to computer software by stating that Accolade's achievement of compatibility with the Genesis console is consistent with the Copyright Act's purpose of promoting creative expression. The court explained that such an achievement "has led to an increase in the number of independently designed video game programs offered for use with the Genesis console."

The Ninth Circuit found that similar policy considerations supported the conclusion that a derivative work does not constitute copyright infringement. In *Lewis Galoob Toys, Inc. v. Nintendo of America, Inc.*, the court found that Galoob's derivative work served the Copyright Act's purpose of promoting creative expression. The court explained that although the derivative work had benefitted from Nintendo's popularity, Nintendo's sales benefitted from the extra power and convenience afforded by the derivative work.

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72. "Disassembly" implies reverse engineering.
73. *Sega*, 977 F.2d at 1527.
74. *Id.* at 1523; see also *Atari Games Corp. v. Nintendo of Am.*, 975 F.2d 832 (Fed. Cir. 1992). The Federal Circuit agreed with the *Sega* court that "reverse engineering object code to discern the unprotectable ideas in a computer program is fair use." *Id.* at 843. However, the Federal Circuit was careful to define the scope of fair use as applied to reverse engineering, pointing out that the fair use exception applies only to individuals "in rightful possession of a copy of a work" if these individuals aim at nothing more than merely distinguishing a program's protectable elements from its unprotectable ones. *Id.* at 842, 844.
75. *Sega*, 977 F.2d at 1523.
76. A device that operates only in conjunction with another software is called a derivative work. Nadan & Morando, supra note 55 at 13.
77. *Lewis Galoob Toys, Inc. v. Nintendo of Am., Inc.*, 964 F.2d 965 (9th Cir. 1992). *Lewis Galoob Toys* involved a device manufactured by Galoob called GAME GENIE, which attached to the Nintendo video game cartridge and acted as an enhancer for Nintendo games. "Game Genie" is compatible only with the Nintendo video game cartridge and does not operate without it. *Id.*
78. *Id.*
79. *Id.* at 965.
D. Uncharted Waters

Recent decisions by the Ninth Circuit and other circuit courts resulted in a revised substantial similarity test as well as reduced copyright protection allowing for reverse engineering and derivative works. In MAI Systems Corporation v. Peak Computer Inc., the Ninth Circuit addressed two issues not previously considered by the courts: (1) whether the loading of software into RAM constitutes a copy under § 106, and (2) whether the making of this copy constitutes copyright infringement.

IV. THE COURT'S ANALYSIS

A. Jurisdiction and Standard of Review

Peak appealed the permanent injunction, parts of the preliminary injunction, and the partial summary judgment issued by the district court. With respect to the copyright infringement claim, however, Peak was only permitted to appeal the permanent injunction and the partial summary judgment. The Ninth Circuit asserted its jurisdiction to review the entire permanent injunction issued by the district court because the district court's grant of the permanent injunction was "inextricably bound up" with its underlying decisions on the merits of the copyright claim.

81. See Sega Enter. Ltd. v. Accolade, Inc. 977 F.2d 1510, (9th Cir. 1992).
82. See Lewis Galoob Toys, Inc. v. Nintendo of Am., Inc., 964 F.2d 965 (9th Cir. 1992).
83. 991 F.2d 511 (9th Cir. 1992).
84. Id.
85. Id.
86. Id.
87. MAI, 991 F.2d at 516. The court asserted jurisdiction over interlocutory orders granting injunctions under 28 U.S.C. § 1292 (a)(1) and cited Bernard v. Air Line Pilots Ass'n, AFL-CIO, 873 F.2d 213, 215 (9th Cir. 1989) ("[A]n appeal under 28 U.S.C. § 1292(a)(1) brings before the court the entire order, and, in the interests of judicial economy the court may decide the merits of the case. The court, however, generally will chose to decide only those matters 'inextricably bound up with' the injunctive relief.").
The Ninth Circuit reviewed the partial summary judgment de novo. The purpose of the review, conducted in the light most favorable to the nonmoving party, was to determine whether there were any genuine issues of material fact and whether the district court correctly applied relevant substantive law.

B. COPYRIGHT INFRINGEMENT

To prevail on a claim of copyright infringement, plaintiff must prove ownership of a copyright and the copying of protectable expression beyond the scope of a license. Since MAI's copyright ownership was undisputed, the main question in this case was whether the loading of operating system software constituted copying of protectable expression beyond the scope of Peak's license.

1. Loading of Operating System Software into RAM Constitutes the Making of a Copy under the Copyright Act

The Ninth Circuit noted that whether the loading of software from the computer's hard drive into RAM creates a "copy" under the Copyright Act is an issue of first impression for the court.

