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The Council Directive on the Legal Protection of Computer Programs: An Unsatisfactory Balance of Competing Interests

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THE COUNCIL DIRECTIVE ON THE LEGAL PROTECTION OF COMPUTER PROGRAMS: AN UNSATISFACTORY BALANCE OF COMPETING INTERESTS

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INTRODUCTION

On May 14, 1991, the European Communities (EC)[1] enacted the Council Directive on the Legal Protection of Computer Programs (Final Directive).[2] The Final Directive is an important element of Europe's impressive economic goal to establish a Single European Market

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1. The European Communities (EC) were originally organized under three separate treaties which attempted to achieve economic and political integration by establishing three distinct "European Communities": the Treaty Establishing the European Community, March 25, 1957, 298 U.N.T.S. 11 [hereinafter EEC Treaty]; the Treaty Establishing the European Atomic Energy Community, March 25, 1957, 298 U.N.T.S. 169 [hereinafter EURATOM Treaty]; and the Treaty Establishing the European Coal and Steel Community, April 18, 1951, 261 U.N.T.S. 140 [hereinafter ECSC Treaty]. *Regional Economic Organizations, Treaty Establishing the European Community*, 2 Basic Documents Int'l Econ. L. (CCH) 3 (1990) [hereinafter Treaty of Rome]. Each of these "Communities" were initially governed by separate treaties. *Id.* On April 8, 1965, however, the member states signed the merger treaty which established one Council and one Commission to govern the European Communities. Treaty Establishing a Single Council and a Single Commission of the European Community, April 8, 1965, 4 I.L.M. 776 (1965).

2. *Proposal for a Council Directive on the Legal Protection of Computer Programs*, 32 O.J. EUR. COMM. (No. C 91) 4 (1989) [hereinafter *Software Proposal*]. The EC amended this original proposal in December 1990. *Amended Proposal for a Council Directive on the Legal Protection of Computer Programs*, 33 O.J. EUR. COMM. (No. C 320) 22 (1990) [hereinafter *Revised Proposal*] The EC finally accepted the proposal in 1991. *Council Directive on the Legal Protection of Computer Programs*, 34 O.J. EUR. COMM. (No. L 122) 42 (1991) [hereinafter *Final Directive*]. Article 189 of the Treaty of Rome which establishes the European Economic Community provides that "[d]irectives shall bind any Member State to which they are addressed, as to the result to be achieved, while leaving to domestic agencies a competence as to form and means." *See* Treaty of Rome, *supra* note 1. This provision implies that Member States must comply with the rules of the Directive through any means they deem appropriate. *Id.*

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by 1992.[3] The Final Directive could have a significant effect on the software business in both Europe and the United States.

In 1988, the EC introduced the Green Paper, "Copyright and the Challenge of Technology,"[4] which called for immediate adoption of the 1992 program related to copyright issues.[5] The Green Paper repre-

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3. *Single European Act*, 30 O.J. EUR. COMM. (No. L 169) 1 (1987) [hereinafter *Single European Act*]. The five subsections of the Single European Act which include an internal market, monetary capacity, social policy, economic cohesion, and research and technological development amend the Treaties which originally established the EC. *See supra* note 1 (defining the various treaties originally employed by the member states in an attempt to promote cooperation and integration of economic and political policies). The main objective of the Single European Act is the creation of a European economic area without internal frontiers or barriers. *See* Ehlermann, *The Internal Market Following the Single European Act*, 24 C.M.L.R. 361 (1987); Berman, *The Single European Act: A New Constitution for the Community?*, 27 COLUM. J. TRANS- NAT'L L. 529, 529 (1989) (noting that the Single European Act is not a revolutionary notion, but instead is built upon Community practices over the last thirty years); Campbell, *The Single European Act and the Implications*, 35 INT'L & COMP. L.Q. 932, 933-34 (1986) (stating the novelty of the Single European Act was the introduc- tion of more majority voting); DUDLEY, 1992 STRATEGIES FOR THE SINGLE MARKET (1989) (noting the American response to the Single Market).

4. Copyright Issues Requiring Immediate Action: Green Paper on Copyright and the Challenge of Technology, COM(88)172 final at 7 [hereinafter Green Paper].

5. *Id.* The Green Paper is a discussion paper outlining actual deficiencies and gaps in the copyright laws of the member states. *Id.* at 186-87, 196-201. The Paper exam- ines five main areas within the field of copyright: piracy, audio-visual home copying, distribution and rental rights, computer programs and data-bases. *Id.* at 19, 99, 146, 170, 205. For each sector, the problems are described and legal answers are suggested. *Id.* Interested parties could submit position papers regarding the suggested legal frame- work. *Id.* at 200. In this respect several associations expressed their views on copyright for software in the EC. *Id.* at 180. *See* Federation Against Software Theft (FAST), *EC Green Paper on Copyright and the Challenge of Technology on Chapter 5: Sub- stantive Legal Protection for Computer Programs*, 5 COMPUTER L. & PRAC. 55 (1988) (stating that FAST favors the new EEC Directive as providing clear and substantive legal provisions for software as well as providing consistent standards for application throughout the member states); Sterling, *EC Green Paper on Copyright and the Chal- lenge of Technology 1988 - Comments on Chapter 5: Computer Programs*, 5 COM- PUTER L. & PRAC. 64 (1988) (agreeing with the findings of the Green Paper that officials have not yet had enough experience to lead to a modification of copyright and authors' rights in rules, computer programs, access protocols or interface elements); *Comments on Chapter 5 of the EC Green Paper on Copyright and the Challenge of Technology - Copyright Issues Requiring Immediate Action*, 5 COMPUTER L. & PRAC. 70 (1988) (finding that several improvements to the Green Paper could be instituted including a better definition of "originality" in computer programs, the introduction of the concept of a "use right" involved in the copying of computer programs, and the continued use of shifting of the burden of proof to an alleged software copyright in- fringer when the right holder established some evidence of infringement); *Comments on Chapter 5: Computer Programs*, 5 COMPUTER L. & PRAC. 72 (1988) (noting the reaction of the Japanese electronic industry to the Green Paper); Appleton & Hart, *Comments on the EC Green Paper Copyright and the Challenge of Technology*, 10 EUR. INTELL. PROP. REV. 287 (1988) (stressing that the inadequate protection of com- puter programs by copyright makes works vulnerable to easy copying, and accordingly, should be treated in the same manner as other classes of literary works).

sented the EC's[6] first attempt to harmonize copyright laws. The effort to regulate intellectual property rights derived from computer programs undoubtedly represents an important event in the EC 1992 industrial property program. The most controversial aspect of the Final Directive has been interpretation of the rules. In particular, the United States computer industry expended substantial efforts to change some of the Final Directive's provisions. The short period between the Green Paper and the first draft of the Directive (Software Proposal), however, prevented a real debate. In addition, the Final Directive raises questions of compliance with the Berne Convention[7] and the EC position on intellectual property within the recent Uruguay Round of the General Agreement on Tariffs and Trade (GATT).[8]

This Article discusses this recent EC legislation and the preceding debate. Part I provides a detailed analysis of the basic computer concepts important to understand the Final Directive and the surrounding debate. Part II discusses the scope of the Final Directive. Part III discusses the legal and practical implications of the Final Directive. Part IV concludes that while the Final Directive is the necessary first step in addressing the copyright issues at hand, it fails to balance competing interests.

I. BACKGROUND

A detailed analysis of basic computer technology concepts is vital to an examination of possible schemes for the legal protection of computer

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6. The European Commission is a body within the EC consisting of 17 commissioners representing each member state. EUROPEAN COMMUNITIES, THE INSTITUTIONS OF THE EUROPEAN COMMUNITIES 7 (1989). The Commissioners are appointed by mutual consent of the governments, but act independently from the country appointing them. *Id.* Indeed, they only represent the interests of the Community. *Id.* The primary tasks of the Commission consist of guarding the proper functioning of Community policies in the single market, submitting proposals to the Council of Ministers in order to promote Community policies, and executing Council decisions. *Id.* at 7-8. The Commission's headquarters are located in Brussels. *Id.* at 8.

7. Berne Convention for the Protection of Literary and Artistic Works, Spet. 6, 1886, 828 U.N.T.S. 221, *reprinted in* 1 BASIC DOCUMENTS INT'L ECON. L. (CCH) 711 (1990) [hereinafter *Berne Convention*]. The Berne Convention seeks to protect an author's rights in his or her literary and artistic works including books, pamphlets, writings, musical compositions, designs, and scientific works. *Id.*

8. GATT serves as an international framework to ease the free transborder flow of investment resources to wherever they generate the highest economic return. *World Bank: Draft Convention Establishing the Multilateral Investment Guarantee Agency*, 24 I.L.M. 688 (1985). The Uruguay Round is the name given to the most recent GATT discussions. *Liberalization of Canada's Trade Policies Adds to Flexibility of Economy, GATT Says*, Int'l Trade Rep. (BNA) No. 32, at 1241 (Aug. 8, 1990).

programs.[9] The essential differences between "hardware"[10] and "software,"[11] on the one hand, and "application programs"[12] and "operating system programs,"[13] on the other provide the framework for this analysis. Each of these concepts raises different issues and problems for the legal and copyright protection of computer technology.

In addition to analyzing technological aspects of the computer system, this section also examines the definition of computer software. Legislators often have difficulty arriving at a definition that adapts to evolving computer technology. Finally, this section discusses the reasons the EC Commission opted for copyright protection and provides an overview of the different legal techniques available for protecting software.

A. THE NATURE OF SOFTWARE

Computer technology is commonly divided into two categories: "software" and "hardware."[14] Software is a generic term for the pro-

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9. *See* RAYSMAN & BROWN, COMPUTER LAW: DRAFTING AND NEGOTIATING FORMS AND AGREEMENTS § 1.01 (1987) [hereinafter RAYSMAN & BROWN] (stating that an attorney can only serve his client if he has an understanding of the fundamental concepts involved in computer technology).

10. Hardware is defined as all tangible computer equipment that composes the physical elements of the computer. MAWREY & SALMON, COMPUTERS AND THE LAW 5 (1988). *See also* RAYSMAN & BROWN, *supra* note 9, at § 1.02 (noting that hardware is composed of a central processing unit or "CPU" that performs the computer functions and a series of peripheral devices connected to a CPU to provide a means for input or output of data or the storage of information).

11. Software of computer programs are a series of instructions that direct a computer to perform some function. *Id.* at § 1.03. Particularly, software applies to those programs which assist all users of a particular type of computer in making the best use of their machine, as opposed to specific programs written to solve the problems of any particular user. CHANDOR, A DICTIONARY OF COMPUTERS 372 (1977) [hereinafter CHANDOR].

12. Application programs are designed for the computer's specific end use functions such as word processing, inventory control, and sales invoicing. RAYSMAN & BROWN, *supra* note 9, at § 1.04. Included under the category of application programs are customized software that refer to standard computer software modified to meet the specific requirements of a single user, and custom software, that refer to software created specifically for the user to meet its exact requirements. *Id.*

13. Operating system programs instruct hardware components to perform tasks and monitor the operation to ensure performance. MAWREY & SALMON, *supra* note 10, at 5.

14. *See supra* notes 11-12 and accompanying text (noting that the essential difference between hardware and software is that hardware concerns only the tangible, physical equipment of the computer while software refers to all programs enabling a computer to perform some function); *see also* Note, *Computer Software as a Good Under the Uniform Commercial Code*, 65 B.U.L. REV. 129, 130 (1985) (noting that intangibles, such as contracts for personal services, fall outside of the scope of the Uni-

grams used by the computer.[15] These programs give instructions to the computer to accomplish certain results.[16] The programmed computer is a machine that operates to manipulate electrical signals in order to produce an output result such as data or a graphic image.[17] The program is merely a series of instructions that achieve a result which can be the resolution of a problem or the initiation of other programs. Software also includes ideas, concepts, and algorithms[18] which can be described as the "soul" of the program.[19] The program is usually written in one of the high-level computer languages such as COBOL,[20] BASIC,[21] or FORTRAN.[22] A computer cannot understand the human language and, therefore, continuously translates the input text and data into the appropriate machine language.

Software is divided into application programs and operating system programs.[23] The first form of any program is written in one of the high-

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form Commercial Code); Zammit, *Contracting for Computer Products,* 54 N.Y. St. B.J. 128, 128 (1982) (explaining the input and output process of the computer).

15. *See* Rodau, *Computer Software: Does Article 2 of the UCC Apply,* 35 Emory L.J. 853, 861-62 (1986) (explaining that the term "software" has been used in different ways, due to rapid advances in computer technology, creating added confusion about the status of software as a "good").

16. *See supra* note 12 (explaining that software functions to direct and guide the computer).

17. Chandor, *supra* note 11, at 89 (explaining that the three main categories of computers include digital computers, analog computers, and hybrid computers).

18. An algorithm refers to a procedure composed of a sequence of mathematical or logical operations designed to achieve some desired result. Burton, A Dictionary of Microcomputing 3 (1976) [hereinafter Burton].

19. Higashima & Ushiku, *A New Means of International Protection of Computer Programs through the Paris Convention - A New Concept of Utility Model,* 7 Computer L.J. 1, 5 (1986) [hereinafter Higashima & Ushiku].

20. COBOL is an acronym for Common Business Oriented Language, developed for commercial use under the auspices of the United States Department of Defense. Chandor, *supra* note 11, at 79. Although COBOL is a high level language, programs are written in readable and standard English. *Id.*

21. BASIC is a high level language designed for novice programmers and hobbyists. Burton, *supra* note 18, at 12. The name is an acronym for Beginner's All-purpose Symbolic Instruction Code. Chandor, *supra* note 11, at 45-46. The language is preferred by beginning programmers because each element of the program is directly input to the computer which checks and validates each step before the next step is input. *Id.*

22. FORTRAN, which stands for Formula Translations, is a high level problem-oriented programming language used primarily by scientists and engineers. Burton, *supra* note 18, at 62. The language is written in a combination of algebraic formulae and standard English. Chandor, *supra* note 11, at 182.

23. Gemignani, *Product Liability and Software,* 8 Rutgers Computer & Tech. L.J. 173, 181 (1981). *See* Mawrey & Salmon, *supra* note 10, at 6 (noting that the three basic components of a computer system, usually considered as an integral whole, are the hardware, the operating system, and the applications software); Note, *Copyright Law and Computer Software: The Third and Ninth Circuit Take Another Byte*

level languages.[24] These programs perform the functions desired by the computer buyer including calculating, updating records, and word processing. The operating system program is the means by which an application program may later be expressed. Consequently, the two systems interact when the operating system creates a language in which the application program will be expressed.[25] Accordingly, the operating system will use the hardware instruction set designed to work with a specific computer.[26] An application program linked to the operating system may only be used in a computer equipped with this specific operating system.[27] A key component of software, and of great importance to the analysis of the Final Directive, are interfaces. Interfaces mark the location where two units inter-operate or where interaction with the user takes place.[28]

Hardware encompasses the physical devices associated with the computer.[29] The most important hardware component is the logic circuitry. Logic circuitry is a component of the Central Processing Unit and is primarily responsible for information processing.[30] Although logic cir-

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of the Apple, 49 ALB. L. REV. 170, 174 (1984) (suggesting the following definition: An "operating system" coordinates the internal activities of computer hardware).

24. *See* CARBERRY, COHEN & KHALIL, PRINCIPLES OF COMPUTER SCIENCE 168 (1986) [hereinafter CARBERRY] (stating that the inconveniences caused by low-level programming led to the development of high level language and that programs written in such languages must first be translated into machine language before being executed).

25. *See id.* at 174 (noting that all operating systems contain control or management programs which function as translators and convert high level language to machine language in order to direct a computer's operations and auxiliary programs).

26. *See* MAWREY & SALMON, *supra* note 10, at 6 (noting that an operating system works in conjunction not only with the hardware, but with applications software as well).

27. *See* FRATES & MOLDRUP, INTRODUCTION TO THE COMPUTER: AN INTEGRATIVE APPROACH 244-45 (1980) [hereinafter FRATES & MOLDRUP] (explaining that applications programs are designed to use the capabilities of the computer to solve specific problems for the user).

28. Lake, Harwood & Olson, *Tampering with Fundamentals: A Critique of Proposed Changes in EC Software Protection*, 6 COMPUTER L.J. 1, 3 (Dec. 1989). For the purposes of the EC Directive, only the product-to-product interfaces are relevant. The other interfaces, user interfaces, are protected under unfair competition laws. *Id.* Product-to-product interfaces include the software-to-software, hardware-to-hardware and the software-to-hardware interfaces. *Id.*

29. Hardware includes the television monitor, storage devices, such as a tape recorder or disk drive, and the microcircuit chips. BURTON, *supra* note 18, at 68.