The court restated the definition of a "copy" pursuant to the Copyright Act:

[M]aterial objects, . . . in which a work is fixed . . . and from which the work can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device. . . . 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

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88. MAI, 991 F.2d at 516. See generally FDIC v. O'Melveny & Meyers, 969 F.2d 744, 747 (9th Cir. 1992), cert. granted, 114 S. Ct. 543 (1993).
89. MAI, 991 F.2d at 516.
90. Id.
91. Id. at 519 ("We have found no case which specifically holds that the copying of software into RAM creates a "copy" under the Copyright Act.").
perceived, reproduced, or otherwise communicated for a period of more than transitory duration. 93

The Ninth Circuit noted that when a computer is turned on, the operating system software is automatically loaded into the computer's random access memory (RAM).94 The representation of the operating system software in RAM produces a system error log which can be viewed from the computer monitor screen.95 When Peak technicians turned the MAI computers on to determine functionality, they were able to view the system error log and use it in performing maintenance services.96 The error log was erased when Peak technicians turned the MAI computers off because all data stored in RAM is lost when the computer is turned off.97

Peak argued that the representation of the operating software in RAM was not a copy because any representation in RAM is only temporary and not sufficiently permanent to be considered "fixed."98 However, based on the fact that the error log remained on the screen for a sufficient amount of time to allow Peak technicians to view it, the Ninth Circuit concluded that the loading of operating system software into RAM created a representation of the software that was "sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration."99 As such, the court held that this representation was "fixed" and a "copy" within the meaning of § 101 of the Copyright Act.100

93. MAI, 991 F.2d at 517 (emphasis added).
94. Id. at 518. A computer's random access memory is a component in which data and computer programs are temporarily stored when the computer is turned on and are erased when the computer is turned off. Apple Computer v. Formula Int'l, 594 F. Supp. 617, 622 (C.D. Cal. 1984).
95. MAI, 991 F.2d at 518.
96. Id. The technicians used the error log only to the extent necessary to diagnose the problem. Id.
97. Id. at 518.
98. Id.
99. Id. (emphasis added).
100. Id.
In support of its decision, the Ninth Circuit cited *Apple Computer v. Formula International*,\(^{101}\) which noted in dictum that a copy made in RAM is a temporary fixation.\(^{102}\) Although the court recognized that *Apple* is not dispositive on this issue, it used *Apple* to support the conclusion that a copy made in RAM is "fixed" and hence a "copy" within the meaning of the Copyright Act.\(^{103}\) Furthermore, the court noted that although the question of whether the loading of software from the computer's hard drive into RAM creates a "copy" is one of first impression, courts have long recognized that the loading of software into the computer's hard drive creates a copy within the meaning of § 101 of the Copyright Act.\(^{104}\)

After finding that the loading of software into RAM created a copy within the meaning of the Copyright Act, the Ninth Circuit found that, when Peak turned on MAI's computers, it infringed on MAI's copyright in the operating system software.\(^{105}\) MAI's software licenses allowed MAI customers to load software into RAM.\(^{106}\) These licenses did not allow third parties, such as Peak, to copy the software.\(^{107}\) The court found that when Peak technicians turned on MAI computers, the operating system software was copied into RAM.\(^{108}\) Therefore, the court reasoned that, in the absence of a valid license, Peak technicians could not turn on MAI computers without infringing MAI's copyright in its operating system software.\(^{109}\)

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102. *Apple*, 594 F. Supp. 617 at 621-22. This case centered on the application of 17 U.S.C. § 117 to the permanent copying of software onto silicon chips. The district court held that § 117 did not apply because such copying was neither for archival purposes only nor an essential step in the utilization of the software, which could be used through RAM without making a permanent copy. The district court then pointed out that a copy made in RAM would only be a temporary fixation, as it will be lost after the computer is turned off. *Id.*
103. *MAI*, 991 F.2d at 519.
104. *Id.* (citing Vault Corp. v. Quaid Software Ltd., 847 F.2d 255, 260 (5th Cir. 1988); 2 Melville B. Nimmer, Nimmer on Copyright § 8.08, at 8-105 (1983); and CONTU Rep., supra note 38, at 13). The court admitted that it found these authorities "somewhat troubling since they do not specify that a copy is created regardless of whether the software is loaded into the RAM, the hard disk or the read only memory ("ROM")).” *MAI*, 991 F.2d at 519.
105. *MAI*, 991 F.2d at 517.
106. *Id.*
107. *Id.*
108. *Id.*
109. *Id.*
2. Software Licensees Are Not Eligible for Protection Under Section 117 of the Copyright Act

In a footnote, the Ninth Circuit briefly noted that "[s]ince MAI licensed its software, the Peak customers do not qualify as "owners of copies" of the software and are thus not eligible for protection under § 117." The court did not provide any further clarification of this ruling. Neither did the court consider other possible justifications for the making of a copy in RAM, such as the Fair Use Doctrine.

V. CRITIQUE

In MAI, the Ninth Circuit held that the loading of operating system software into a computer's RAM constitutes copyright infringement in the absence of a valid license. This holding is questionable on four grounds: First, the court is unpersuasive when citing support for its decision that the loading of operating system software into RAM creates a copy for copyright purposes; second, the court dismisses § 117 as a possible justification for the copy; third, the court never considers the Doctrine of Fair Use as a possible justification for the copy; and finally, the impact of the court's decision on the third party maintenance market may bring the decision within the realm of an antitrust violation. Following is an analysis of each of these four areas of concern.

A. Loading of Operating System Software into RAM Does Not Create a Copy Under § 101 of the Copyright Act

The Ninth Circuit held that the loading of operating system software into RAM creates a copy of a sufficiently fixed duration.
to constitute a "copy" under § 101 of the Copyright Act.113 Although recognizing that the case is not dispositive of the issue, the court cited Apple Computer114 to support its conclusion.115 However, the Apple court found that the loading of a computer program into RAM is only a temporary fixation.116 The Apple court further noted that "the software [involved in the Apple case] could be used through RAM without making a permanent copy."117 The language of the very authority the Ninth Circuit cited in support of its decision seems to support the proposition that a representation of the operating system in RAM is not sufficiently permanent to qualify as a copy under the Copyright Act.118

B. EVEN IF LOADING OF OPERATING SYSTEM SOFTWARE INTO RAM CONSTITUTES A COPY, IT SHOULD BE JUSTIFIED UNDER § 117 OF THE COPYRIGHT ACT

Even if loading of software into RAM can rightly be considered making a copy, § 117 of the Copyright Act provides, in pertinent part:

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

(1) that such a new copy or adaptation is created as an essential step in the utilization of the computer program in conjunction with a machine and that it is used in no other manner. . . .119

113. Id. at 518.
115. See supra notes 100-102 and accompanying text for a discussion of the Ninth Circuit’s use of Apple in its analysis.
117. Id.
118. The MAI court did not distinguish Apple. Rather, it focused on the words “temporary fixation,” with emphasis on “fixation,” without discussing the impact of Apple’s observations that software could be used through RAM without making a permanent copy. MAI, 991 F.2d at 519.
Under this section, a third party maintenance provider such as Peak can make a copy of the operating system software provided that he is (1) the owner of a copy of the software and (2) is making the copy as an essential step in the utilization of the software. The following sections consider whether Peak's copying of the operating system software was an essential step in its utilization and whether the words "owner of a copy" should be construed to apply to "licensees of a copy."

1. **The Making of a Copy of Operating System Software by a Third Party Service Provider Is an Essential Step in the Customer's Utilization of the Computer**

   Clearly, a customer cannot utilize a malfunctioning computer. As a general rule, the computer maintenance technician cannot service the computer unless she turns it on. If a customer wants his computer repaired, he must authorize the service technician to turn the computer on. This, according to MAI, is the equivalent of authorizing the technician to make a temporary copy of the operating system software. Thus, authorizing a technician to make such a temporary copy of the software is an essential step in a customer's utilization of the computer.

2. **Section 117 Should Apply to All Rightful Possessors of Software Copies**

   The Ninth Circuit interpreted the language "the owner of a copy" to mean that only owners of copies of software, as distinguished from licensees of copies of software, are entitled to the

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120. Katz & Bayha, supra note 11.

121. The Ninth Circuit acknowledged that operating system software is automatically loaded into RAM as soon as the computer is turned on. MAI, 991 F.2d at 518. The reason for such loading is that operating system software "is essential for anyone to productively use the computer, because the operating system serves as the principal interface between the computer itself, other applications software which might be used (such as word-processing software), and the user." Katz & Bayha, supra note 11. However, the Ninth Circuit held that loading of operating system software into RAM creates a sufficiently fixed representation of the software to constitute a copy for copyright purposes. MAI, 991 F.2d at 518.

122. See Raysman & Brown, supra note 11 ("An argument can be made that copies of computer software created by an independent service provider (ISO) on the user's behalf in the course of performing system diagnostic and repair services are an essential step in the user's use of the system and therefore permissible under § 117.").
protection of § 117. Since MAI customers were licensees of the software, they could not authorize a third party to make any copies of the software, no matter how essential the purpose. When viewed in a vacuum, the Ninth Circuit's interpretation of § 117 is not surprising. After all, the language of § 117 refers to an "owner of a copy" and even leading commentators have reached the conclusion that this section does not apply to those who merely rent, lease, or otherwise possess the software without acquiring ownership of it.

However, when interpreting § 117, the Ninth Circuit did not view its provisions in a vacuum. The decision was set against the background of the computer maintenance market — a two to three billion dollar industry. When viewed in this context, the Ninth Circuit's strict interpretation of the language of § 117 is inconsistent with the economic policy underlying the enactment of this section. The economic policy is one of balancing the legitimate needs of computer users against the reasonable business expectations of copyright owners. The MAI decision interferes with the legitimate needs of computer users while resulting in a windfall for software copyright owners.

a. Literal Interpretation of § 117 as Inapplicable to Licensees of Software Copies Virtually Ousts Third Party Maintenance Providers from the Computer Maintenance Market

One reason for the rapid growth of the computer maintenance market is that most computer micro-hardware has become a commodity, making it less profitable to sell the hardware than to repair it. As a result, there is a growing battle for the com-