30. *See* FRATES & MOLDRUP, *supra* note 27, at 97-98 (explaining that the central processor is composed of the storage or memory unit, the control unit, and the arithmetic-logic unit).

cuitry comprises one of the most essential components in a computer, the entire system works in an elementary way.[31]

The programmer may control the level of change in the program by various means. The most effective method of preventing user modification is to incorporate and secure a program into a chip.[32] In computer language, this is referred to as Read Only Memory (ROM).[33] ROM is significant because it can only be read and not modified.[34] In contrast to the ROM, the hardware contains the Random Access Memory (RAM).[35] RAM begins as a blank slate on which data and programs may temporarily be read and stored.[36] RAM stores information only if the computer is turned on and erases all data once the computer is turned off.[37]

In another category of computer technology, microcodes, are software closely related to hardware.[38] Microcodes are a set of coded instructions inside each chip[39] that alter the basic operation of the hardware by coordinating the resources of the Central Processing Unit.[40] As part of the software, but also equipped to influence the hardware, the microcodes represent a hybrid of the two technologies.[41]

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31. *Id.* at 98. The arithmetic-logic unit is comprised of registers, adders, and counters. *Id.* A register receives data, holds it, and transfers it as directed by the control unit. *Id.* An adder performs arithmetic functions simultaneously on data received from two or more sources. *Id.* A counter records the number of times an operation is performed. *Id.*

32. *See* BURTON, *supra* note 18, at 78 (noting that an entire integrated circuit may be placed on a small silicon chip to store data).

33. ROM has two variants: the programmable ROM (PROM) and the erasable ROM (EPROM). *Id.* at 124.

34. FRATES & MOLDRUP, *supra* note 27, at 161.

35. *See* BURTON, *supra* note 18, at 131 (noting that RAM is a memory organized and constructed into cells, each of which may be accessed directly without having to first go through all other storage cells).

36. FRATES & MOLDRUP, *supra* note 27, at 161.

37. *See id.* (noting that when stored data in RAM type memories is no longer needed, such information may be erased and replaced with other data).

38. Friedman, *Copyrighting Machine Language - Computer Software the Case Against,* 9 COMPUTER L.J. 1, 5 (1989) [hereinafter Friedman].

39. Chips are complex integrated or electrical circuits that perform a variety of elementary functions. *Id.* Chips are harnessed by applications programs which then use the operating system to perform complex functions. *Id.*

40. Harris, *Legal Protection for Microcode and Beyond: A Discussion of the Applicability of the Semiconductor Chip Protection Act and the Copyright Laws to Microcode,* 6 COMPUTER L.J. 187, 189 (1985). The resources are the circuits that execute the functions of the Central Processing Unit (CPU) but execute these tasks separately from the CPU. *Id.* at 187. The function of the CPU is to perform the programs from the memory of the computer. *Id.* at 189, n.7. Therefore the CPU will examine, decode and finally execute the instruction. *Id.*

41. Friedman, *supra* note 38, at 5. Due to this ambiguous position, microcodes are often referred to as firmware. *Id.* Firmware is any microcomputer program or data

B. Statutory Definitions

As a pioneer in the statutory definition of legal protection of computer software, the United States definition[42] created several problems, especially with regard to the scope of such protection.[43] The United States definition, however, should serve as an excellent guide for the EC drafters and may enable them to avoid similar problems. The United States Congress adopted the following formula: "A computer program is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result."[44] This definition distinguishes between the direct and the indirect use of the computer program. The direct use of the computer refers to the object code. Consequently, under the United States definition, computer programs may be read in ROM. Therefore, a machine language directly reads the object code which is usually contained in tapes, disks or other physical devices. The indirect use refers to source code programs written in one of the high-level computer programming languages.

In *Apple Computer, Inc. v. Franklin Computer Corp.*,[45] the court was asked to determine the scope of copyright protection under the statutory definition.[46] The court held that software in object code as well as source code qualified as a literary work within the meaning of the Copyright Act.[47] In addition, the court ruled that a computer program embodied in a ROM also qualified as copyrightable subject mat-

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incorporated into the hardware of the system. RAYSMAN & BROWN, *supra* note 9, at § 1.03.

42. 17 U.S.C. § 101 (1982 & Supp. 1991). The first United States provision providing a definition for the protection of computer software began with a 1980 amendment to the United States Copyright Act. *Id.*

43. *See* MARZOUK, PROTECTING YOUR PROPRIETARY RIGHTS IN THE COMPUTER AND HIGH TECHNOLOGY INDUSTRIES 21 (1988) (stating that once Congress permitted copyright protection of computer software, controversy arose over which portions of a program could be copyrighted).

44. 17 U.S.C. § 101 (Supp. 1991). A definition of a computer program was incorporated into the United States Copyright Act after amendment on December 12, 1980. *Id.*

45. 545 F. Supp. 812 (E.D. Pa. 1982), *rev'd*, 714 F.2d 1240 (3rd Cir.), *cert. denied*, 464 U.S. 1033 (1984).

46. *Id.* at 815. Apple Computer, a leading manufacturer of personal computers and related equipment, initiated this copyright infringement suit because Franklin, which designed and manufactured the ACE 100 as an Apple compatible personal computer, copied Apple's operating system. *Id.* In its analysis, the District Court stated that "there is no clear consensus on how to describe the technology employed in microcomputers. With no clarity there, the application of law or fact becomes unsure." *Id.* at 816.

47. Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240, 1249 (3d Cir. 1983), *cert denied*, 464 U.S. 1033 (1984).

ter.[48] The court further noted that the statutory requirement of "fixation" of information or data was satisfied by expression in ROM.[49]

Apple Computer is one of the major cases determining the scope of copyright protection for computer programs. This concept is not new, earlier cases have also concluded that the scope of copyright law protects the expression of an idea but not the idea itself.[50] Confronted with this idea-expression dichotomy, the court gives a broad interpretation to the statutory definition of computer programs.[51]

In the early 1980's, the World Intellectual Property Organization (WIPO) began work on a draft for a software protection treaty.[52] The committee eventually agreed upon the following definition for computer programs: "A set of instructions, capable, when incorporated in a machine-readable medium, of causing a machine having information processing capabilities to indicate, perform or achieve a particular function, task or result."[53] The WIPO Committee decided, however, to submit the draft to a governmental expert committee for further examination.[54]

Through various court interpretations, the United States has implemented its computer program definition throughout the entire programming field.[55] The issue which remains unresolved in the case law, how-

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48. *Id.*

49. *Id.* Under section 101, a work is considered to be "fixed in a tangible medium of expression when its embodiment in a copy, by or under the authority of the author, is sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period more than transitory duration." HENN, COPYRIGHT LAW: A PRACTITIONERS GUIDE 50 (1988).

50. Mazer v. Stein, 347 U.S. 201, 217 (1954) (categorizing this theory as idea-expression dichotomy).

51. Apple Computer, 714 F.2d at 1253-54.

52. *See* THE LEGAL PROTECTION OF COMPUTER SOFTWARE 183 (H. Brett & L. Perry ed. 1981) (noting that the World Intellectual Property Organization's (WIPO) Model Provision gained approval from the representatives of many different economies as the increasing availability of small computers expands the market for new computer programs).

53. *Id.* (quoting section 1(i) of the WIPO Model Provisions On the Protection of Computer Software).

54. The working group first met in 1984 in Canberra, Australia to study the proposed set of rules and continued the discussions in Geneva, Switzerland, in 1985. *Group of Experts on the Copyright Aspects of the Protection of Computer Software,* 21 COPYRIGHT 146 (1985) [hereinafter *Group of Experts*]. At the 1985 meeting, WIPO decided to conduct the meetings as a common conference between WIPO and the United Nations Educational, Scientific and Cultural Organization (UNESCO). *Id.* at 146.

55. Both source code, the language in which a programmer writes a program, and object code, the code in which a source code is translated for further processing, qualify as copyrightable works under this definition. GCA Corp. v. Chance, 217 U.S.P.Q. (BNA) 718, 720 (N.D. Cal. 1982). Programs encoded on ROM chips also qualify for copyright protection under the United States definition. Tandy Corp. v. Personal Micro

ever, concerns the microcodes. Under the United States definition, it remains unclear whether microcodes qualify as copyrightable material.[56]

The EC legislature had the option of adopting either a precise and technical definition of computer programs, or a more general and broad description in the Directive.[57] The drafters of the Software Proposal preferred to create a more general framework and leave the structural details to the discretionary power of the courts.[58] This type of framework, however, produces much legal uncertainty. Delegating the task of providing the necessary details to the European Court of Justice or the member state courts could thwart the ability of the EC legislature to control the application and interpretation of the Final Directive.[59]

A restrictive interpretation not only limits the field of application but also raises doubts concerning whether harmonization of computer law within the EC is feasible.[60] On the other hand, the world of computers

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Computers, Inc., 524 F. Supp. 171, 173 (N.D. Cal. 1981). Both operating systems programs and application programs qualify for copyright protection. *Apple Computer*, 714 F.2d at 1251.

56. *See* Harris, *supra* note 40, at 212 (suggesting that some *sui generis* law for the microcode may be necessary to protect those parties with a commercial interest).

57. For an overview of definitions of "computer programs" see MICHAEL S. KEPLINGER, UNITED STATES PATENT AND TRADEMARK OFFICE, OFFICE OF LEGISLATION AND INTERNATIONAL AFFAIRS, INTERNATIONAL PROTECTION FOR COMPUTER PROGRAMS 1-4 (1990) (compiling an overview of "computer program" definitions in twelve different jurisdictions).

58. *See Software Proposal*, *supra* note 2, at 13 (stating that the Directive applied to the expression in any form of a computer program but not to ideas, principles, logic, algorithms, or programming languages underlying the program). *See also* Prinsley & Baxter, *The Proposed European Directive on the Legal Protection of Computer Programs*, 5 COMPUTER L. & PRAC. 217, 217 (1989) (noting that the Commission sought to establish an idea/expression dichotomy by which the expression of underlying ideas in source or object code were protected, but the underlying ideas themselves were left unprotected).

59. *See* D. WYATT & A. DASHWOOD, THE SUBSTANTIVE LAW OF THE EEC 25 (1980) (highlighting specific issues of substantive law and particularly the EEC Treaty and its domination of EC law) [hereinafter WYATT & DASHWOOD]. The European Court of Justice held that provisions of Community law, generally referred to as secondary legislation, are directly applicable or directly effective in the member states. Van Gend & Loos v. Nederlandse Administratie Der Belastingen, 1963 E.C.R. 1, 11-14. The concept of establishing direct effect is described as provisions endowed with sufficient clarity and precision to bestow a legal right on a natural or legal person. WYATT & DASHWOOD, *supra* note 59, at 25. Nevertheless, direct effect remains a question of interpretation. *Id*. Directives usually have direct effect and, therefore, they are directly applied in the local courts of the member states. *Id*. The role of the European Court of Justice is mainly to promote a uniform interpretation of these directly applicable provisions. Van Gend, 1963 E.C.R. at 12.

60. *See* WYATT & DASHWOOD, *supra* note 59, at 40 (defining directives). A directive leaves the member state the choice of whether or not to implement the directive into the national legislation. *Id*. As a result, in some member states, individuals can rely on both domestic and Community legislation on identical subject-matter. *Id*.

is continuously expanding and evolving. Consequently, a restrictive definition may not cover future technological innovations in software.

Another major problem with the Software Proposal is that article 1 fails to specify the technical components necessary to ensure software protection.[61] Without such specialty, the Courts in various member states will continue to provide conflicting interpretations of the legislation. Consequently, the European Court of Justice must play a vital role in establishing a uniform interpretation of the Directive.

C. THE NEED FOR PROTECTION

The software business community has proven to be one of the most outspoken groups advocating protection of computer programs for several reasons. First, from an economic perspective, the software business is one of the fastest growing sectors in the world.[62] This area is expanding at an exponential rate and greatly affects the economies of a large number of countries.[63] Current attempts to integrate national copyright laws are simply insufficient for adequate and effective software protection in the EC. The computer business in Europe currently exceeds 50 billion ECUs.[64] Consequently, the EC must implement regulations similar to those in the United States, Japan, and several European countries outside the EC which protect this important economic sector.[65]

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61. The explanatory memorandum to the EC draft provides that the words "computer program" are not defined for the purpose of this Article. *Id.* Experts in the field recommend that any stated definition in the Directive of what constitutes a program would become obsolete as future technology changes the nature of programs. *Software Proposal, supra* note 2 at 9.

62. Green Paper, *supra* note 4, at 171 (stating that computer software sales in 1985 equaled between 30 to 39 billion dollars).

63. *Id.*

64. WYATT & DASHWOOD, *supra* note 59, at 334 (discussing the European Currency System). Prices under the common agricultural policy are measured by units referred to as ECU or European Currency Unit. *Id.* An ECU is calculated by adding combined amounts of currencies of the member states, excluding Spain and Portugal. *Id.*

65. *See* Gyertyanfy, *The Possibilities for Copyright Protection of Software in the European Socialist Countries*, 25 COPYRIGHT 118 (1989) [hereinafter *Possibilities*] (noting the economic and political development in these countries over the past few years is likely to cause radical changes in the field of software copyright protection). At present, only Hungary offers copyright protection to computer programs. *See* Palos, *Hungary: Protection of Computer Software without the Framework of Copyright*, 6 COMPUTER L. & PRAC. 123 (March 1990) (noting the importance of Hungary's computer production to western countries). The new legislation came into effect on July 12, 1983. *Id.* Bulgaria enacted legislation which provides for *sui generis* protection. Decree no. 8/1982 of State Committee on the Unified System for Social Information, in *Official Gazette* 1982, No. 75. *See also* BLACK'S LAW DICTIONARY 1286 (5th ed. 1979) (defining *sui generis* as "of its own kind or class," and "peculiar"). In reality, however,

The second reason businesses dealing in computer software advocate software protection derives from the human creativity of a computer related project. A computer program is a product of the human mind. Consequently, just as the author of a literary work is granted copyright protection, the author of software deserves the same right. This approach assures regulation of the relationship between the creator, the owner, and the final user.

The software industries' third potential argument originates in principles of equity. Software development involves investing tremendous amounts of time and money. Literal copying, on the other hand, can be produced at a fraction of the cost of the initial development. Literal copying, or piracy, destroys the incentive to develop new software and robs the creator of his investment in the new idea. Therefore, to combat piracy and to protect an inventor's investment, the software industry could argue that copyright protection should apply to software.

A fourth argument centers on the economic ramifications of the software industry. Development of computer technology plays a vital role in the EC due to the magnitude of its influence on the economy. Moreover, it commands a large portion of public and private investment capital. United States companies currently dominate the European market for computer programs.[66] As a result, the need to protect the European software industry, as well as to control the powerful United States industry, helped inspire the Final Directive.[67]

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the Bulgarian legislation should not qualify as a *sui generis* solution because the provisions do not grant exclusive rights to the author of the software. *Possibilities, supra* note 65, at 122. In most of the other socialist countries, namely Czechoslovakia, Poland, the former Soviet Union, and Yugoslavia, legal authorities are in favor of copyright protection. *Id.* In Germany and Romania, the development of legal protection of computer programs remains unclear. Bulgaria, Czechoslovakia, Yugoslavia, Germany, Hungary, Poland, Romania, and the former Soviet Union are all members of one of the two major copyright conventions, the Berne Convention or the Universal Copyright Convention. *Id. See* Bohacek & Loebl, *Software and the Proposed Czechoslovak Copyright Act Amendment*, 6 COMPUTER L. & PRAC. 152 (1990) (discussing the benefits of high-quality computer programs and other software in Czechoslovakia).

66. *The Effects of Greater Economic Integration within the European Community on the United States*, USITC Inv. No. 332-267, at 12-5 (March 1990). United States software producers retain 70% of the world market. *Id.* In 1987, United States software producers imported 65% of all computer programs in the EC. *Id.*

67. Schricker, *Harmonization of Copyright in the European Economic Community*, 20 INT'L REV. OF INDUSTRIAL PROP. & COPYRIGHT L. 466, 473-84 (1989) (analyzing the 1988 Green Paper on Copyright and the Challenge of Technology which defines the Commission's policy concerning copyright). The Single European Act declared the development of European industry as one of the EC's goals:
> The Community's aim shall be to strengthen the scientific and technological basis of European Industry and encourage it to become more competitive at the international level.