123. See supra note 110 and accompanying text.
124. See Boorstyn, supra note 33, § 2.21, at 70-71; see also S.O.S. Inc. v. Payday, Inc., 886 F.2d 1081, 1088 (9th Cir. 1989) (holding an owner of a copyright has certain rights under § 117 which a mere possessor does not). But see Vault Corp. v. Quaid Software, Ltd., 847 F.2d 255 (5th Cir. 1988) and Foresight Resources Corp. v. Pfornmiller, 719 F. Supp. 1006 (D.Kan. 1989) (obliterating the owner-licensee distinction).
125. Orenstein, supra note 11 (based on an estimate made by Ronald Katz, counsel to Independent Service Network International).
127. See infra notes 128-136 and accompanying text for a discussion of the effect of the MAI decision on computer users, third party maintenance providers, and software copyright owners.
128. Orenstein, supra note 11 (based on a quote from David Hayes, head of the intellectual property department at the law firm of Fenwick & West).
puter maintenance market between manufacturers of computer micro-hardware and third-party service providers. MAI holds that an independent service provider cannot turn on a computer without infringing the copyright of the author of the operating software which that particular computer uses unless (1) she is the owner of the copy of the operating software or (2) she is licensed to make copies of that software. However, given the wide variety of computers on the market today, the cost of purchasing ownership of a copy of the operating system software for every type of computer that the independent provider services is prohibitive. Even if the service provider were to limit itself to servicing only one or two different types of computers in order to bring the cost to a tolerable level, the service provider would not be able to purchase ownership of operating software copies. Software vendors usually structure software transfer transactions as licenses rather than outright sales in order to retain greater control over the use of the software.

This leaves service providers with the licensing alternative. However, the road to obtaining licensing rights is also not an easy one for the service provider. Aside from the question of cost, there are licensing obstacles. Computer micro-hardware manufacturers often manufacture operating and other software for “their” computers. These manufacturers then copyright their software. By requiring service providers to obtain a license prior to turning on a computer, MAI is requiring service providers to obtain a license from their competitors in the maintenance market. The difficulty the service provider faces in ob-

129. Id.
130. “Owner of a copy of the software” is distinguished from the “owner of the software,” i.e., the actual copyright holder. Boorstyn, supra note 33, § 2.21, at 70-71.
131. In which case she is protected under § 117.
132. The Ninth Circuit used a series of steps to reach the conclusion that turning on of a computer may result in copyright infringement. The Ninth Circuit first found that operating system software is automatically loaded into the computer's RAM when the computer is turned on. The court then found that because Peak technicians could perceive (on the monitor screen) the representation of an error log made by the operating system software (after it was loaded into RAM), this representation constituted a copy under the Copyright Act. The court then found that this copy was not justified under § 117 and concluded that the copy infringed the operating system software author's copyright. See supra notes 90-111 and accompanying text for a discussion of the court's analysis.
133. Raysman & Brown, supra note 11; see also Orenstein, supra note 11.
134. Orenstein, supra note 11.
135. MAI was just such a manufacturer.
taining either ownership or licensing rights to copies of operating software puts control in the hands of manufacturers/copyright owners, virtually ousting third-party providers from the computer maintenance market.  

b. CONTU Intended § 117 to Apply to All Rightful Possessors of Software Copies

In view of the strong consequences of finding that copying operating system software into RAM is a copyright infringement, the existence of any possible justification for this copying should be considered by courts in determining whether a copyright has been violated. Following this reasoning, instead of dismissing § 117 as inapplicable to “non-owners” of computer software copies, it may be worthwhile to take a closer look at the legislative intent behind it. In determining the legislative intent of § 117, four considerations are pertinent: First, Congress enacted this section based on the recommendations made by CONTU; second, Congress adopted CONTU's language with only one change and left no legislative history to explain the reason for the change; third, CONTU left a comprehensive record explaining the reasoning behind its choice of words; and fourth, Congress acknowledged that CONTU was the authority “with respect to clarifying the law of copyright of

136. Katz & Arnold, supra note 11 (“Because the vast majority of repairs cannot be accomplished without turning on the machine, if the Ninth Circuit is upheld, depending on the language in the license for the operating system software, ISOs [independent service providers] may not be able to service high-tech equipment any longer.”); see also Raysman & Brown, supra note 11 (“[A]ccess by an ISO to a system may ultimately depend on whether the user can be characterized as the “owner” of a copy of software, or merely as a ‘licensee.’ ”); Orenstein, supra note 11 (quoting David Hayes, head of the intellectual property department at Fenwick & West: “[MAI] is a potentially huge decision for the third-party maintenance providers. . . . It gives the copyright owner the right to control who can exercise the program. That’s a pretty powerful right.”); Orenstein, supra note 11 (quoting Ron Ben-Yehuda, a senior associate at Blanc, Williams, Johnston & Kronstadt: “The extent of control by vendors is critical because of the growth in the computer market, and the MAI decision is ‘definitely another weapon in the vendor’s arsenal.’ ”).


138. Congress granted the limited right to copy and adapt software under § 117 to “owner[s] of a copy” of software as opposed to “rightful possessors” of a copy of software, as suggested by CONTU. 17 U.S.C. § 117 (1980).


140. CONTU Rep., supra note 38, at 31; see also supra note 40.
Together, these considerations have prompted courts to rely on the CONTU final report as the expression of Congressional intent behind § 117.

CONTU reasoned that rightful possessors of copyrighted software should be free to use the software in the manner in which they intend and justifiably expect to use it, without fearing claims of copyright infringement. In other words, CONTU believed that purchasers of computer software should be given the benefit of their bargain. At the time of CONTU's final recommendations and continuing today, the customary practice was for software owners to sell licensing rights to their software, rather than the software itself. Then and now, the overwhelming majority of purchasers of computer software were licensees.

142. Sega, 977 F.2d 1510, 1520 n.5 (9th Cir. 1992) (“Congress adopted all of the statutory changes recommended by CONTU verbatim. Subsequent Congresses, the courts, and commentators have regarded the CONTU report as the authoritative guide to Congressional intent.”). See also Apple Computer v. Franklin Computer Corp., 714 F.2d 1240, 1252 (3d Cir. 1983) (“Congress wrote into the law the [CONTU] majority's recommendations almost verbatim.”); Vault Corp. v. Quaid Soft. Ltd., 847 F.2d 255, 260-61 (5th Cir. 1988) (“The absence of an extensive legislative history and the fact that Congress enacted proposed § 117 with only one change have prompted courts to rely on the CONTU report as an expression of the legislative intent.”); John M. Conley & Vance F. Brown, Revisiting § 117 of the Copyright Act: An Economic Approach, THE COMPUTER LAWYER, November 1990 (stating “The courts have treated the CONTU report as the legislative history of the 1980 computer related amendments to §§ 101 and 117.”).
143. CONTU Rep., supra note 38, at 13 (“Because the placement of a work into a computer is the preparation of a copy, the law should provide that persons in rightful possession of copies of programs be able to use them freely without fear of exposure to copyright liability.”). See also CONTU Rep., supra note 38, at 29-30 (“One who rightfully possesses a copy of a program . . . should be provided with a legal right to copy [the software] to the extent which will permit its use by the possessor.”).
144. CONTU observed that situations could arise “in which the copyright owner might desire, for good reason, or none at all, to force a lawful owner or possessor of a copy to stop using a particular program.” CONTU Rep., supra note 38, at 13. “By thus denying to one who had lawfully acquired a copy of a program the right to make additional copies necessary to its use, the copyright holder could be in a position to deprive him of the benefit of the acquisition bargain.” Conley & Brown, supra note 44; see also Katz & Bayha, supra note 11.
145. Id. For example, most “over the counter” software, accessible to the average computer user in the average computer store, automatically comes with “shrinkwrap” licenses. Thus, when you go into a store and buy a word-processing program or other software, you are not acquiring ownership of that copy, merely a license to use it. Bigger systems require signed licensing agreements, such as the one used by MAI. Orenstein, supra note 11.

Most of these licenses prohibit the licensee from allowing a third-party to make a copy of the software for any reason whatsoever. For example, a typical MAI software license provides that:
rather than owners. CONTU must have been aware of this practice when providing that § 117 apply to all “rightful possessors” of a copy of software, rather than only to “owners of a copy.” CONTU must have realized that to apply § 117 merely to owners of a copy would deprive the vast majority of computer software purchasers, who are licensees, of the benefit of their bargain.  

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c. The Internal Inconsistency of § 117 is Another Indication that Congress Intended It to Apply to All Rightful Possessors

Another argument in favor of interpreting § 117 as applying to all rightful possessors rather than just to owners of software copies is Congress’ lack of parallelism in substituting “owners” for “rightful possessors.” Subsection 2 of § 117 provides that all archival copies must be destroyed “in the event the continued possession of the computer program should cease to be right-

Licensee shall not give access nor shall it disclose the Diagnostics (in any form) . . . to any person . . . without the written permission of [MAI]. Licensee may authorize not more than three (3) of its bona fide employees to utilize the Diagnostics . . . if, and only if, they agree to be bound by the terms thereof.

MAI, 991 F.2d at 517 n.3.

146. See Katz & Bayha, supra note 11 ("If § 117 is not applicable to licensees, it will be rarely applicable to anyone possessing a copy of computer software (except in the case of more modern computerized devices, such as found in automobiles, where licensing has not yet become prevalent.").

See also RAV Comm., Inc. v. Philipp Bros., 1 CCH Computer Cases P 46.048 at 60,999 (S.D.N.Y., 1988). The factual pattern is somewhat similar to MAI. RAV licensed its communications programs to Philipp, supplied the hardware to run the programs, and provided maintenance and upgrade services. Id. at 61,000. Philipp lured a number of RAV employees to work for it and obtained the programs’ source code from them. Id. Using this source code, Philipp altered, changed, and upgraded RAV’s proprietary source codes to accommodate Philipp’s internal use of the communication programs. Id. In deciding that Philipp was not liable for copyright infringement, the court held that § 117 “should be given a broader reading where the owner of a copy of a computer program adopts it for his own internal use.” Id. at 61,001 (emphasis added). The court noted that the adaptation must be necessary to allow use of the program for the purpose for which it was purchased. Id. Conversely, § 117 should be given a broader reading where the copying of the program is necessary to allow the program’s internal, intended use. Because a program cannot be utilized on a malfunctioning computer, a technician must be allowed to copy operating system software in order to service the computer and to allow the software purchaser to utilize her program. To hold otherwise would be to deny the software purchaser the benefit of her bargain.
The word "rightful" parallels CONTU's intent to compel a licensee acting under § 117 to destroy archival copies upon termination of her license. However, the first paragraph of § 117 refers only to owners of software copies, not to licensees. This poses a curious question: "How can an owner cease to be a rightful possessor?" The lack of parallelism in the language of § 117 suggests that Congress' change of CONTU's wording may have been hasty or inadvertent. After all, to interpret § 117 as applying only to "owners" of software copies would be to render the section essentially meaningless.