Single European Act, 1987 O.J. EUR. COMM. (No. L 169) 1.

Obviously, legal protection of computer software is in the best inter-
est of the EC. Protection of the European software industry provided
the impetus for the Final Directive.[68] In order to achieve this objective,
the EC must construct a legal environment under which competition
will flourish while software developers' rights remain protected. The
EC will not, however, succeed in creating a competitive software mar-
ket unless it can coordinate the efforts made by EC member states.

Suppose, for example, a Belgian company creates a new computer
program. The development of this project involves a great amount of
time and money. Belgium has no substantive law protecting computer
programs. The only possibility of copyright protection is found in the
general Copyright Act.[69] The small or medium-sized Belgian company
has no guarantee of an adequate protection once the program is mar-
keted. Consequently, the company commits financial suicide while de-
veloping an innovative and important computer program, because a
computer program can be copied at a fraction of the initial research
and development costs. This inequitable outcome, which results from
ineffective legislation, impairs small and medium-sized European
software companies in their attempts to increase or merely maintain
their market share. Even with adequate protection, there will be strong
competition with multinational software companies.

In developing the Final Directive, the EC legislature had two distinct
goals. One was to create an environment for fair competition in the
software industry. The other was to establish a competitive advantage
for its local manufacturers. Therefore, the Final Directive serves as an
impetus for the European software industry. This industry has, since
the introduction of the personal computer, become a vulnerable target

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68. *See* Tamburrini, *Software Protection - The Situation in Italy*, 5 COMPUTER L.
& PRAC. 82 (1988). Italy has no legislation protecting software. *Id.* Piracy is wide-
spread not only among individual Italian software users, but large companies as well.
Id. These companies prevented several attempts to regulate the protection of software.
Id. Consequently, manufacturers created an organization, Associazone Italiana Per La
Tutela del Software (ASSOFT or the Italian Software Protection Association) due to
the absence of national legislation. *Id.* This organization sponsors legal proceedings,
drafts legislation, and has set up a system of software registration. *Id.*

69. Loi sur les pratiques du Commerce, *reprinted in* Bulletin Usuel des Lois et
Arretes, No. 1081, July 1971, 847, 855 [hereinafter Bulletin Usuel]. Computer pro-
grams are protected as a work of authorship under the Copyright Act of March 2,
1886 as amended on March 11, 1958. Sumner & Plunkett, *Copyright, Patent and
Trade Secret Protection for Computer Software in Western Europe*, 8 COMPUTER L. J.
327, 342 (1988).

for piracy.[70] In the Green Paper, the Commission extensively addressed the issue of piracy from countries outside the EC.[71]

D. CHOICE OF PROTECTION

Computer software can undoubtedly be regulated through different legal mechanisms. Although copyright law is generally accepted as the most adequate tool, more and more judicial decisions recognize the patentability of computer software.[72] Software pirates have also been caught under trade secret provisions, unfair competition law, and general penal law, specifically theft.[73] In addition, the owner of software has the option of securing his interest through contract law.

Prior to the 1980's, courts in Europe refused to grant patent protection to software. Patent protection laws in the United States, however, led to European courts granting patent protection to software inventions. Initially, it appeared to be the most suitable form of protection for various reasons.[74] An inventor obtains broad protection for inventions through specific patent provisions which provide protection for ideas and concepts embodied in the software. This exclusive protection contradicts copyright protection. Moreover, patent law provides protection for ideas that are not copyrightable.[75] Finally, the scope of patent protection is very extensive. In most countries, the owner of a patent has the right to prevent the making, using, or selling of the product for a reasonable period of time.

In general, patent protection is unified in Europe through the initiatives of the European Patent Office (EPO).[76] Seventeen West European

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70. Green Paper, *supra* note 4, at 35.

71. Green Paper, *supra* note 4, at 19. Piracy is the unauthorized reproduction of works protected by copyright or allied rights for commercial purposes as well as subsequent commercial dealing in such reproduction. *Id.*

72. Sumner & Plunkett, *Powerful New Software Protection in Europe: The Patent Trend Continues*, 4 COMPUTER LAW. 10, 10 (1987). [hereinafter *Powerful New Software*].

73. *See* Dreier, *Copyright Protection for Computer Programs in Foreign Countries: Legal Issues and Trends in Judicial Decisions and Legislation*, 20 INT'L REV. OF INDUS. PROP. & COPYRIGHT L. 803, 805 (1989) (outlining the international trend of copyright protection).

74. Sumner & Plunkett, *supra* note 69, at 330; *see* Sumner & Lundberg, *The Versatility of Software Patent Protection: From Subroutines to Look and Feel*, 3 COMPUTER LAW. 6 (June 1986) (discussing the characteristics and benefits of patent protection and suggesting guidelines for its use).

75. 17 U.S.C. § 102 (1988); *see also Powerful New Software*, *supra* note 72, at 5.

76. *The Effects of Greater Economic Integration Within the EC on the United States*, USITC Inv. No. 332-267, at 12-4 n.1 (Mar. 1990).

countries signed the convention establishing the EPO.[77] The purpose of the European Patent Convention (EPC) is not to create a single set of patent rules for Europe, but to create a unified and simplified procedure to obtain patent protection. Instead of filing a patent application in each of these separate countries, an inventor can request protection in all the member countries with one application.[78]

The EPO Guidelines[79] contain information concerning the patentability of software. According to these recommendations, a computer program by itself is excluded from patent protection. The situation changes, however, when a program is loaded into a known computer; patentability should not be denied on the ground that a computer program is involved in the implementation.[80] Although the language in the Guidelines is not very clear, it gives an indication that the EPO does not want to exclude computer programs from patent protection under the Convention. The EPO expressed concern about a strict application of article 52 of the EPC in cases where a computer program is an essential part of the invention.

The EPO Board of Appeals determined the relation between patents and software in *Vicom Systems, Inc.*[81] The Board held that a technical process conducted by a computer program is not a program within the meaning of article 52(2) of the EPC.[82] This judgment distinguishes between the patentability of a computer program and the application of a program. It would indeed be illogical to grant protection to the process and not to the computer program as the main activator of the process.

Most European countries incorporated this provision into their patent law. Although the EPO Guidelines are not binding, national courts dealing with the patentability of software will most likely follow them. This means that patent protection for software is quasi-unified in Eu-

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77. *See Powerful New Software, supra* note 72, at 3. The member countries are Austria, Belgium, France/Monaco, Germany, Greece, Italy, Luxembourg, the Netherlands, Spain, Switzerland, Liechtenstein and the United Kingdom. *Id.* Ireland, Norway, and Denmark have signed but not ratified the convention. *Id.*

78. Sumner & Plunkett, *supra* note 69, at 333. An inventor has four different ways to obtain a patent in Europe: (1) file for a patent in each country; (2) apply through the Patent Cooperation Treaty (PCT) for the member states; (3) request a European Patent with the EPO; or (4) apply with the PCT for both PCT and EPC member countries. *Id.*

79. *Guidelines for Examination in the EPO*, Chapter II, Part C 2.3 (1985) Official Journal of the European Patent Office, at 173 [hereinafter *EPO Guidelines*]. *See also* Hart, *Application of Patents to Computer Technology - UK and the EPO Harmonization?*, 11 EUR. INTELL. PROP. R. 42, 43 (1989).

80. *EPO Guidelines, supra* note 79, at 257.

81. *Vicom Sys. Inc.*, No. T 208/84, 18 I.R.I.P. 101 (1987).

82. *Id.*

rope and the scope of protection is similar to protection available in the United States.[83]

At the same time, however, patent protection runs into some major problems. The requirements for granting protection are very severe and many newly developed programs will not be able to fulfill the legal criteria. The examination of programs is a complex and time-consuming process. In many cases, by the time the investigation is over and the patent is finally granted, the protection is no longer necessary. Usually, the strength of a new program consists of a change, or an addition to, an existing program. Filing a patent for these changes, has proven to be unsuccessful.[84] A balance of these advantages and disadvantages makes patent law a less secure form of computer software protection.[85]

Trade secret protection is certainly not as developed in Europe as copyright and patent protection. In fact, no European country has extensive and detailed legislation for trade secrets. Only Belgium[86] and France[87] have court decisions regarding trade secret protection of computer software.

The creation of contractual relations between rightholder and user is another valuable form of protection. Manufacturers try to retain control over their products through licensing agreements. The lessor has full control over his property and the lessee has the right to use the

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83. *Powerful New Software, supra* note 72, at 4.

84. *See* Higashima & Ushiku, *supra* note 19, at 12 (proposing a new means of international protection of computer programs).

85. *See* Sotysinski, *Protection of Computer Programs: Comparative and International Aspects*, 21 INT'L REV. OF INDUS. PROP. & COPYRIGHT L. 1, 23 (1990) (discussing cumulative patent and copyright protection).

86. Belgium law provides for a twofold statutory protection: The Unfair Competition Act of July 14, 1971 and the Penal Code. *See* Sumner & Plunkett, *supra* note 69, at 313 (outlining the protection of trade secrets in Belgium). Article 54 of the Unfair Competition Act states that "[a]ny act contrary to honest usage in commercial matters by which a merchant or artisan injures or attempts to injure the professional interests of one or more other merchants or artisans." 1 A. WISE, TRADE SECRETS AND KNOW-HOW THROUGHOUT THE WORLD § 1.08[19](1976). The Commercial court of Brussels decided on September 17, 1982, that the use of copies without the author's consent is a violation of Article 54. S.V. Administra v. N.V. Synectics, [1983] REVUE DE DROIT COMMERCIAL BELGE 611 (1982).

87. The French doctrine distinguishes between a manufacturing secret and a commercial secret. Sumner & Plunkett, *supra* note 69, at 349. A manufacturing secret is a manufacturing process that is not patentable but has a certain commercial value and is not known by the competitors. *Id.* Commercial secrets refer more to the account or the books. *Id.* at 350. Trade secret protection can be obtained in France under the Unfair Competition Act or Article 1382 of the Civil Code. *Id.* Relying on these principles, the Court of Commerce of Paris decided on January 14, 1988, that the sale of unauthorized duplicated software is contrary to unfair competition law. *Id. See also* Toubol, *The Protection of Computer Programs in France*, 8 EUROPEAN INTELL. PROP. REV. 15, 18 (1986)(discussing software protection by copyright in France).

program according to detailed rules in the licensing contract. Although licensing is a common practice in software transactions, arguments can be formulated against licensing. The powerful position of the manufacturer limits the possibility for the user to negotiate the terms of the agreement. Therefore, it is necessary to give some basic protection to the user beyond the conditions of the contract.[88] This raises the issue of whether the lessor can impose restrictions limiting the basic protection provided by copyright.[89] The Commission found that the regulation of contract law relating to software licensing is not necessary.[90] Guidelines for the suppliers might be useful but the EC legislature leaves the initiative to the private sector. As a result, the Confederation of European Computer Users Association is examining the possibility of establishing guidelines.

E. HARMONIZATION OF COPYRIGHT IN THE EC

Copyright provides the most adequate legal solution against unauthorized reproduction of programs.[91] In the past, copyright has provided a very flexible mode of protection which can adapt to new technological events, such as films and broadcast.[92] Copyright does not encompass the intellectual creation but covers only the material realization of an idea.[93] Therefore, copyright protection stimulates technological innovation because a simultaneously created program relying on the same idea can enjoy identical legal protection. This feature of copyright is particularly important for computer programs because the fundamental basis for programs, algorithms, are limited in number. This mode of legal protection provides that programs developed on the same algorithm, can be covered by copyright on equal terms.

A number of economic considerations support copyright as a means of protecting intellectual property rights. Copyright does not confer a monopoly to the creator and allows competitors to enter the market.

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88. *Software Proposal, supra* note 2, at 10.
89. *See* Charlton, *Software Licensing and the Abuse of Copyright,* 10 EUROPEAN INTELL. PROP. REV. 291, 292 (1986)(stating that vendors should not be allowed to restrict certain areas guaranteed by copyright).
90. Green Paper, *supra* note 4, at 181.
91. *See Software Proposal, supra* note 2, at 11 (recognizing the need for copyright protection of computer programs); *Final Directive, supra* note 2, at 25 (adopting copyright protection for computer programs); *see also* Clapes, Lynch & Steinberg, *Silicon Epics and Binary Bards: Determining the Scope of Copyright Protection for Computer Programs,* 34 UCLA L. REV. 1493 (1987) (arguing that copyright is critical to their continued commercial availability).
92. *Software Proposal, supra* note 2, at 7.
93. *Id.*

Copyright does not grant an absolute protection because ideas and methods of operation are not protected. Copyright law provides a perfect tool to combat unauthorized infringement through the application of international conventions such as the UC Convention and the Berne Convention.

The European Court of Justice has already resolved many of the difficulties associated with harmonization. These cases elucidate that free movement of goods and services and undistorted competition can only be achieved through harmonization of legislation. An analysis of these European Court of Justice decisions provides a better understanding of how the court tried to reconcile the conflict between the goals of the EEC Treaty and those of the copyright laws.

Copyright protection in EC member states is limited to the territory of that country. National legislation issued by the authorities of the member states cannot extend beyond the borders of that particular member state. This creates an environment where the protection of authors' rights varies from country to country. Consequently, the opportunity for authors' to obtain substantive and effective protection depends on the national law applicable to the issue. These different levels of domestic copyright protection create problems concerning the compatibility with one of the main goals of the EEC Treaty, the establishment of a single European market without any internal barriers.[94] The decisions of the European Court of Justice provide some answers for the resolution of this dilemma within the EC.[95] The European Court of Justice dealt with the copyright situation in three important chapters of the EEC Treaty.[96] The national character of copyright law is likely to affect the free movement of goods and services and competition law.

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94. *Single European Act, supra* note 3 (enumerating the EC's goal of economic and social cohesion). Article 3 of the EEC Treaty provides the means to establish the internal market: (1) the elimination of customs duties and quantitative restrictions on trade; (2) the establishment of a common customs tariff and commercial policy towards third party countries; (3) the abolition of obstacles to free movement of persons, services and capital; (4) the adoption of a common policy as to both agriculture and transport; (5) the institution of a system preventing the distortion of the interstate competition. EEC Treaty, *supra* note 1.

95. *See* Dietz, *Copyright Issues in the EEC: The Recent Decisions of the European Court of Justice and the Commission,* 30 COPYRIGHT SOC'Y 517 (1983); Harris, *Community Law and Intellectual Property: Recent Cases in the Court of Justice,* 19 COMMON MKT. L. REV. 61 (1982)(arguing that the 1980s will witness an increase of influence of Community law on national laws governing copyright).

96. Schricker, *supra* note 67, at 467.

1. European Competition Law

In general, EC competition law encompasses copyright use.[97] The contention that article 85(1) fails to address a regular use of copyright is a misconception.[98] Initially, cartel law exempted industrial property rights.[99] EC competition law considers the author of a copyrighted work an *undertaking* if he grants licenses or otherwise exploits his work.[100] The European Court of Justice, however, refrained from delineating the specific subject matter of copyright as a result of differing national laws.[101] The *In re GEMA* (Gesellschaft fur Musikalische Auffuhrungs-und Mechansicte Vervielfaltigungsrechte) case shows that any practices imposed by a dominant undertaking[102] that extend beyond the necessary protection of the owner's existing property may impinge upon articles 85 and 86 of the EEC Treaty.[103] The Commission concluded that GEMA, an authors rights' society, with a dominant position in authors' copyright, improperly exploited its rights in viola-

97. *Id.*
98. Article 85(1) of the EEC Treaty provides:
The following shall be deemed to be incompatible with the Common Market and shall hereby be prohibited: all agreements between enterprises, decisions by associations of enterprises and any concerted practices which are likely to affect trade between Member States and which have as their object or result the prevention, restriction or distortion of competition within the Common Market, in particular those consisting in:
(a) the direct or indirect fixing of purchase or selling prices or of any other trading conditions;
(b) the limitation or control of production, markets, technical development, or investment;
(c) marketing sharing or the sharing of sources of supply;
(d) the application to parties to transactions of unequal terms in respect of equivalent supplies; or
(e) the subjecting of the conclusion of a contract to acceptance by a party of additional supplies which, either by their nature or according to commercial usage, have no connection with the subject of such contract.
EEC Treaty, *supra* note 1, at art. 85(1).
99. P. KAPTEYN & P. VAN THEMATT, INTRODUCTION TO THE LAW OF THE EUROPEAN COMMUNITIES AFTER THE COMING INTO FORCE OF THE SINGLE EUROPEAN ACT 535 (L. Gormley 2d ed. 1989)[hereinafter KAPTEYN & VAN THEMATT].
100. *Undertaking* encompasses any legal or natural person engaged in some form of economic or commercial activity. STEINER, TEXTBOOK ON EEC LAW 108-09 (1990) [hereinafter STEINER].
101. *Id.* at 158.
102. The Court defined *dominant position* as "a position of economic strength enjoyed by an undertaking which enables it to prevent effective competition being maintained on the relevant market by giving it the power to behave to an appreciable extent independently of its competitors, customers and ultimately of its consumers." United Brands Co. v. Commission of the European Communities, 1978 E.C.R. 207, 208, 2 C.M.L.R. 429.
103. *In re* GEMA, 14 J.O. EUR. COMM. (No. L 134) 15 (1971).

tion of article 86 of the EEC Treaty.[104] The society discriminated against nationals from other member states by refusing them full membership.[105] Its practices extended beyond what was necessary to protect its legitimate property rights.[106] Consequently, the *GEMA* decision could force software producers holding a dominant position to disclose valuable program information in order to comply with EC law.