The MAI decision to uphold the distinction between owners and licensees in the application of § 117 has been consistent with previous Ninth Circuit decisions. However, three factors urge a change in the Ninth Circuit's interpretation of § 117. CONTU intended § 117 to apply to all rightful possessors. Congress' change of CONTU's language is neither explained nor uniform and may be inadvertent. Finally, applying § 117 solely to owners of copies of software renders the section essentially meaningless and bears inequitable results.

148. Conley & Brown, supra note 44.
150. Conley & Brown, supra note 44.
151. Id.

If Congress had intended to limit the protection of § 117 to owners in the strict sense, it presumably also would have changed subsection 2 and the unnumbered final paragraph to make the straightforward point that an owner who transferred the underlying program would have the choice of transferring or destroying any archival copies he had made, but could not have it both ways by selling the original and keeping the copies. The present awkwardness suggests that the significant change in the preamble was made in haste, if not by inadvertence.

Id.; see also Raysman & Brown, supra note 11 (recognizing that not all courts accept the distinction made in MAI between owners and licensees); Katz & Bayha, supra note 11 (suggesting § 117 should be liberally interpreted to apply to licensees as well as to owners of software copies).
152. Katz & Arnold, supra note 11.
155. See supra notes 43, 147-151 and accompanying text for a discussion of Congress' substitution of "rightful possessors" of a copy with "owners of a copy."
156. See supra note 136 and accompanying text for a discussion of the chilling effect of the MAI holding.
Of course, one may argue that instead of reading CONTU's intent into § 117, the courts should take a strict approach to the section and hope that the chilling result caused by this approach will prompt Congress to clarify its intent with respect to applicability. However, while the courts are waiting for Congress to do so, their decisions could wreak havoc in the computer maintenance and software markets.\textsuperscript{157} Although inferring a legislative intent behind any piece of legislation which does not expressly specify it is always risky, the inequitable results born by a literal interpretation of § 117, sustaining the owner licensee distinction, urge drawing such an inference. Both methods will eventually cause Congress to clarify the legislation. However, if only for humanitarian reasons, the courts should choose the method that most quickly reaches equitable results.

B. THE NINTH CIRCUIT SHOULD HAVE APPLIED THE DOCTRINE OF FAIR USE

The Ninth Circuit did not consider whether the Doctrine of Fair Use is a possible justification for the making of a temporary copy in RAM.\textsuperscript{158} In view of the far-reaching effect of the MAI decision on the computer maintenance and software market and in light of the Ninth Circuit's recent decision in \textit{Sega Enterprises Ltd. v. Accolade, Inc.},\textsuperscript{159} the court's omission is puzzling.\textsuperscript{160}

\textsuperscript{157} See Conley & Brown, \textit{supra} note 44 (stating § 117 as presently construed may not adequately balance the legitimate interests of the software copyright owner and the consumer).

\textsuperscript{158} The Doctrine of Fair Use, incorporated into § 107 of the Copyright Act, provides, in pertinent part:

\begin{quote}
[T]he fair use of a copyrighted work . . . is not an infringement of copyright. In determining whether the use made of a work . . . is a fair use the factors to be considered shall include:

(1) the purpose and character of the use, including whether the use is of a commercial nature or is for nonprofit educational purposes,

(2) the nature of the copyrighted work,

(3) the amount and substantiality of the portion used in relation to the copyrighted work, and

(4) the effect of the use on the potential market for, or the value of, the copyrighted work.
\end{quote}

\textsuperscript{159} 977 F.2d 1510 (9th Cir. 1992); see \textit{supra} notes 68-75 and accompanying text for a discussion of \textit{Sega}.

\textsuperscript{160} The \textit{Sega} court avoided a rigid application of the Copyright Act by using the
In Sega, the Ninth Circuit considered whether intermediate copying in the process of reverse engineering was a fair use of the copyrighted software. Applying the Fair Use Doctrine, the court held that if reverse engineering is the only way to access the non-copyrightable elements of the software, and if there is a legitimate reason for accessing these elements, reverse engineering is a fair use of the copyrighted software, as a matter of law. In examining the facts of the case, the court concluded that intermediate copying is a necessary step in the process of reverse engineering and that reverse engineering is the only way to gain access to a copyrighted program's noncopyrightable, functional aspects. The court also found that Accolade's reason for accessing the non-copyrightable elements of Sega's programs was legitimate and consistent with the purpose of the Copyright Act.

Similarly, the copying involved in MAI is an unavoidable consequence of turning on a computer; turning on a computer is usually the only way to begin maintenance work. Performance of maintenance work is a legitimate reason to justify the copying involved in MAI because computer systems, like everything man-made and fallible, have a tendency to break down. When this happens, the owner ordinarily has two options: to call a third-party maintenance technician or to call a technician from the company which manufactured the computer. Unless the kind of copying involved in MAI is justified under the Copyright Act, third-party maintenance providers will be forced out of the maintenance market, leaving owners of malfunctioning com-

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Doctrine of Fair Use, sometimes referred to as the "safety valve" of copyright law, to prevent Sega from exercising a monopoly over the creation of games designed to run on its Genesis game console. Katz & Bayha, supra note 11.

161. Sega, 977 F.2d at 1522-27.
162. Id. at 1527 (emphasis added).
163. Id. at 1522-1527.
164. Accolade needed to access these non-copyrightable elements to achieve compatibility with the Genesis console with which Sega games were already compatible.
165. Sega, 977 F.2d at 1527.
166. Katz & Bayha, supra note 11.
167. The MAI holding forces third-party maintenance providers to purchase licenses to use the operating system software of the computers which they maintain. Given the great variety of different operating system software, the cost of purchasing a license to use the operating system software of each computer serviced by a third-party provider is prohibitive. Neither does it make good business sense for a third-party provider to purchase licenses for only a few varieties of operating system software and then wait until the particular computers that use that software happen to malfunction. The
puters with only one option — calling the technician from the manufacturing company. The effect may lead to a monopoly, where a small number of manufacturing companies exercise control over a large computer maintenance market. In addition, limiting the maintenance market to which customers can turn will almost certainly raise the price of computer maintenance.

Furthermore, the inadvertent copying of operating system software in order to maintain a computer is justified under the purpose of the Copyright Act. The Copyright Act presupposes that authors will have increased motivation to invest sufficient resources in producing and publishing original works if they are promised property rights that will enable them to profit from their work's dissemination. However, the Act most probably does not presuppose that these property rights should extend beyond the work's dissemination and into the maintenance market servicing the work. The purpose of the Copyright Act is to promote creative expression, not to create perpetual profit.

Applying the holding of Sega to the facts of MAI leads to the conclusion that the copying of operating system software into RAM is the only way of achieving the legitimate objective third-party provider's position is further complicated by the fact that most computer manufacturers are also manufacturers of those computers' operating system software as well as competitors in the computer maintenance market. Thus, the effect of the MAI holding is to require third party maintenance technicians to purchase licenses from their competitors. Together, these factors effectively exclude third-party maintenance providers from the maintenance market. See supra notes 128-136 and accompanying text for a discussion of the effect of the MAI decision on the computer maintenance market.

168. See Advanced Computer Servs. v. MAI Sys. Corp., 1993 WL 522850 1 (E.D. Va. 1993) (plaintiffs' complaint alleges, inter alia, that purchasers of MAI operating system software have been and are being wrongfully forced to buy MAI's hardware service). See infra notes 172-174 and accompanying text for a discussion of a potential monopolizing effect of the MAI decision on the computer maintenance market.

169. See Advanced Computer Servs., 1993 WL 522850 1 (plaintiffs' complaint alleges, inter alia, that prices for MAI hardware service have been and are higher than they would be in a competitive market and that the supply of such service has been and is lower than it would be in a competitive market). See infra note 174 and accompanying text for a discussion of a potential monopolizing effect of the MAI decision on the computer maintenance market.

170. GOLDSTEIN, supra note 30.

171. The Copyright Act balances two competing claims: motivating creative work by providing a temporary monopoly to its authors while at the same time promoting broad public availability of the creative work. GOLDSTEIN, supra note 30. Nimmer takes this analysis one step further, stating that "the primary purpose of copyright is not to reward the author, but is rather to secure the general benefits derived by the public from the labors of the authors." NIMMER, supra note 31, § 1.03 at 1-44.13, 1-44.14.
of allowing third-party maintenance technicians to service the computer, and should be a fair use of the operating system software as a matter of law.

C. THE NINTH CIRCUIT’S DECISION MAY CONFLICT WITH THE SHERMAN ANTITRUST ACT

The Ninth Circuit’s decision that the loading of operating system software into a computer’s RAM constitutes copyright infringement may result in a virtual ousting of third party maintenance providers from the computer maintenance market. This result is contrary to the United States Supreme Court’s concern for the necessity of competition in the service market between third party maintenance providers and manufacturers. In the absence of any discussion of policy considerations by the Ninth Circuit, it is difficult to reconcile the MAI decision with Sections 1 and 2 of the Sherman Act.

172. See supra notes 128-136 and accompanying text for a discussion of the effect of the MAI decision on the computer maintenance market; see also Katz & Arnold, supra note 11.