In addition, the Commission and the European Court of Justice have exercised control over national collecting societies.[107] In many of the member states these societies have a monopoly and therefore, occupy a dominant position. Exercising copyright from a dominant position automatically constitutes market abuse. There is, however, a strong indication that effective competition on the relevant market will be prevented. As noted in the decision, the General Directorate for Competition has expressed its interest of maintaining a workable system of competition for copyright collecting societies.[108]

2. *Free Movement of Goods*

Copyright is also subject to the treaty provisions establishing the free movement of goods[109] and the free flow of copies of works such as

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104. *Id.*
Article 86 provides:
  To the extent to which trade between any member states may be affected thereby, action by one or more enterprises to take improper advantage of a dominant position within the Common Market or within a substantial part of it shall be deemed to be incompatible with the Common Market and shall thereby be prohibited.
    Such improper practices may, in particular, consist in:
    (a) the direct or indirect imposition of any inequitable purchase or selling process or of any other inequitable trading conditions;
    (b) the limitation of production, markets or technical development to the prejudice of consumers;
    (c) the application to parties to transaction of unequal terms in respect of equivalent supplies, thereby placing them at a competitive disadvantage; or
    (d) the subjecting of the conclusion of a contract to the acceptance, by a party, of additional supplies which, either by their nature or according to commercial usage, have no connection with the subject of such contract.
EEC Treaty, *supra* note 1, at art. 86.
  105. STEINER, *supra* note 100, at 157-58.
  106. *Id.* at 141.
  107. Schricker, *supra* note 67, at 467.
  108. Dietz, *The Harmonization of Copyright in the European Community*, 20 INT'L REV. OF INDUS. PROP. & COPYRIGHT L. 381 (1985). The European Court of Justice previously examined whether collecting societies can claim exemption from EEC competition law under the second paragraph of article 90 of the EEC Treaty. Belgische Radio en Televisie (BRT) and Societe belge des auteurs, compositeurs et editeurs v. SV SABAM and NV Fonior, 1974 E.C.R. 51.
  109. *See* EEC Treaty, *supra* note 1, arts. 30-36.

books and computer programs. Article 36 of the EEC Treaty makes a special exception for the protection of industrial and commercial property.[110] For a long time it was not clear whether articles 30 through 36 applied to copyright.[111]

The European Court of Justice finally resolved the issue in 1981. The *GEMA* case clearly establishes the applicability of the provisions regulating the free movement of goods to copyright and neighboring rights.[112] The court considered whether the enforcement of the copyright was compatible with the EEC Treaty provisions governing the free movement of goods, holding that the payment of additional fees due to different enumeration in national laws is not enforceable.[113] The court also concluded that internal legal provisions restricting the music recording trade between member states are equivalent to quantitative restrictions for purposes of article 30 of the EEC Treaty.[114] Consequently, the differences in national copyright laws in the absence of harmonization may not be used to restrict the free movement of goods.[115] This decision clearly provides a number of opportunities to United States software producers. National copyright restrictions cannot prevent the free flow of computer programs within the Community. The harmonization of software copyright through the Final Directive, however, will make this problem obsolete.

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110. *See id.* art. 36 (prohibiting quantitative restrictions or measures). Article 36 states that the provisions of articles 30 to 34 shall not preclude prohibitions or restrictions on imports or exports justified on the grounds of the protection of industrial and commercial property among others and that such prohibitions or restrictions shall not, constitute a means of arbitrary discrimination or a disguised restriction between member states. *Id.*

111. *See* KAPTEYN & VAN THEMATT, *supra* note 99, at 401 (considering whether the court refuses to recognize the compatibility of copyright and articles 30 or 34 or if the exercise by owners of their rights constitutes a restriction of free trade within the EEC).

112. Musikvertrieb Membran Gmbtt and K-Tel International v. Gesellschaft fur Musikaliste Auffshrungs-und Mechanishe Venvielfaltigungsrechte (GEMA), 1981 E.C.R. 147, 148-50, 2 C.M.L.R. 44. Musikvertrieb Membran imported music recordings into Germany from other member countries. *Id.* at 149. The UK Copyright Act provides for a 6.25% license fee for the distribution of phonograms protected by copyright, while German copyright law leaves the issue up to the parties. *Id.* at 152. The parties agreed upon an eight percent royalty fee. *Id.* at 168. GEMA filed suit in the German court for the payment of the additional 1.75%. K-Tel also imported music recordings from the UK into Germany. *Id.* The German recording company sold the recordings against the payment of the 6.25% royalty as provided by UK Copyright law. *Id.* GEMA sued K-Tel in a German court on the basis of Article 97 of the German Copyright Act which delineates the different remedies for an author whose copyright has been infringed, including injunctive relief for removal of the infringement and damages for deliberate or negligent breach of the law. *Id.* at 152.

113. *Id.* at 160.

114. *Id.* at 161.

115. *Id.* at 165.

The question whether the free movement of goods provisions are applicable to copyright was first raised in the 1971 *Deutsche Grammophon* case[116] where the European Court of Justice expressed fundamental principles which were expanded on in later copyright cases.[117] The court concluded that article 36 of the EEC Treaty only applies to the existence of industrial and commercial property and not necessarily to the exercise of these rights.[118] The existence/exercise dichotomy is explained through the concept of "specific subject-matter" of industrial property.[119] Only those rights forming part of the "specific subject-matter" of the industrial and commercial property can be derogated in favor of protecting systems.[120] The court expanded the scope of this new concept in subsequent cases dealing with industrial and commercial property.[121] The court failed, however, to resolve the issue and merely expressed the opinion that these treaty provisions *may* be relevant to copyright.[122]

In the *Dansk Supermarked* case[123] the court developed an additional principle concerning the harmonization of copyright.[124] Once a product has been marketed and put in circulation in a member state, the owner

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116. Deutsche Grammophon Gmbh v. Metro-S.B.-Grossmarkte, 1971 E.C.R. 487.

117. Cline, *Copyright Protection of Software in the EEC: The Competing policies Underlying Community and National Law and the Case for Harmonization*, 75 CAL. L. REV. 633, 635 (1987). Deutsche Grammophon manufactured gramophones and sold them through retailers in Germany. *Deutshe Grammophon*, 1971 E.C.R. at 489. The distribution was subject to a retail price maintenance system. Metro purchased Deutsche Grammophon's records through its subsidiary, Polydor, in France and sold them on the German market well below the fixed price. *Id.* at 489-90. The European court stated in this case:

[I]t would be in conflict with the provisions prescribing the free movement of products within the common market for a manufacturer of sound recordings to exercise the exclusive right to distribute the protected articles, conferred upon him by the legislation of a Member State in such a way as to prohibit the sale in that state of products placed on the market by him or with his consent in another Member State solely because such distribution did not occur within the territory of the first Member State. *Id.* at 500.

118. *Id.* at 499-500.

119. *Id.*

120. *Id.* at 500.

121. *See* Centrafarm BV v. Sterling Drug Inc., 1974 E.C.R. 1147, 1162 (holding that Article 36 only allows derogations from the free movement of goods where they are justified for the goal of protecting rights which constitute the specific subject matter of the property); Centrafarm BV v. Winthrop BV, 1974 E.C.R. 1183, 1194 (stating that Article 36 permits derogation from the free movement of goods only when the derogations are for the purpose of protecting rights which constitute the specific subject matter of the property).

122. Cline, *supra* note 117, at 636.

123. Dansk Supermarked A/S v. A/S Imerco, 1981 E.C.R. 181.

124. In *Dansk Supermarked*, Imerco, a Danish firm, ordered several decorated china services from an English china manufacturer. *Id.* at 183. The contract provided for Imerco to remain the sole distributer in Scandinavia. *Id.* Another Danish retailer,

cannot invoke national copyright law to prevent the free circulation of the product within the EC.[125] The court followed the rationale of the *Deutsche Grammophon* case that goods enjoying domestic copyright protection in a member state can circulate freely within the EC. These cases, in essence, stand for the proposition that copyright protection is not a valid reason to restrict the free circulation of goods. Consequently, a distributor can legally sell the goods anywhere in the EC, once the owner has consented to an initial distribution.

3. Free Movement of Services

The free flow of services is the third area of the EEC Treaty affected by domestic copyright protection. Article 59 of the EEC Treaty specifically applies when the exploitation of a work protected by copyright is intangible.[126] In *Coditel I*,[127] the European Court of Justice found that copyright problems of producers of a cinematographic work are not the same as regular literary and artistic works, such as books or records.[128] The court concluded that a movie belongs to a protected category where performances can be repeated without restrictions.[129] This method of distribution is a typical example of free services within the borders of the EEC. The court also stated that the principles concerning the free movement of goods do not apply and allowed national copyright laws to block the free movement of services within the EC.[130]

In *Coditel II*,[131] the court confirmed the rule expressed in *Coditel I*.[132] Both cases dealt with the validity of the distribution agreement for the film *Le Boucher*. A Belgian film distribution company, Cine' Vog, held an exclusive license to distribute *Le Boucher* in Belgium.[133] The producer, La Boetie, had also granted an exclusive distributorship to a

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Dansk Supermarked, purchased some of these services through a Danish seller who acquired the goods in the United Kingdom. *Id.* at 184.

125. *Id.* at 193.

126. *See* EEC Treaty, *supra* note 1, art. 59 (providing that restrictions on the freedom to provide services within the Community will be progressively abolished during a transitional period with respect to nationals of member states established in a state other than that of the persons for whom the services are intended).

127. S.A. Compagnie Generale pour la Diffusion de la Television, Coditel v. S.A. Cine' Vog Films [Coditel I], 1980 E.C.R. 881, 2 C.M.L.R. 362.

128. *Id.* at 902.

129. *Id.*

130. *Id.* at 904-05.

131. Coditel S.A., Compagnie Generale pour la diffusion de la Television, Coditel v. S.A. Cine' Vog Films [Coditel II], 1982 E.C.R. 3381.

132. *Id.* at 3400-01.

133. *Id.* at 3384.

German cable network for distribution in Germany.[134] Coditel, made up of three Belgian cable companies, intercepted the German broadcast transmission and rebroadcasted the movie on its network for a Belgian audience without the permission of La Boetie or Cine' Vog.[135] The court, in deciding whether EEC Treaty provisions permitted this action,[136] stated that national courts have the prerogative to establish whether the performing right to exhibit a film includes the right to charge certain fees and the right to limit the geographical area.[137] As a result, if the owner of a copyright grants an exclusive right for a specific period in a particular member state, the EEC Treaty provisions mandating free trade are inapplicable.[138]

This case is generally seen as an exception to the courts' approach towards harmonization of copyright. Article 59 of the EEC Treaty prohibits restrictions on the freedom to provide services. Nevertheless, the court recognizes that national copyright laws may impose limits on the application of this freedom except where it would constitute arbitrary discrimination in one of the member states.[139]

The *Coditel* cases do not rely on the presumption of the "exhaustion theory" under Community law, in which the application of article 36 of the EEC Treaty to intellectual property rights is at stake.[140] Contrary to its decisions in *Deutsche Grammophon* and *GEMA*, the court recognized both the exercise and the existence of national copyright legislation in a member state.[141]

The foregoing cases demonstrate an attempt by the European Court of Justice to reconcile the goals of the EEC Treaty with those of copyright law. Problems arise, however, from the fact that the EC has different copyright laws in each member state. The objective of harmonizing software copyright protection in the internal market will be difficult to accomplish so long as national laws grant exclusive rights to particu-

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134. *Id.*
135. *Id.* at 3404.
136. *Id.* at 3398-99.
137. *Id.* at 3402.
138. *Id.*
139. Coditel I, 1980 E.C.R. at 903.
140. *See* Ubertazzi, *Copyright and the Free Movement of Goods,* 16 INT'L REV. OF INDUS. PROP. & COPYRIGHT 46, 52-53 (1985) (stating that the theory was developed as an attempt to reconcile the national background of industrial property rights and the urge towards a rapid integration of EEC copyright law). This national source of industrial property protection results in a situation where the identical intellectual work can have as many national protections, as there are member states. This can create a division of the Community and can restrain the free movement of goods. *Id.*
141. Cline, *supra* note 119, at 638.

lar segments of the market.[142] At present, there is great disparity in the protection of software in the Community.[143] Even though exclusivity agreements that prevent computer software imports from another member state constitute quantitative restrictions, the principles arising from the European Court of Justice case law do not contribute to the comprehensive harmonization of copyright protection in the EC. Harmonization is possible, however, because the Commission achieved substantial consistency in other branches of intellectual property law, particularly in patent law.[144]

Although the Commission only recently established a working program for copyright harmonization,[145] the situation in the EC has not been a completely chaotic combination of different national copyright laws. Some level of harmonization within the EC exists through the Berne Convention.[146] The main difference between copyright law in the EC and the copyright provisions of the Berne Convention and other

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142. *See* Deutsche Grammophon, 1971 E.C.R. at 633 (arguing that copyright protection by individual member states may restrict or distort free trade in the EC).

143. The Effects of Greater Economic Integration within the EC on the United States, USITC Inv. No. 332-267, at 12-4 (Mar. 1990).

144. *See supra* notes 76 to 83 and accompanying text (discussing harmonization in patent law).

145. *Commission Sets Out Copyright Work Program*, 672 COMMON MKT. REP. (CCH) 4 (Jan. 10, 1991).

146. *Berne Convention, supra* note 7. The Berne Convention entered into force on December 5, 1987, and has been revised five times with two additions. INTERNATIONAL TREATIES, *supra* note 74, at 339-40. The first twenty articles contain substantive provisions and subsequent articles contain administrative provisions. *Id.* The scope of the subject matter that the Berne Convention protects is expansive, including "literary and artistic works [that] shall include every production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression. . . ." *Id.* (quoting *Berne Convention* at art. 2, para. 1).

The Berne Convention provides that an author who is a national of a member state may have published or unpublished works protected. *Id.* The Berne Convention also protects the work of a non-national of a member state if the work is first published in a member state or if the work is published simultaneously in a member and a non-member state. *Id.*

Although the Convention does not govern the protection of works within the country of origin, works originating in a member state are protected in all other countries that are members of the Berne Convention without requiring formal prerequisites to such protection. *Id.* (referring to *Berne Convention* at art. 5, para. 2). The Convention offers protection for a minimum period of life plus fifty years, or an alternative fifty years from the date of publication of anonymous works or those completed under a pseudonym. *Id.* (quoting *Berne Convention* at art. 7, paras. 1, 3).

The EC countries that are members of the Berne Convention and their respective dates of entrance are as follows: Belgium (1887); Denmark (1903); France (1887); Germany (1887); Greece (1920); Ireland (1927); Italy (1887); Luxembourg (1888); Netherlands (1912); Portugal (1911); Spain (1887); and the United Kingdom (1887). STEWART, INTERNATIONAL COPYRIGHT AND NEIGHBORING RIGHTS 130-32 (1983) [hereinafter STEWART].

international conventions,[147] is that Community law is directly applicable to the member states,[148] whereas the Convention merely requires states to conform their legislation to its principles and rules.[149] When a state does not comply with its duties under the Berne Convention, other states may only resort to an appeal to the International Court of Justice.[150] The importance of the Berne Convention, however, should not be understated. An analysis of the relevant provisions in the Final Directive will make it clear that compliance with the Berne Convention is an issue of first priority.