174. 15 U.S.C. §§ 1-2 (1890). See Raysman & Brown, supra note 118; see also Advanced Computer Servs, 1993 WL 522860 1 (E.D. Va. 1993). Advanced Computer Servs arose because MAI, citing the Ninth Circuit’s ruling in MAI, sent cease and desist letters to independent service providers servicing MAI systems. Seven of these independent service providers served a joint suit against MAI, seeking injunctive relief. Plaintiffs-service providers alleged that MAI practiced (1) per se tying, in violation of § 1 of the Sherman Act; (2) rule of reason tying, in violation of § 1 of the Sherman Act; and (3) monopolization, in violation of § 2 of the Sherman Act. Id. Plaintiffs’ argument is as follows:

MAI computers are unique. . . . Because special training is required to maintain MAI systems, purchasers of MAI computers have limited choices in selecting a maintenance and service firm; they must select either MAI or another firm, including any of plaintiffs, that specializes in the servicing and maintenance of MAI computers. . . . MAI . . . developed [and copyrighted] unique operating system software designed to provide the basic commands to operate MAI computers. . . . MAI licenses, but does not sell, this software. . . . [Citing MAI], MAI’s view [is] that any use of the software by plaintiffs, who are unlicensed, including simply “loading” or “booting” the [operating system] software by turning the computer on, constitutes unauthorized use prohibited by law. . . . Plaintiff further alleges that MAI is exploiting the complete market power it enjoys over the sale of its copyrighted software to distort and preclude competition in the . . . market for maintenance and repair services for MAI computers.

Id. (emphasis added).
D. PEAK’S UNPROFESSIONAL CONDUCT MAY HAVE COMPELLED THE NINTH CIRCUIT TO COME TO A RASH DECISION

Peak is not a particularly sympathetic entity. It lured away MAI’s customer service manager, as well as three other MAI employees; it stole MAI’s customers; and it allegedly ran MAI operating system software on several computers at its headquarters, despite being licensed to use the software to operate only one system. In the words of MAI counsel William Robinson, “[Peak] hired our employees, went after our customers and used our diagnostics to make a heck of a lot of money.”

Although a case may be a world unto itself to the parties involved, it should be analyzed with reference to its place in the development of our law and society. In its desire to punish Peak’s misdeeds, the Ninth Circuit may have reached a decision before examining its long-term consequences.

15 U.S.C. §§ 1-2 (Sherman Act) provides:

Section 1

Contracts, Combinations and Conspiracies in Restraint of Trade:

Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is hereby declared to be illegal. Every person who shall make any contract or engage in any combination or conspiracy hereby declared to be illegal shall be deemed guilty of a felony and, on conviction thereof, shall be punished by fine not exceeding $10,000,000 if a corporation, or, if any other person, $350,000, or by imprisonment not exceeding three years, or by both said punishments, in the discretion of the court.

Section 2

Monopolization, Attempted Monopolization, and Conspiracies to Monopolize:

Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a felony, and, on conviction thereof, shall be punished by fine not exceeding $10,000,000 if a corporation, or, if any other person, $350,000, or by imprisonment not exceeding three years, or by both said punishments, in the discretion of the court.

175. MAI, 991 F.2d at 519.
176. Orenstein, supra note 11.
These consequences are incongruous. On the one hand, the decision threatens the very existence of third-party maintenance providers and hovers on the edge of an antitrust violation. On the other hand, although the decision prohibits software licensees to authorize a third-party to make a copy of the software under any circumstances not specifically authorized under the license, a licensee might circumvent this problem merely by turning the computer on herself. What cannot be accomplished by the technician alone might easily be accomplished merely by taking a second of the customer’s time. If the MAI decision is really so easy to bypass, it will cause no harm to the computer maintenance market, aside from some inconvenience. Otherwise, the decision will have a serious impact on the computer maintenance and software community.

VI. CONCLUSION

The MAI decision has resulted in incongruous consequences that have puzzled and confused both the legal community and third-party maintenance providers. The court has afforded us few explanations and conflicting authority as to why the loading of operating system software into RAM creates a copy under the Copyright Act. Neither has the court provided us with policy explanations as to why the Doctrine of Fair Use was not considered and § 117 was dismissed in a footnote. The court does not seem to recognize the potential monopolizing impact of its decision on the third party computer maintenance market. Perhaps the loathsome nature of Peak’s unprofessional conduct compelled the court to take swift action prior to analyzing the full impact of its decision. Although the court has not disclosed its motivation behind the MAI decision, this decision is in stark contrast to the Ninth Circuit’s earlier decisions in the computer

177. See supra note 136 and accompanying text for a discussion of the effect of the MAI decision on third-party maintenance providers.

178. See supra note 174 and accompanying text for a brief discussion applying the Sherman Antitrust Act.

179. See Katz & Arnold, supra note 11 (asking whether a court would enjoin an owner from turning on its own computer for the purpose of an ISO maintaining it, just because such an act would be in concert with an ISO that was enjoined from turning on the machine?).

180. Davidson, supra note 11 (MAI v. Peak deserves special mention because it is the first reported decision to hold that the mere turning on of a computer for a purpose not authorized by the operating system license is an act of copyright infringement).
software field\textsuperscript{181} and with the purpose behind the Copyright Act.\textsuperscript{182}

\textit{Katrine Levin*}

\textsuperscript{181} Sega Enter. Ltd. v. Accolade, Inc., 977 F.2d 1510 (9th Cir. 1992); Lewis Galoob Toys, Inc. v. Nintendo of Am., Inc., 964 F.2d 965 (9th Cir. 1992).

\textsuperscript{182} Sega, 977 F.2d at 1523 (holding that the Copyright Act must be considered in light of its basic purpose of stimulating artistic creativity for the general public good).

* Golden Gate University School of Law, Class of 1995.