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147. *See* STEWART, *supra* note 146, at 133-247 (discussing international conventions other than the Berne Convention). The Universal Copyright Convention, July 24, 1952, 6 U.S.T. 2731, T.I.A.S. No. 3324 [hereinafter UC Convention], was formed after the Berne Convention and is a significant one. STEWART, *supra* note 148, at 134-37. It was inspired by the ideas of the United Nations. *Id.* The UC Convention came into force in 1952 and was thoroughly revised in 1971. *Id.* at 134.

The UC Convention includes as members some major countries that did not join the Berne Convention, such as the United States, the Soviet Union, and China. INTERNATIONAL TREATIES, *supra* note 74, at 378. The UC Convention requires all member countries to confer the same protection to foreign works eligible under the UC Convention as they give to their own citizens' works. *Id.* Member states must grant at least a twenty-five year term of protection from the date of publication, or the lifetime of the author plus twenty-five years. *Id.* at 379.

148. STEWART, *supra* note 146, at 477-78. In order to guarantee uniform interpretation of the provisions of the Treaty of Rome, Article 177 of the EEC Treaty grants the European Court of Justice jurisdiction to give preliminary rulings relating to the interpretation of the Treaty, the validity and interpretation of acts of Community institutions, and in the case of secondary legislation, the validity of Community laws. EEC Treaty, *supra* note 1, art. 177, at 76. Based on this authority, the European Court of Justice ruled on fundamental principles of EC law. For example, in Van Gend v. Nederlandse Tariefcommissie, 1963 C.M.L.R. 105, 132, the Court stated that the provisions of the EEC Treaty gives citizens of member states certain rights which they may seek to enforce in national courts. *Id.* In addition, the Court decided in Costa v. ENEL, 1964 E.C.R. 585, 613-14, 1964 C.M.L.R. 425, 460, that Community law prevails over opposing national legislation.

149. *See* STEWART, *supra* note 146, at 477-78 (discussing convention requirements).

150. *See Berne Convention, supra* note 7, at art. 33(1), *reviewed in* INTERNATIONAL TREATIES, *supra* note 74, at 366. The UCC similarly provides that the International Court of Justice will hear disputes when a state fails to comply with Convention requirements. UC Convention, *supra* note 149, at art. 15, *reviewed in* INTERNATIONAL TREATIES, *supra* at 387. *See also* The International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations at art. 30, *reviewed in* INTERNATIONAL TREATIES, *supra* at 427 [hereinafter Rome Convention] (containing an analogous provision).

II. THE SCOPE OF THE FINAL DIRECTIVE

A. OVERVIEW OF THE PROCEEDINGS

The Final Directive[151] will be critical for the computer industry in post-1992 Europe. The extensive lobbying on certain controversial options in the Software Proposal delayed the adoption of the Final Directive.[152] While it was originally scheduled to be completed in early March 1990, it was not actually adopted until May 1991.[153] This section evaluates the reasons for this delay.

After examining the software protection in the member states, the European Parliament assigned Lord Cockfield the task of developing legislation to harmonize the existing software protection laws in the member states.[154] The provisional text was issued on December 21, 1988.[155] The Commission's Proposal follows the "cooperation" procedure.[156] The cooperation procedure, designed to expedite the implementation of the legislation, provides for cooperation between the Commission, the European Parliament, and the Economic and Social Committee.[157]

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151. *Final Directive, supra* note 2, at 42.

152. *See supra* notes 149-151 and accompanying text (discussing controversies with regard to the Software Proposal).

153. *Controversy Over Software Seen Delaying Final Directive,* The External Impact of European Unification (BNA) (Vol. 1, No. 20) 4 (Jan. 26, 1990). Social parties expressed the opinion that the Directive should be adopted promptly. For example, the Economic and Social Committee of the EC expressed in its opinion that the latest desirable deadline would be January 1993. *Opinion on the Proposal for a Council Directive on the Legal Protection of Computer Programs,* 32 O.J. EUR. COMM. (No. C 329) 8 (1989) [hereinafter ECOSOC Report] (expressing preference for early adoption of the Directive). The committee, however, stated that attempts should be made to put the Directive into effect at an earlier date. *Id.* In addition, the French Presidency urged the prompt adoption of the Directive. *Software Copyright Measure Pushed by French Presidency,* The External Impact of European Unification (BNA) (Vol. 1, No. 14) 7 (Oct. 20, 1989). As controversial issues were resolved by October 1989, industry experts anticipated that the Council would approve the Directive in early 1990. *Id.*

154. Dawkins, *E.C. Plan for Assault on Pirate Recording,* Financial Times, June 2, 1988, at 4.

155. *E.C. Parliament Approves Amended Software Directive,* 7 COMP. LAW. 32 (1990).

156. *Single European Act, supra* note 3, at 5. The Single European Act introduced the cooperation procedure to realize the internal market. *Id.* Article 100 A of the Single European Act provides for a special procedure to expedite the approximation of the laws in the member states. *Id.* at 8. The procedure provides that the Commission shall generate a proposal in cooperation with the European Parliament and the Economic and Social Committee. *Id.* The European Council must adopt the legislation by qualified majority. *Id.*

157. *See id.* at 8 (describing the cooperation procedure).

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The Software Proposal caused concern among software manufacturers. Several associations issued papers elucidating their positions on the suggested provisions. The Union of Industrial and Employers' Confederation of Europe,[158] the European Committee for Interoperable Systems,[159] the European Computing Services Association,[160] and the Software Action Group for Europe[161] all issued statements on the Software Proposal.

On January 5, 1989, the Commission submitted the Software Proposal to the European Council. The Council then consulted the Economic and Social Committee (ECOSOC).[162] Thereafter, the President of the Council referred the text of the Software Proposal to various sub-committees. On November 8, 1989, the Committee on Energy, Research and Technology approved the provisional text.[163] The Committee on Monetary and Economical Affairs issued a positive opinion concerning the Software Proposal on March 21, 1990.[164] Finally, the Committee on Judicial Affairs and Civil Rights approved the proposed provisions on June 28, 1990.[165]

Within the European Parliament, the Legal Affairs Committee examined the Software Proposal before it was considered in the plenary session of the European Parliament. After introducing changes to the Commission's proposal, the European Parliament approved the proposal in plenary session on July 11, 1990.[166]

On October 18-19, 1990, the Commission issued an amended proposal (Revised Proposal) incorporating the changes suggested by the Eu-

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158. *See generally EEC Proposal for a Council Directive on the Legal Protection of Computer Programs, COM (88) 816 Final-Syn 183 Position Paper*, 6 COMPUTER L. & PRAC. 102 (1990) [hereinafter *UNICE Position Paper*](approving some elements of the proposal and recommending changes to other elements).

159. European Committee for Inoperative Systems, *Position Statement on the Proposed EC Directive on the Legal Protection for Computer Programs*, Brussels, Oct. 1989.

160. European Committee for SA, *Position Paper Proposal for a Council Directive on the Legal Protection of Computer Programs*, The Hague, Oct. 1989.

161. Software Action Group for Europe, *Industry Statement on the Proposed Directive on the Legal Protection of Computer Programs*, Brussels, Nov. 1989 [hereinafter *SAGE Statement*].

162. *See* ECOSOC Report, *supra* note 153, at 4-9 (evaluating the Software Proposal). While the Economic and Social Committee generally approved of the proposal, it suggested some changes in the proposal's language. *Id.*

163. Official Document 13/DOC/-NE/AD/77615.

164. Official Document 15/DOC/-NE/RR/91422.

165. Official Document PE 136.025.

166. *Legislative Resolution Embodying the Opinion of the European Parliament on the Proposal for a Directive on the Legal Protection of Computer Programs*, 33 O.J. EUR. COMM. (No. C 231) 83 (1990).

ropean Parliament.[167] The Committee presented the Revised Proposal to the Permanent Representatives of the Council of Ministers (COREPER). The Council of Ministers[168] reached a "common position" and issued the Final Directive on May 14, 1991.[169]

B. THE NEED FOR HARMONIZATION

Presently, the software protection provisions vary extensively among EC member states.[170] These differences can be illustrated through a comparison of the terms of protection in the respective countries.[171] For example, in 1985, France reduced the term of protection from fifty to twenty-five years from the date of creation.[172] The United Kingdom, by contrast, adopted a more extensive protection, which covered the life of the author plus fifty years.[173] The copyright laws of The Netherlands,[174] Italy,[175] Belgium,[176] Denmark,[177] and Ireland[178] provide pro-

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167. *Revised Proposal, supra* note 2, at 22.

168. *See Europe, Our Future: The Institutions of the European Communities,* Eur. File No. 16/89, at 5 (a joint publication of the European Parliament and Commission of the European Communities, January 1990) (explaining the structure of the Council of Ministers). The Council consists of the Ministers of the national governments of the member states. *Id.* at 6. The Council makes policy decisions in the Community. *Id.* Members who participate in the meetings vary depending on the issue under consideration. *Id.* For example, while the Employment and Economy Ministers discuss employment measures in the EEC, they will not necessarily discuss all other issues that arise. *Id.* The most important Council meeting is the European Council, which meets two or three times a year and consists of the heads of states from each member state and the President of the Commission. *Id.* The European Council discusses general Community issues and issues involving political cooperation. *Id.*

169. *Final Directive, supra* note 2, at 43.

170. *See* Deutsche Grammophon, 1971 E.C.R. at 661 (discussing unequal protection of copyright laws in European countries).

171. *See* Cline, *supra* note 117, at 638-39 (discussing varying terms of copyright protection in EC countries).

172. *See* Toubol, *Software Protection in France,* 6 COMPUTER L. & PRAC. 149, 150 (1990) (describing computer software protection in France). Before the revision of the French copyright law, the term was fifty years. *Id.* The French legislature reduced the term to twenty-five years to comply with the minimum term of protection for works of art in the Berne Convention. *Id.*

173. *See* Shipley, *Computer Software Copyright - The Same But Different?,* 7 EUR. INTELL. PROP. REV. 307 (1985) (describing copyright protection in the United Kingdom).

174. Law Concerning the New Regulation of Copyright, art. 37 (1912 and amended up to May 30, 1985), *reprinted in* 2 COPYRIGHT LAWS AND TREATIES OF THE WORLD, at the Netherlands: Item 1, p.10.

175. Law for the Protection of Copyright and Other Fights Connected with the Exercise Thereof, art. 25 (1941 and amended up to July 29, 1981) *reprinted in* 2 COPYRIGHT LAWS AND TREATIES OF THE WORLD, at Italy: Item 1, p.4 [hereinafter Italian Copyright Law].

176. Law on Copyright, art. 2 (1886 and amended up to March 11, 1956), *reprinted in* 1 COPYRIGHT LAWS AND TREATIES OF THE WORLD, at Belgium: Item 1, p.1.

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tection for fifty years after the death of the author[179] while the Law on Intellectual Property in Spain offers sixty years of protection.[180] Under article 64 of the German Copyright Act, data processing programs are legally protected for the life of the author plus seventy-five years.[181] Consequently, the term of protection varies from twenty-five years from the date of creation to seventy-five years after the author's death,[182] while most computer related innovations only retain their commercial vitality for five to ten years.[183]

The courts' various interpretations regarding the originality criterion[184] indicate further differences in regulation of software protection in the member states.[185] Because courts have not had the occasion to adjudicate cases concerning software protection, however, judicial interpretations do not demonstrate as much disparity as the varying terms of software protection afforded in various countries.[186]

The different periods of protection make the manufacturer's decision on where to first market the software critical. These differences in the protection periods are likely to affect the functioning of the internal market. For instance, the differing protection periods will greatly influence the free movement of software within the EC. Although member states could, hypothetically, each pass similar legislation, which would

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177. Law on Copyright in Literary and Artistic Works, art. 43 (1961 and amended up to June 8, 1977), *reprinted in* 1 COPYRIGHT LAWS AND TREATIES OF THE WORLD, at Denmark: Item 1, p.6 [hereinafter Danish Copyright Law].

178. Copyright Statute, § 8(4) (1963), *reprinted in* 2 COPYRIGHT LAWS AND TREATIES OF THE WORLD, at Ireland: Item 1, p.6.

179. *See supra* notes 176-180 and accompanying text (enumerating articles of these laws that provide the term of protection).

180. Law on Intellectual Property, art. 2 (1987), *reprinted in* 3 COPYRIGHT LAWS AND TREATIES OF THE WORLD, at Spain: Item 1, p.7 [hereinafter Spanish Copyright Act].

181. Act Dealing with Copyright and Related Rights, art. 64 (1965 and amended up to June 24, 1985), *reprinted in* 2 COPYRIGHT LAWS AND TREATIES OF THE WORLD, at Germany (Federal Republic of): Item 1, p.13 [hereinafter German Copyright Act]. On June 24, 1985, Article 2 of the German Copyright Act, dated September 9, 1965, was amended to include the protection of data processing programs. *Id.* at 1.

182. *Software Proposal, supra* note 2, at 6 (describing the range of terms of protection).

183. *Software Proposal, supra* note 2, at 5.

184. *Software Proposal, supra* note 2, at 5. The Proposal for a Council Directive on the legal protection of computer programs describes three factors that the European Commission recognized in addressing the need to harmonize computer program protection: the nature of the intellectual property; the existing protection given by member states; and, the need to harmonize the protection measures. *Id.* The originality criterion, which comes within the "nature of the intellectual property," reflects the view that elements of creativity, skill, and inventiveness are elements of a computer program. *Id.*

185. *Id.* at 6.

186. *Id.*

solve the problem of differing protection periods, the only viable legisla-
tive solution is a single European-wide protection period. Consequently,
the member states agreed to consolidate their efforts and to organize
computer copyright protection throughout the EC. While a comprehen-
sive European copyright law has thus far been unattainable,[187] the Fi-
nal Directive represents a step in the right direction.[188] Europeans have
welcomed it as a useful tool and an important step towards copyright
harmonization.[189]

C. The Primary Provisions of the Final Directive

1. Copyright Protection

a. Protection as a "Literary Work"

The Software Proposal would have required the member states to
modify their laws to protect computer programs as literary works.[190] In
essence, the Software Proposal forced member states to give computer
programs the same scope of protection as copyright laws grant to other
forms of literary work, such as a book. The Commission set out its
reasons for introducing article 1.2 and noted that:

> A program has all the characteristics of a literary work, namely that it is the
> expression in language and in a perceivable form from which it can be repro-
> duced of an idea or series of ideas, created by the expenditure of human skill and
> labor. The fact that the language may be only comprehensible to those skilled in
> the art, and that some manifestations of the program may take forms which are
> not at all times comprehensible to the human senses does not preclude protection
> as a literary work. . . .[191]

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187. *See* Dietz, *A Common European Copyright - Is it an Illusion?* 7 EUR. IN-
TELL. PROP. REV. 215, 215 (1985) (noting that differences in theoretical concepts and
approaches to copyright law, especially between the British and Continental law sys-
tems, appear insurmountable).

188. DIETZ, COPYRIGHT LAW IN THE EUROPEAN COMMUNITY 244 (1978).

189. *See* Cline, *supra* note 117, at 672-73 (discussing the difficulty EC member
states have faced in the global high technology markets and the need for harmonization
of copyright law). The European Strategic Program on Research in Information Tech-
nology (ESPRIT), an organization under the auspices of the EC, concluded that the
Directive is a major step towards strengthening Europe's position in the global com-
puter market. *Id.* The Union des Confederations de l'Industrie et des Employeurs
d'Europe (Union of Industrial and Employers' Confederations of Europe) (UNICE)
also welcomed the Commission's proposal. *UNICE Position Paper, supra* note 160, at
102. The European Committee for Interoperative Systems (ECIS) similarly gave its
full support to the proposed Directive. *The Proposed EC Directive on the Legal Protec-
tion for Computer Programs*, 6 COMPUTER L. & PRAC. 97, 97-98 (1990).

190. *Software Proposal, supra* note 2, art. 1.2 at 13. Article 1.2 reads as follows:
"Exclusive rights shall be conferred by the provisions of copyright laws. Protection
shall be accorded to computer programs as literary works." *Id.*

191. *Id.* at 9.

Most parties welcomed the Commission's decision to protect computer programs as literary works.[192] The EC legislature explicitly established that computer programs should be protected "as" and not "as if" they were literary works.[193]

As the above discussion demonstrates, industrialized countries and experts agree that computer programs are a form of literary work.[194] The United States has expressed the view that computer programs should be protected under copyright law in a manner consistent with the obligations of the Berne Convention.[195] This statement implies that all computer programs, regardless of their complexity, deserve protection as long as they are not copies of existing programs.

In response to these concerns, the European Parliament amended article 1.2 of the Final Directive according to the view expressed by the Executive Office of the President, "Member States shall protect com-

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192. Computers and Business Mfrs. Ass'n, Comments to the US Trade Representative Concerning a Proposal for a Directive on the Legal Protection of Computer Programs, at 2 (Jan. 22, 1990) [hereinafter CBEMA Comments](on file at the *Am. U. J. Int'l L. & Policy*)(stating that the CBEMA "particularly supported the Commission's proposal to provide uniform protection within the EC for computer programs as literary works under copyright law"). The Computer and Business Equipment Manufacturers Association (CBEMA), a trade association representing twenty-eight of the leading computer and high technology industries, adopted the view that copyright protection of software should not differ from copyright protection of literary works. *Id.* The Software Action Group for Europe (SAGE) supports protecting software as literary works although SAGE would not increase the scope of protection. *See* The Effects of Greater Economic Integration within the European Community on the United States, USITC Inv. No 332-267, at 12-6 (March 1990). *But see*, Phillips, *Looking Toward 1992: European Copyright Harmonization and Software Development*, 5 COMPUTER L. & PRAC. 53, 54 (1988). Phillips states that:

> treating computer software differently from other literary works threatens inconsistent and reduced protection. Reduced protection for software would arbitrarily deny treatment afforded works in more conventional media and deprive software authors and publishers of the awards that have been central incentives for software development.

Id.

ECOSOC stressed that authors can rely on "ready-made" legislation such as the Berne Convention and that reference to the Berne Convention should be included in this provision by concluding the provision with the phrase ". . . in the context of the Berne Convention." ECOSOC Report, *supra* note 153, at 5. *But see* Lloyd, *Copyright in Computer Software*, 20 SCOTS LEGAL TIMES 232, 233 (1991).

193. Staines, *The European Commission's Proposal for a Council Directive on the Legal Protection of Computer Programs*, 11 EUR. INTELL. PROP. REV. 183 (1989).

194. Keplinger, *International Protection for Computer Programs, reprinted in*, 3 WORLD INTELL. PROP. REPORT 38 (1989); Ulmer & Kolle, *Copyright Protection of Computer Programs*, 14 INT'L REV. INDUS. PROP. & COPYRIGHT L. 159, 178-80 (1983).

195. *See* Letter from Carla A. Hills, United States Trade Representative, to Martin Bangemann, Vice President, Commission of the European Community (February 28, 1990)(on file at the *Am. U. J. Int'l L. & Policy*)(stating that all types of computer progress, regardless of the level of complexity, should be protected).

puter programs, including their preparatory design material, as literary works within the meaning of the Berne Convention for the Protection of Literary and Artistic Works."[196] This amended proposal contains an express reference to the principles of the Berne Convention as advocated by the EC legislature. In addition, the Parliament clarified and elaborated the concept of "computer program" for purposes of the Final Directive. The Parliament stressed the importance of preparatory design works and recognized that these can lead to the development of a new program.[197]

Protecting software as literary works seems to be of great importance to the Commission. Nevertheless, the Commission fails to recognize that effective protection of software is more important than classifying computer programs into specified categories of protected work.[198] The degree of effective protection should be the guideline, whether this result is achieved through classifying software as literary works or works of applied art.

Computer law is better suited to protect computer programs than any statutory scheme of neighboring rights.[199] The Commission examined the prospect of developing a neighboring rights statute to protect computer programs and reached a twofold conclusion. First, the Commission decided that the nature of computer programs is more closely related to the "traditional" works protected under copyright statutes, rather than works subject to neighboring rights conventions such as sound recordings, broadcasts, and performances.[200] Second, the Commission determined that the necessary scope of protection for computer programs is no different from the scope of protection granted to other products which traditionally fall within the domain of copyrighted works.[201]

Creating a newly designed neighboring rights convention is unnecessary as a legal matter and an undesirable, indeed dangerous, policy. A new neighboring rights convention would also present a risk of significant harm to the European computer program authors and owners.[202]

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196. *Software Proposal, supra* note 2, at 78.
197. *Id.* at 78.
198. Vandenberghe, *Copyright Protection of Computer Programs: An Unsatisfactory Proposal for a Directive*, 11 EUR. INTELL. PROP. REV. 409, 409 (1989)(stating that the proposal overemphasizes the interest of the maker/owner to the disadvantage of the competitor and the user).
199. STEWART, *supra* note 148, at para. 7.01-7.04.
200. *See* Green Paper, *supra* note 4, at para. 5.5.13.
201. *Id.*
202. Computer and Business Mfrs. Ass'n, Comments on Chapter V "computer programs" of the Commission's "Green Paper," at 3 (Sept. 23, 1988)(on file with the *Am.*

There is no justification for treating computer programs differently.
The two main copyright conventions, the Berne Convention and the
Uniform Copyright Convention (UC Convention) support this view.
The Berne Convention categorizes computer software as "literary and
artistic works,"[203] while the UC Convention categorizes computer
software as "literary, scientific and artistic works."[204] These expressions
seem to encompass *any expression of the human intellect which has
received linguistic expression in readable signs.*[205] The conventions do
not require members to protect software, but if a country chooses to
protect software, the conventions mandate certain applicable provisions
to protect computer programs.[206]

Some critics suggest that the classification of software as "literary
works" provides unsatisfactory protection.[207] These critics argue that
copyright only protects expression and not the actual idea.[208] Conse-
quently, the most valuable assets of the computer industry remain
unprotected.

b. The Concept of Originality

The Green Paper requires originality before a work qualifies for
copyright protection.[209] The originality requirement mandates that the
work results from the creator's own intellectual effort[210] and is essential
to achieve a satisfactory level of copyright protection. As the Green
Paper states, originality is *ipso facto* the criterion used to select com-
puter programs eligible for copyright protection.[211] The Commission
failed to insert any originality requirement in the Final Directive.[212]

The omission of an originality criterion results from the different ap-
proaches to copyright law in the member states, namely between the
English common law approach and the French continental approach.

U. J. Int'l L. & Policy) (stating that protection of computer programs under "neigh-
boring rights" analyses would be undesirable and "indeed dangerous").

203. Berne Convention, *supra* note 7, at art. 2.
204. UC Convention, *supra* note 149, art. 1.
205. *See* Karnell, *Copyright in Computer Programs - An International Survey,* 7
EUR. INTELL. PROP. REV. 126, 128 (1985)(discussing different definitional construc-
tions between the Berne Convention and the UC Convention).
206. UC Convention, *supra* note 147, at art. 3; Berne Convention, *supra* note 203,
at art. 5.
207. Staines, *supra* note 193, at 183.
208. *See id.* at 183 (stating that for computer software, usually the idea, not the
expression is valuable, even though copyright law only protects the expression).
209. Green Paper, *supra* note 4, at 187.
210. *Id.*
211. *Id.*
212. Vandenberghe, *supra* note 200, at 410.

Under common law, a program is eligible for protection when the creator displays a sufficient amount of intellectual effort.[213] Under the continental approach, the degree of originality determines when the work will be protected.[214]

Most countries apply some standard of originality for the protection of software. Nevertheless, the definition differs from country to country.[215] Consequently, programs that qualify for protection in one country may fail to receive protection in another country.[216] This situation disrupts the economic balance within the EC and could result in a distortion of trade relations between EC members and the United States. In addition, ECOSOC claims that these differences limit the free flow of software within the Community.[217]

This problem has substantial commercial implications for Germany. The courts in Germany have developed a high standard of originality.[218] Before a company receives copyright protection, the applicant must prove that the program has "creative value" and the program is the product resulting from skills exceeding the average skill of a computer programmer.[219] This process generally takes more than a year, and during this period Germany refuses to protect programs.[220] In contrast, French law uses a subjective, aesthetic criterion. French courts test the originality by examining whether the program reflects the personality of the author.[221] The French Supreme Court overturned a lower court decision because the creator did not show the originality necessary to gain protection of the Copyright Law.[222] Dutch court interpretations of the Copyright Act protect computer programs as "writ-

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213. *Id.*

214. *Id.*

215. ECOSOC Report, *supra* note 153, §3.3.3.1 at 5.

216. Letter from Orrin Hatch and Dennis DeConcini, Chairman and Ranking Member of the Subcommittee on Patents, Copyrights and Trade Marks of the Senate Judiciary Committee, to Carla Hills, United States Trade Representative, (February 27, 1990) (discussing concerns about the Software Proposal).

217. ECOSOC Report, *supra* note 153, at 5-6. ECOSOC stated that the maintenance of different levels of originality among the member states could hinder trade in computer programs between member states. *Id.* at 5.

218. Hoeren, *Republic of Germany - Recent Developments*, 6 COMPUTER L. & PRAC. 134, 134 (1990); Dreier, *Program Protection in the Republic of Germany - A New Decision Leaves Inkasso-Program Intact*, 7 COMPUTER L. & PRAC. 178, 178 (1991).

219. Wurtenburger, *The Protection of Computer Software in the Federal Republic of Germany*, 2 COMPUTER L. & PRAC. 166, 166 (1986).

220. Rappaport, *EC Could Dismantle Good Law*, The Recorder, Feb. 26, 1990, at 9.

221. Toubol, *supra* note 87, at 16.

222. Atari Inc. v. Valadon, Cour de Cassation, 18 INT'L REV. OF INDUS. PROP. & COPYRIGHT L. 550 (1980).

ings" even where no degree of originality exists.[223] These differing levels of protection prompted the European business community to express concern over the lack of a harmonized system of copyright protection.[224]

The objective of harmonizing computer copyright law will fail under the current provisions of the Final Directive because it allows some countries to keep their demanding condition of originality, while allowing others to have no originality requirement. As a solution to this problem the EC should abolish the originality requirement and incorporate a low but basic standard. The lowest possible standard would protect any program that is not a copy. This low standard would prevent the rampant piracy in Germany, which remains unregulated because of Germany's originality requirements and its time-consuming examination process. If the EC decides not to abolish the originality requirement it should, at the very least, make it uniform.[225] Harmonizing the originality requirement is a complicated task for a legislator, however, because the concept is usually given substance through judicial interpretation.[226]

2. *Authorship of a Computer Program*

In a business such as the computer industry, the determination of the identity of a work's author can be particularly difficult. Unlike literary works, employees or persons working on a commission basis frequently produce software, yet no uniform system for assigning rights to works produced in the context of employment or commission exists. In attempting to resolve the question of authorship, the Commission first turned to the Council Directive on the Legal Protection of Topographies of Semiconductor Products.[227] This provision called for giving the rights of a program to the employer, or the party who commissioned the work, unless the parties contracted otherwise.[228] The Commission

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223. Kinma, *Copyright Protection of Computer Software in the Netherlands*, 2 COMPUTER L. & PRAC. 97, 97 (1986).

224. UNICE Position Paper, *supra* note 158, at 102 (commenting on the text of the proposal and noting the desirability of harmonization and proposing a more positive formula for copyright protection).

225. The Commission attempted to address these concerns by defining the originality requirement as the author's own intellectual creation. *Revised Proposal, supra* note 2, at 25. This provision specifies that "no other criteria shall be applied to determine its eligibility for protection." *Id.*

226. Dreier, *supra* note 218, at 180.

227. *Council Directive on the Legal Protection of Topographies of Semiconductor Products*, 30 O.J. EUR. COMM. (No. L 24) 36, 38 (1987) [hereinafter Topographies Directive].

228. *Id.*

opted to propose a minimum standard for authorship and to allow the legislatures of the member states to enact more detailed criteria for determining authorship.[229] The Commission recognized that harmonization of authorship standards would be ideal, but that an absence of harmonization would not affect the completion of the internal market.[230]

The Software Proposal adopted most of the principles set out in the Green Paper. The Commission confers authorship to the natural person or group of persons who created the program.[231] The Software Proposal provided that these rights could be transferred, except for the right of paternity, which remained unalienable.[232] In case a work is created by a group of persons, the group must commonly exercise copyright rights, unless the parties adopt a different contractual regime.[233] In the software industry, many experts work free-lance and create programs on a commission basis. The Commission decided to give the company that commissioned the work control over the final result.[234] The same regime was also established for a program developed by an employee.[235]

The last aspect of authorship in the Software Proposal concerns computer programs developed through a computer process.[236] The Software Proposal gives all legal rights of a program to the person who causes the program's generation.[237] This represents the best solution because the program creating the new software is not really different from the programmer developing a new program. The program is just an intermediate step in the process and, therefore, the author of the first program should be entitled to all the rights in the second program. In practice, the company that retains the rights to the first program will receive the rights to subsequent programs. This provisions shows that the Commission recognized the common practice of computer generated programs and applies copyright principles to the evolutions in this

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229. *Revised Proposal, supra* note 2; art. 2.1 at 25; *Final Directive, supra* note 2, art. 2.1 at 44.

230. *Green Paper, supra* note 4, at 196.

231. *Software Proposal, supra* note 2, art. 2.1, at 14.

232. *Id.*

233. *Id.*, art. 2.2, at 14.

234. *Id.*, art 2.5, at 14. A European scholar described this provision as the "the only provision which protects the software user effectively." Vandenberghe, *supra* note 200, at 411.

235. *Software Proposal, supra* note 2, art. 2.4 at 14.

236. *Id.* at art. 2.5.

237. *Id.*

field. The Council refused to regulate the domain of computer gener-
ated programs by deleting this provision in the Final Directive.[238]

Article 2.1 of the Software Proposal stated that the employer of the
individual commissioned to create the software shall exercise all
rights.[239] This provision may not have complied with the fundamental
moral right principles of the Berne Convention.[240] The comments to the
Software Proposal explicitly stated that these rights did not include the
right to claim the paternity of the creation.[241] The text of the Software
Proposal did not mention a single word about moral rights.[242]

The European Parliament was aware of this discrepancy and
amended the language of article 2.4.[243] The new provision entitles the
employer to all *economic* rights.[244] Therefore, this amendment is an
implicit recognition of the moral rights of the author. Initially, the
Commission did not intend to harmonize laws relating to authorship by
legal entities and collective works.[245] In an attempt to address concerns
of the European Parliament, the Council inserted into the Final Direc-
tive a reference to collective works.[246]

3. Reverse Engineering

One of the most controversial issues in the Software Proposal con-
cerned an article 5 provision permitting the decompilation of computer
programs.[247] Legalizing decompilation enables pirates to do indirectly
what they now do directly, but illegally. Before substantively delving

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238. COM(88) 816 final - syn 183 at 44.
239. *Software Proposal, supra* note 2, at art. 2.5. *See also* Jaszi, *Garland of Re-*
flections on Three International Copyright Topics, 8 CARDOZO ARTS & ENT. L.J. 47,
62 (1989) (noting that a fundamental tenet of French copyright law is moral right,
which has limited application to computer software).
240. Article 6 of the Berne Convention grants the author the right to object to any
alteration of the work that would damage his honor or reputation, even after the trans-
fer of the author's economic rights. Berne Convention, *supra* note 7.
241. *Software Proposal, supra* note 2, art. 2.1 at 9.
242. ECOSOC expresses doubt about compliance with the moral rights provisions
of the Berne Convention. However, this Committee claims that moral rights only apply
to traditional literary works, and not to computer programs. *ECOSOC Report, supra*
note 155, at 6.
243. *Revised Proposal, supra* note 2, art. 2.4 at 26; *Final Directive, supra* note 2,
art. 2.3 at 44.
244. *Id.*
245. *Revised Proposal, supra* note 2, art. 2.1 at 25. Where member states recog-
nize collective works, those member states' legislation considers the author as the crea-
tor of the work. *Id.*
246. *Final Directive, supra* note 2, art. 2.1 at 44.
247. *Software Proposal, supra* note 2, art. 5 at 14.

into the subject of decompilation, a definition of the concept and an overview of the laws of the EC member states is necessary.

a. Definition

The concept of reverse engineering, or decompilation, originated in the sphere of mechanical and chemical product analysis where it refers to the process of examining the components and characteristics of the products.[248] Although authors have suggested various definitions of reverse engineering,[249] these definitions fail to focus on the practical consequences of the concept. In substance, reverse engineering occurs when a computer program is disassembled into its component parts, and the decompiler uses pieces to write a second program.[250] The decompiler then makes adjustments in the second program to disguise its origin.[251]

For intellectual property lawyers, reverse engineering takes on two distinct forms. The first type entails the testing of the black-box through an examination of the operations of the copyrighted software.[252] The second kind of reverse engineering involves entering the black-box to analyze the code.[253] The second interpretation of reverse engineering is the most controversial of the two.[254]

The reverse engineering of software can be accomplished through several different methods. A programmer may copy the object code of

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248. Lake, *supra* note 28, at 3-4. The United States Supreme Court defined reverse engineering in a case concerning methods for growing crystals as "starting with the known product and working backward to divine the process which aided in its development or manufacture." Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 476 (1974).

249. Rappaport defines reverse engineering as "the process of copying machine language, converting it into a high-assembly language, and finally into a higher-level language." Rappaport, *supra* note 220, at 6.

250. Memorandum from Cleary, Gottlieb, Stein & Hamilton, Reverse Engineering and the Draft Directive on the Legal Protection of Computer Programs 5 (Nov. 20, 1989) (on file with author) [hereinafter Memorandum].

251. Lake, *supra* note 28, at 4. The controversy concerning reverse engineering sometimes extends to the so-called "clean room" techniques. *Id.* This procedure alludes to the distinction between taking the first program apart and composing a second derivative program. In the first room, the "dirty room," programmers decompile the original program and prepare detailed lists based on their findings without revealing the structure of the program. *Id.* They transfer the information to the programmers in the second room, the "clean room," who construct a new program without access to the expressions of the first program. Because the programmers in the second room do not copy per se the first program, it is said that they work in a clean room. *Id.*

252. Samuelson, *Reverse-Engineering Someone Else's Software : Is it Legal?*, IEEE SOFTWARE 90, 91 (1990).

253. *Id.*

254. *Id.* An example of going into the black box would be copying the program code so that the copier could reproduce the original code. *Id.*

the program, reproduce the object code in another language, convert the object code into source code enabling the programmer to discern the logic and the structure, reconstruct the object code through an analysis of the disassembled object code, or use the idea to create his own program based on the findings derived from the other methods.[255]

This description of the concept clarifies the point that reverse engineering can be used for several purposes. These purposes include scientific research and analysis, research of the specification of interfaces, and development of a new program based on the "reversed" program.[256] The distinction between these categories remains unclear. Indeed, the computer industry invests money in scientific research in order to create innovative programs. In many cases, therefore, it is uncertain whether a decompilation takes place for scientific reasons or to originate a compatible program.

b. Overview of the Laws of the Member States

The main argument for prohibiting the decompilation of software is found by examining the different laws of the member states. While no member state provides an exemption for reverse engineering, some expressly prohibit it.

1. Countries with Reverse Engineering Statutes

Danish law prohibits the reproduction, adaption, or translation of computer software under article 2 of the Copyright Law.[257] Consequently, under Danish law, all forms of reverse engineering are illegal. In France, the law of 1985 only allows reproductions authorized by the copyright owner or for the purpose of maintaining a back-up copy.[258] French authors' rights law, therefore, allows decompilation only within the limits fixed by the owner in the contract. The concept of reverse engineering does not extend to any modification of the expression or structure of the program made necessary for updating purposes or to adapt the program to the needs of the client.

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255. Memorandum, *supra* note 250, at Annex B.
256. Dommering, *Reverse Engineering: een Softwarepuzzel*, 3 COMPUTERRECHT 105, 105 (1990).
257. Danish Copyright Law, *supra* note 177, Item 1, at 1.
258. Law on Authors' Rights and on the Rights of Performers, Producers of Phonograms and Videograms and Audiovisual Communication Enterprises, Title V, art. 47, *reprinted in* 1 [Supp. 1984-1986] COPYRIGHT LAWS AND TREATIES OF THE WORLD, at France, Item 1A at 7 (1985); *see* Toubol, *supra* note 87, at 16 (explaining that the scope of the monopoly afforded to the copyright owner extends to use of the program with an exception for making a copy for record keeping purposes).

As discussed previously, German copyright law protects computer programs only if they meet severe requirements of originality.[259] The German Copyright Act permits reproduction of a computer program only when the copyright holder agrees.[260] The making of back-up copies, however, is regarded as permissible on the basis of a restrictive interpretation of article 53(4)(ii). The process of transforming object code into source code usually encompasses several forms of reproduction. Therefore, reverse engineering is absolutely prohibited under German law.[261]

The Spanish Copyright Act of 1987 distinguishes between the user of a program and the licensee.[262] The user can only copy the program into the memory of the computer, while the licensee may exploit the software by adapting the program.[263] This distinction should not be seen as a legal authorization of reverse engineering because the statute merely reserves the right of reproduction to the author.

According to the Copyright Design and Patents Act of the United Kingdom, copyright infringement occurs by making an adaptation of the program,[264] which includes translation.[265] The statutory definition of translation seems to cover the conversion of object code into source code as long this action is performed "incidentally in the course of the running of the program."[266] The Act does, however, provide an exception referred to as the "Fair Dealing" exception, which allows reverse engineering for research or private study.[267]

2. Countries Without Reverse Engineering Statutes

The remaining EC member states' legislation does not deal with decompilation, although courts in these countries have addressed the issue. In general, the policies applied in these countries follow the statutory rules in the other member states where explicit legislation concerning reverse engineering exists.

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259. *See supra* notes 218 - 220 and accompanying text (discussing the German standard of originality).

260. German Copyright Act, *supra* note 181, art. 53(4), at Federal Republic Of, Item 1 at 10a.

261. Memorandum, *supra* note 250, Annex A, at 4.

262. Spanish Copyright Act, *supra* note 180, art. 17, at Spain, Item 1 at 17.

263. *Id.*

264. Copyright, Designs and Patents Act 1988, § 16(1)(e), *reprinted in* 3 COPYRIGHT LAWS AND TREATIES OF THE WORLD, at United Kingdom, Item 1 at 5.

265. *Id.* at § 21(3)(a)(i). Section 21(4) defines translation as "the conversion of a program into or out of a computer language or code . . . otherwise than incidentally in the course of the running of a program". *Id.* at § 21(4).

266. *Id.* at § 21(4).

267. *Id.* at § 29(1).

In Belgium, courts consider the issue of reverse engineering in cases dealing with requests for permission to seize illegally copied software. Ultimately, these courts protected object code against decompilation because it is a form of expression which can be translated in a human readable form.[268] Although Italian courts have not addressed the question of reverse engineering, article 18 of the Italian Copyright Act indicates that translations and modifications of programs constitute an infringement.[269] Neither Luxembourg nor Portugal have addressed protection of computer programs in either the courts or by statute.[270]

c. Decompilation and the Final Directive

The Software Proposal contained the following provision concerning reverse engineering:

> Where a computer has been sold or made available to the public other than by a written license agreement signed by both parties, the acts enumerated in Article 4 (a) and (b) shall not require the authorization of the right holder, insofar as they are necessary for the use of the program. Reproduction and adaptation of the program other than for the purposes of its use shall require the authorization of the right holder.[271]

Under the heading "Exceptions to Restricted Acts," the Commission distinguishes two article 5 categories: (1) where the user obtained the program with a written license agreement; and (2) where the author obtained the program without a written license agreement.[272] An ambi-

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268. Atari v. DC, Beslagrechter Gent, September 8, 1982; Atari v. G.A.A., Beslagrechter Brussels, September 6, 1982.

269. Italian Copyright Law, *supra* note 175, art. 18, at Italy, Item 1 at 11.

270. *See* Copyright Law of March 29, 1972, art. 1, *reprinted in* 2 COPYRIGHT LAWS AND TREATIES OF THE WORLD, at Luxembourg, Item 1 at 1 (defining copyrightable works as any artistic, literary, or scientific production); Code of Copyright and Related Rights, art. 2(1), *reprinted in* 2 COPYRIGHT LAWS AND TREATIES OF THE WORLD, at Portugal, Item 1 at 11 (including any intellectual works in the artistic, literary, and scientific areas as protected by copyright).

271. *Software Proposal, supra* note 2, art. 5(1) at 14. Article 4 enumerates restricted acts:
> (a) the reproduction of a computer program by any means and in any form, in part or in whole. Insofar as they necessitate a reproduction of the program in part or in whole, loading, viewing, running, transmission or storage of the computer program shall be considered restricted acts; (b) the adaptation of the program.

Id. at 12.

272. ECOSOC Report, *supra* note 153, at 7. ECOSOC agreed with the main idea in this provision but suggested that the drafting be more precise. *Id.* According to the Committee, Article 5(1) should read as follows:
> Where a computer has been sold or made available to the public other than by *any valid license agreement, reproduction by loading, displaying, transmission or storage* shall not require the authorization of the rightholder, insofar as they

guity exists over whether the provision applies in the case of a lease, sale, or rental agreement. The Commission grants a broad-use right in the Software Proposal, which reaches far beyond traditional rights by authorizing reproduction, rental, adaption, and translation. CBEMA claims that no need exists to extend protection beyond the traditional rights of retrieval and use of interface specification.[273]

As a result of the member states' failure to implement laws allowing reverse engineering, the EC finds itself in a position of technological disadvantage compared to the United States. To enable Europe to catch up with technology, the EC implemented the software provision allowing reverse engineering because it considered free access to ideas and principles embodied in software necessary to the economic development of the EC.[274] The Commission decided that the only way to narrow the gap was through tolerating copying of computer programs. This promotes the interoperability between hardware and programs developed by different entities. As a consequence, competition would increase and the European consumer would benefit from the availability of a wider range of programs.

The Commission's belief that reverse engineering will benefit the European computer industry is based on a misleading and unsound foundation. The Commission seems to forget that European software companies will also suffer from the free copying possibilities. Free decompilation could result in an increase of cheap imitations and an expansion of market clones.[275] The European Parliament recognized this potential danger and prohibited any modification of a program in

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are necessary for the use of the program *on one processor by one user at one time*. Reproduction and adaptation of the program other than for the purposes of its use shall require the authorization of the rightholder.
Id. ECOSOC claims that the reference to a written license agreement should be omitted and replaced by any valid license agreement because technological development will increase the use of non-written license agreements. *Id*. The last change proposed by ECOSOC concerned the issue of parallel processing. ECOSOC concluded that this provision should expressly prohibit parallel processing. *Id*.

273. CBEMA Comments, *supra* note 192, at 8. The CBEMA believes that this provision does not reflect the interests of either the user or the right holder and should, therefore, be deleted. *Id*. at 2. The rights granted under article 4 are, under any circumstances, subject to the authorization of the author whether or not a license agreement exists. *Final Directive, supra* note 2, art. 4 at 44.

274. *See* Green Paper, *supra* note 4, at 175 (emphasizing that the concern in producing an atmosphere conducive to the development of the European software industry was one of the basic underlying ideas for the legislative initiative).

275. Letter from Carla A. Hills, the United States Trade Representative to Frans Andriessen, Vice President of The Commission of the European Communities (March 28, 1990) (recommending against permitting decompilation).

its proposed version.[276] Although Japan is one of largest hardware manufacturers, they retain a relatively small share of the software market[277] and, consequently, apply a great deal of pressure to adopt the reverse engineering provision.

Surprisingly, the EC adopted a contrary approach in its negotiating proposal for the GATT negotiations on Intellectual Property Rights at the Uruguay Round. During the negotiations, the EC sought to protect trade-related aspects of copyright.[278] In an effort to repair the technological imbalance, the EC stated that strong and efficient protection for intellectual property is essential for growth and development.[279] Allowing reverse engineering reduces the possibility that companies investing in research and development will receive a fair return.

Opponents of the EC's position contend that the Final Directive will adversely affect the European industry.[280] Opponents further assert that the Final Directive will undermine the EC's bargaining position in GATT negotiations because it fails to protect intellectual property rights.[281] Also, withdrawing its recommendation for strong intellectual property rights protection would seriously undermine the EC's position as a world market leader in the chemical and pharmaceutical industries.

The European software industry mainly consists of small and medium-sized software companies which rely on innovation to market new products.[282] A relaxation of intellectual property laws will cause the

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276. *Proposal for a Council Decision Concerning the Modules for Various Phases of the Conformity Assessment Procedures Which Are Intended to be Used in the Technical Harmonized Directives*, 33 O.J. EUR. COMM. (No. C 231) 80 (1990).

277. *See* Green Paper, *supra* note 4, at 171-72 (discussing the market shares of the United States, the European countries, and Japan in the world software industry).

278. General Agreement on Tariffs and Trade, *Guidelines and Objectives Proposed by the European Community for the Negotiations on Trade Related Aspects of Substantive Standards of Intellectual Property Rights reprinted in* INSIDE U.S. TRADE, Special Report 1, 5 (July 22, 1988) (stating that command programs should be protected against reproduction, adaption and translation).

279. *Id.*

280. *See* BUSINESS SOFTWARE ASS'N, WHITE PAPER: COPYING THROUGH REVERSE ENGINEERING, SHOULD EUROPE CREATE A NEW RIGHT TO COPY COMPUTER PROGRAMS THROUGH REVERSE ENGINEERING? A SUMMARY OF THE ISSUE 1, 14 (Nov. 10, 1989) (concluding that reverse engineering will harm European industry, which traditionally relies upon software innovations for technological advances)[hereinafter BSA WHITE PAPER].

281. *See id.* (proposing that a reduction in intellectual property rights would detract from the abilities of European companies to create and market new software packages). As a result, former world industry leaders would lose some of their international bargaining power. *Id.*

282. *Id.; see also* ECIS, *Proposed EC Directive on the Legal Protection for Computer Programs: Position Statement*, 6 COMPUTER L. & PRAC. 97, 98 (1990) [herein-

greatest harm to these types of companies.[283] Therefore, these small companies strongly support the Final Directive as a means of securing their rights and investments.[284] Virtually all producers recognize that their rights could only be protected if the Final Directive prevents reproduction and adaptation of programs except as necessary for authorized use. Furthermore, companies relying on software to create technological innovations would suffer to the same extent.

When deliberating the legalization of decompilation, the EC looked to United States legislation as authority opposed to reverse engineering.[285] The United States Copyright Act affords authors of computer programs the same rights as authors of literary works.[286] The limited exceptions created by Congress to this exclusive right do not include reverse assembling of software for commercial purposes.[287] Congress expressly provided that reverse engineering does not qualify under the essential step exception.[288] In addition, Congress stated that only the copyright owner qualifies for these two limited exceptions and not the authorized user after licensing.[289] Authors, therefore, may license their software instead of selling it and still retain the right to prevent others from making adaptations.

Other authors suggest that permitting reverse engineering constitutes an incentive for competition.[290] Decompiling the programs of the major software companies not only makes it easier for the secondary providers

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after ECIS] (stating that small and medium-sized firms will be most affected by the Directive).

283. *Id.*

284. *See id.* (asserting that European businesses supported an EC directive which would prohibit most reproduction and adaption of computer programs). Reverse engineering, by its very nature, harms any industry relying on innovative software. *Id.*

285. 17 U.S.C. §§ 101-19 (1988).

286. *See* Letter from Thomas Niles, United States Ambassador, United States Mission to the European Communities, to Riccardo Perrish, Deputy Director General, EC Commission, (Jan. 24, 1990) [hereinafter Niles Letter] (discussing the treatment of computer software under United States law and noting that the United States Copyright Act does not have a specific provision regarding reverse engineering or decompilation).

287. *See* 17 U.S.C. § 117 (1988) (delineating copies created as an essential step in the utilization of the computer program and copies made for archival purposes as the only two exceptions to the general copyright provisions).

288. National Commission on New Technological Uses of Copyrighted Works, *Final Report* 1, 13 (1979).

289. *See* 17 U.S.C. § 117 (1988) (stating that any material in accordance with this section may be transferred only with the copyright owner's authorization).

290. Brown, *The Current Status of Copyright Protection for Computer Software and Some Patent Protection Parallels*, 6 COMPUTER L. & PRAC. 170, 172 (1990).

to produce compatible programs, but it also allows the public to benefit from a new market with less expensive clones of existing programs.[291]

As discussed earlier, the Commission's main goal in implementing the Final Directive was to produce a legal instrument adjusted to the requirements of the Berne Convention.[292] The reverse engineering provision, however, may not conform with the Berne Convention obligations.[293] In this respect, article 9(1) of the Berne Convention provides authors of literary and artistic works with the exclusive right of reproduction.[294] The Berne Convention delegates authority to the individual member states to legislate exceptions to the exclusive right of reproduction.[295] The reproductions permitted by the exceptions cannot conflict with a normal exploitation of the work.[296] The Final Directive's reverse engineering provision, however, goes beyond the normal exploitation because the author does not have exclusive control over publication and distribution decisions.[297] The EC must resolve this conflict because the Final Directive explicitly states that its provisions may not be interpreted in a manner contrary to the copyright provisions of the Berne Convention.[298] To reconcile the conflict, the present provision should be amended to limit the use of reverse engineering to fair use. This concept would allow decompilation for private study and research. As the provision now stands, it severely prejudices the legitimate interests of program authors under the Berne Convention.

The Revised Proposal incorporates, in revised article 5, decompilation issues concerning interoperability.[299] The Software Proposal did not raise the issue of interoperability. The Final Directive allows the originator of a program to deduce this information through observation, testing, or study of the program.[300] This provision is invoked only, however, when the publicly available material is insufficient to create an interoperable program. Only then can a programmer reproduce the machine-readable form of the code without authorization of the owner.[301] The Council enforced the protection against infringement through the

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291. *Id.*

292. *Revised Proposal, supra* note 2, at 27.

293. Burkill, *Reverse Compilation of Programs and its Permissibility under the Berne Convention,* 6 COMPUTER L. & PRAC. 114 (1990).

294. *Berne Convention, supra* note 7 at art. 9(1).

295. *Id.* at art. 9(2).

296. *Id.*

297. *Final Directive, supra* note 2, at art. 6.1.

298. *Revised Proposal, supra* note 2, at 27.

299. *Id.* at 27.

300. *Final Directive, supra* note 2, at art. 5.3.

301. *Id.* at art. 6.1(b).

new article 7 (Special Measures for Protection).[302] The Council directed member states to provide remedies for circulating or possessing infringing copies for commercial purposes.[303] The Final Directive permits member states to implement legislation providing for the seizure of infringing copies.[304]

The Revised Proposal follows the amendments of the European Parliament pretty accurately. Two issues do not reflect the suggestions of the Parliament. First, the Revised Proposal limited the exception to situations where non-infringing means are insufficient. The Final Directive only allows infringement when there is absolutely no other solution. Second, the purpose of this exception is to create interoperable programs. The creator of the interoperable program must secure the proper functioning of the program. This means that when the interfaces of the first program are changed, the second program no longer functions. Consequently, the second programmer might have to study or analyze the first program several times in order to guarantee interoperability.

The Final Directive regulates the interoperability issue by enumerating the conditions under which an unauthorized copy may be made to create an interoperable program.[305] First, the Final Directive permits only the licensee or the rightful user to make the reproduction. Second, the information may not be available in any other form. Finally, the user may reproduce only those parts of the program essential to create an interoperable program.[306] The second paragraph of this new article also describes how the reproduction may be used in a manner compatible with the rights of the copyright owner.[307]

4. Interfaces, Access Protocols, and Algorithms

The exclusion of interfaces and access protocols in copyright protection resulted in much confusion. Article 1.3 reasserts the fundamental copyright protection principle that copyright protects the expression of an idea, not the idea itself. The Green Paper stated that protection of interfaces and access protocols could create an "undesirable monopoly" and prevent the production of compatible systems.[308] Denying small

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302. *Id.* at art. 7.
303. *Id.*
304. *Id.*
305. *Id.* at art. 6.1.
306. *Id.*
307. *Id.* at art. 6.2; Cornish, *Computer Program Copyright and the Berne Convention,* 12 EIPR 129, 130 (1990).
308. Green Paper, *supra* note 4, at 184.

companies access to interfaces and access protocols would severely hin-
der competitiveness. Under such circumstances, only well funded cor-
porations could afford the licensing fees necessary to use existing inter-
faces. The Commission, however, adopted an alternative for protecting
underlying logic and algorithms.[309] Because copyright protects only the
form in which ideas are expressed rather than the ideas themselves, the
Commission proposed a safeguard for algorithms more analogous to
patent protection.[310]

The Software Proposal incorporated the following provision:

> Protection in accordance with this Directive shall apply to the expression in any
> form of a computer program but shall not extend to the ideas, principles, logic,
> algorithms or programming languages underlying the program. Where the speci-
> fication of interfaces constitute ideas and principles which underlie the program,
> those ideas and principles are not copyrightable subject matter.[311]

The provision attempts to implement the Directive's underlying ration-
ale, to protect the "program as a whole."[312] The Commission, however,
specifies that protection will be given to constituent parts if the individ-
ual parts fulfill the requirement of originality.[313] With this provision,
the Commission emphasized the general copyright principle of protect-
ing interfaces meeting the requirement of an original expression which
shows creativity. In addition, copyright protection is limited to the ex-
pression of an idea with exclusion of the idea itself. Consequently, an
additional exemption for the expressions in interfaces is unnecessary
because copyright rewards creative expressions whether they are found
in interfaces or other elements of the program.

Opponents of this proposal rely on United States law which recog-
nizes interfaces as copyrightable subject matter.[314] The interface ex-
emption provides less protection to interfaces than traditional literary
works.[315] Consequently, this provision is inconsistent with the EC's
Berne Convention obligations.

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309. *Id.* at 182.
310. *Id.*
311. *Software Proposal, supra* note 2, at art. 1.3.
312. *Id.* at art. 1.3.
313. *Id.*
314. *See* SAS Institute, Inc. v. S&H Computer Sys., Inc., 605 F. Supp. 816, 832
(M.D. Tenn. 1985) (protecting interfaces concerned with the interrelationship between
supervisor and procedure portions of the product); *see also* Manufacturers Technolo-
gies, Inc. v. CAMS, Inc., 706 F. Supp. 984, 994, 997 (D. Conn. 1989) (protecting
interfaces regarding a screen display's "sequencing and flow" and the selection, ar-
rangement, and coordination of that information).
315. Letter from William V. Roth and Max Baucus, United States Senators,
Members of the Senate Task Force on EC 1992, to Martin Bangemann, Vice President
of the EEC Commission (May 9, 1990) (noting that the proposal allows decompilation

According to a literal interpretation of the language of article 1.3, interfaces are not completely excluded from copyright protection. Interfaces are only excluded when the specification of interfaces do not constitute ideas or principles.[316] Nevertheless, this conclusion seems inconsistent with the intention of the Final Directive. The use of vague and ambiguous terminology such as "specification" and "ideas and principles," does not contribute to precise and detailed legislation.[317] This ambiguous language raises a number of questions, especially among United States manufacturers. First, it remains unclear whether the concept of "interface" applies to interface programs or the specification of the programs.[318] The European Parliament amended this provision:

> Protection in accordance with this Directive shall apply to the expression in any form of computer program. Ideas and principles which underlie any aspect of a program, including its interfaces, shall not be protected by copyright under this Directive.[319]

Excluding interfaces from copyright protection, is a policy subject to criticism. A newly developed interface can constitute the most valuable asset of the program because it may affect the speed and the functionality of a computer program.[320]

In contradistinction to the Final Directive, the United States Copyright Act does not deal expressly with interfaces. The courts, however, recognize interfaces as copyrightable subject matter.[321] The case law

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of computer programs, absence of explicit protection for interfaces, and overly narrow standards of originality).

316. *Revised Proposal, supra* note 2, at 13.

317. Lehmann & Dreier, *The Legal Protection of Computer Programs: Certain Aspects of the Proposal for an (EC) Council Directive,* 6 COMPUTER L. & PRAC. 92, 93 (1990).

318. UNICE, COMPUTER SOFTWARE PROPOSAL- ITS STATUS: A POSITION FROM UNICE 8 (1990).

319. *Proposal for a Council Directive on the Legal Protection of Computer Programs,* 33 O.J. EUR. COMM. (No. C 231) 78-79 (1990). The Commission accepted this amended provision. *Id. See* ECOSOC Report, *supra* note 153, at 5 (reporting the Committee's suggestion to delete reference to interfaces).

320. Lake, *supra* note 28, at 5.

321. *See* Whelan Assoc. v. Jaslow Dental Laboratory, 797 F.2d 1222, 1239 (3rd Cir. 1986) (applying traditional copyright protection to interfaces in data structures); E.F. Johnson Co. v. Uniden Corp., 623 F. Supp. 1485, 1495 (D. Minn. 1985) (applying traditional copyright protection to interfaces in communication protocols); Broderbund Software, Inc. v. Unison World, Inc., 648 F. Supp. 1127, 1134 (N.D. Cal. 1986) (applying traditional copyright protection to screen interfaces); SAS Inst., Inc. v. S&H Computer Sys., Inc., 605 F. Supp. 816, 832 (M.D. Tenn. 1985) (applying traditional copyright protection to interface routines).

clearly indicates that judges rejected arguments based on the need for compatibility or the need for standardization.[322]

The exclusion of interfaces risks violating article 222 of the EEC Treaty.[323] This provision prevents the Treaty or the Directives from affecting the national regimes of property ownership. Consequently, the European Court of Justice might determine that, pursuant to article 222, this part of the Final Directive constitutes an unjustified limitation of the rights of copyright owners.

5. The Term of Protection

The Commission recognized that computer programs need protection for "an appropriate number of years" after their creation.[324] The Software Proposal, therefore, contains a provision which grants protection for "fifty years from the date of creation."[325] The usual term of protection for literary works is the life of the author and fifty years after his death.[326] The Commission feared that this type of term would cause complications in light of joint authorship for computer generated works. Therefore, the Commission chose a fixed term beginning from the date of creation.

Opposition arose against the implementation of a fixed term of protection.[327] Some commentators believe that because the Software Proposal categorized computer programs as literary works,[328] it would have been better to grant them the same protection as provided by the Berne Convention.[329] Other authors, however, justify this discrepancy with article 2(1) of the Berne Convention.[330] They suggest that computer programs should not be classified as literary works and should, therefore, maintain a different term of copyright protection.[331]

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322. Apple Computer, 714 F.2d at 1253; SAS Inst., 605 F. Supp. at 825; E.F. Johnson, 623 F. Supp. at 1501; Digital Communications, 659 F. Supp. at 462.

323. EEC Treaty, *supra* note 1, at 235.

324. Green Paper, *supra* note 4, at 201.

325. *Software Proposal, supra* note 2, art. 7 at 14.

326. *See supra* notes 174 to 183 and accompanying text (describing the various member states' terms of protection).

327. UNICE Position Paper, *supra* note 158, at 105 (stating that such a difference in terms of protection could be used by foreign countries to the detriment of European industry).

328. *Id.*

329. *See* ECOSOC Report, *supra* note 153, at 8 (categorizing the Commission's motivation as academic and chiding the Commission for elevating its motivation over the requirement to follow the provisions of the Berne Convention).

330. *See* Vandenberghe, *supra* note 198, at 412 (maintaining that the classification of software as a literary work is due to the drafter's wish to exclude a short term of protection).

331. *Id.* at 140.

In response to these comments, the Commission amended the Software Proposal as follows:

> Protection shall be granted for the life of the author and for fifty years after his death; where the computer program is an anonymous or pseudonymous work, the term of protection shall be fifty years from the time that the computer program is first lawfully made available to the public. The term of protection shall be deemed to begin on the first of January of the year following the above mentioned events.[332]

The Final Directive adopted by the Commission added even more copyright protection to computer programs. In cases of joint authorship, the Final Directive protects computer programs for fifty years after the death of the last surviving author.[333] Furthermore, the Council allows member states to maintain a longer term of protection, "until such [a] time as the term of protection for copyright works is harmonized in a more general way."[334]

III. LEGAL AND PRACTICAL IMPLICATIONS OF THE FINAL DIRECTIVE

According to the Commission, full copyright protection for computer programs would limit the growth-potential of European companies. This premise was the Commision's starting point. The Final Directive will hamper the growth of the software industry in the EC because the Commission incorrectly started its proposal from this premise. Presently, United States software manufacturers produce approximately seventy percent of the computer programs in the world.[335] The United States software industry, by contrast, began its immense growth when Congress introduced strong copyright protection for computer programs.[336] Full copyright protection, not the absence of copyright protection, will enhance the growth-capacity of European software producers.

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332. *Software Proposal, supra* note 2, at art. 7.
333. *Final Directive, supra* note 2, at art. 8(1).
334. *Id.* at art 8(2).
335. Green Paper, *supra* note 4, at 171.
336. *See* BSA WHITE PAPER, *supra* note 280, at 7 (supporting the conclusion that copyright protection for software, including interfaces and the prohibition of reverse engineering, benefitted United States industry). Between 1986 and 1988 most compatible hardware manufacturers doubled their sales and data for five of the top manufacturers, Dell, AST, Apple, Hewlett-Packard, and Compaq, show that sales increased from less than $6 billion in 1986 to more than $10 billion in 1989. *See* Phillips, *supra* note 192, at 54 (stating how the European software market can grow with strong copyright protection).

The Commission needed to balance several competing interests when drafting the Final Directive. These interests included: (1) providing legal protection for the innovative skills of the European software developers; (2) creating a software market with undistorted competition; and (3) assessing the rights and best interests of consumers in the European market. The overall success of the Final Directive is tied to the Commission's ability to balance these competing interests.

The Commission stated that the European software industry needed adequate legal protection to "catch up with its competitors."[337] The Final Directive enhances the growth of the European software industry by permitting reverse engineering and legalizing interoperability. Reverse engineering and the legalization of interoperability allow small and medium sized European software manufacturers to create compatible programs at more favorable prices. Large sized manufacturers do not receive a comparable benefit from this regime. Consequently, post-1992, the EC should witness the emergence of an entire industry comprised of small and medium software manufacturers, which will ultimately benefit the consumer.

Creating a software market with undistorted competition was an onerous challenge for the Commission. The purpose of the Final Directive is to create "an environment favorable to investment and innovation."[338] In this respect, the Final Directive correctly excluded ideas and principles from copyright protection.[339] Leaving the underlying concepts of a program in the public domain is undoubtedly an impetus for fair competition. Often, new programs result from a different perspective of the same idea. Extending protection to ideas and principles would create over-protection, resulting in undesired monopolies for software developers. Article 6 of the Final Directive strives towards a more competitive software market.[340]

The legalization of reverse engineering, however, thwarts free competition and redirects the creative resources of the software manufacturer to the detriment of the consumer. Instead of legalizing reverse engineering, the Commission should have relied on the use of an alternative means to discern the idea behind a computer program. An analysis of the publicly available materials could be one such alternative. Under the Final Directive, software manufacturers focusing on the European market will be forced to commit large portions of investment capital to

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337. Green Paper, *supra* note 4, at 175.
338. *Id.* at 175.
339. *Software Proposal, supra* note 2, at art 1.3; *Revised Proposal, supra* note 2, at art 1.3.
340. *Final Directive, supra* note 2, art, 6 at 45.

the protection of their rights. Rather than pursuing the development of new products, research will shift to developing technical means to prevent decompilation. The European Court of Justice must enforce the provisions in an effective and equitable way. The court must decide where to draw the line between authorized and unacceptable decompilation. Undoubtedly, the reverse engineering provisions in the Final Directive will lead to extensive litigation,[341] especially in the absence of an effective enforcement system.[342]

The Directive, in its present form, will be beneficial to the consumer. It focuses on increasing competition, and the decompilation provision will considerably reduce investment costs. As previously stated, the price of a computer program is determined for a major part by the development costs. Consequently, a combination of lower initial investment costs and increased competition on the European software market ought to benefit the consumer. Such a benefit will occur provided that software manufacturers do not shift their resources to protectionist development or the establishment of safety devices. Whether software manufacturers will adopt this policy, however, is an issue to be resolved in the next decade.

IV. CONCLUSION

The Final Directive is the first step towards harmonization of the software protection laws in the EC. Although the need for protection in the Community is urgent, the Final Directive fails to deal adequately with the most controversial issues. The Commission clearly limited its ambitions with the Final Directive. The Commission failed to deal with important issues concerning software, such as piracy, parallel importing, and compulsory licensing. In addition, the Final Directive's provisions on decompilation, an originality requirement for copyright protection, and the protection of interfaces, will adversely affect the Commission's goal of creating a strong European software industry in a single European market. The efforts of the EC to regulate an important

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341. BSA, WHITE PAPER ON THE PROPOSAL FOR A EUROPEAN COMMUNITY DIRECTIVE ON THE LEGAL PROTECTION OF COMPUTER PROGRAMS 1 (Sept., 1989) (expressing concern with the Directive's lack of clarity, and the litigation costs which will be imposed on software producers).

342. *Id.* at 3. BSA suggests a new section in the Directive containing principles designed to ensure inspections of companies suspected of infringing the provisions of the Directive, seizure of infringing software copies in order to preserve them as evidence, interim hearings to enjoin use of unauthorized copies, and increased minimum civil and criminal remedies. *Id.* at 4.

market sector such as computer programs deserves praise, but the Final Directive is an unsatisfactory balance of competing interests.