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THE LEGAL PROTECTION OF
COMPUTER PROGRAMS IN THE
EUROPEAN ECONOMIC
COMMUNITY

by CHRISTOPHER Voss*

I. INTRODUCTION

The Council of the European Economic Community ("EEC" or "Community") adopted the Directive on the Legal Protection of Computer Programs ("Directive") on May 14, 1991.1 This legislation sets forth the parameters for harmonizing2 the national copyright laws of the EEC's twelve member countries ("Member States") with respect to computer programs.3 Member States must enact legislation or adopt regulations or administrative measures establishing copyright protection for computer programs in accordance with the provisions of the Directive by January 1, 1993.4

Computer programs currently benefit from widely different protection regimes within the EEC. Community software developers have asserted proprietary rights in their programs under a variety of legal doctrines, including the patent, copyright, contract, tort and criminal

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2. The "directive" is a form of Community legislation which is "binding," as to the result to be achieved, upon each Member State to which it is addressed, but [which] leave[s] to the national authorities the choice of form and methods." Treaty Establishing the European Economic Treaty, as amended (March 25, 1957), art. 189 (hereinafter cited as "Treaty of Rome"). Thus, the effect of a directive will be to "harmonize" the substantive law of the Member States with respect to the object of the directive, e.g., the protection of computer programs by copyright, though not necessarily the means by which the legislative goal is attained.

3. The Directive does not expressly define the term "computer program."

laws of the Member States. With respect to copyright protection of computer programs prior to the adoption of the Directive, the approaches of the Member States varied greatly: several enacted legislation specifically extending copyright protection to computer programs; others had contemplated draft legislation; some considered protection of computer programs under a special copyright regime either redundant or inappropriate. By harmonizing the basis for and scope of the legal protection of computer programs within the Community, the Council hopes to facilitate the development and exploitation of information technology.

Following the approach of the major software producing states, the EEC Commission embraced a copyright framework in its original proposal to the Council as the most suitable legal basis "for ensuring a balance between an effective level of protection and the interests of users."

Traditional copyright principles grant the author of a literary, artistic or musical work the exclusive legal rights to reproduce, adapt,

5. See generally J. KEUSTERMANS & I. ARCKENS, INTERNATIONAL COMPUTER LAW, chs. 6 & 7 (1990) (hereinafter cited as "INT’L COMPUTER LAW").


7. This is the case in Italy, the Netherlands, and Ireland (although copyright protection for certain programs has been established by court decisions in Italy and the Netherlands). See generally INT’L COMPUTER LAW, supra note 5, §§ 7.15, 7.17, 7.21.

8. Legal experts (as well as several courts) in Belgium and Luxembourg "favour[ed] copyright as an appropriate vehicle for protecting" software, while "learned opinion" in Portugal assumed that the Portuguese copyright law covered computer programs. Greek officials, on the other hand, have questioned whether copyright protection was appropriate for computer programs. Green Paper on Copyright and the Challenge of Technology, Com (88) 172 final (June 7, 1988), at § 5.3.9 & nn.16-20 (hereinafter cited as "Green Paper").

9. As the Commission noted in the Green Paper, "[t]o retain its place in the forefront of technical advance, and [] to maintain its competitiveness generally, the Community will [] have to ensure that it has a competitive, dynamic software industry." Id. § 5.2.11.


11. Article 155 of the Treaty of Rome, supra note 2, grants the Commission the competence to introduce proposed legislation to the Council. This is often referred to as the Commission’s "power of initiation." See, e.g., Noël, The Commission’s Power of Initiation, 10 COMMON MKT. L. REV. 123 (1973).

and distribute the matter and form of the work. The primary function of copyright law is to prevent unauthorized exercise of these rights and to regulate the commercialization of a protected work.\textsuperscript{13}

In explaining its choice of a copyright regime, the Commission noted that "[t]he overwhelming weight of evidence submitted . . . during the consultation process . . . indicated that protection by copyright is the most appropriate measure to adopt."\textsuperscript{14} Patent protection, for example, appeared limited in all Member States to programs which were incorporated into patentable inventions having a technical character; the normal criteria for patentability—the "inventive step"—was unlikely to be satisfied by the majority of programs.\textsuperscript{15} Contract solutions might be sufficient to regulate rights at a bi-lateral level, but are wholly ineffective in protecting against misappropriation and misuse of a work.\textsuperscript{16} Moreover, bargaining inequalities between contracting parties, as well as the unique requirements of differing modes of commercial exploitation, underscored the need for basic "off-the-rack" principles of protection to supplement specific contractual provisions. Other protection regimes—including those falling under tort and criminal law—offered incomplete or otherwise inadequate protection for computer programs.\textsuperscript{17}


13. This definition ignores the "moral rights" component of copyright which is recognized by ten of the twelve EEC Member States. While an extended discussion of the applicability of moral rights to computer programs is beyond the scope of this article, copyright experts generally agree that a moral rights regime would pose an "impossible situation" and a "formidable inhibition" for and to the creation and marketing of software. See, e.g., Dworkin, United Kingdom, in Stewart, International Copyright and Neighbouring Rights 514 (2d ed. 1989); see also Green Paper, supra note 8, § 5.6.27 ("Moral rights, that is the right of the author to claim paternity and to object to prejudicial modifications of his work, do not appear to have given rise so far to significant practical problems.")

On the other hand, while the Explanatory Memorandum does make the (arguable) assertion that "the concept of integrity of [a computer program] is of much less relevance to the author's interest than has traditionally been the case with other literary works," it states unambiguously that "the author [of a program] will retain at least the unalienable right to claim paternity of his work." Explanatory Memorandum, supra note 12, at 91/9-91/10.


15. With respect to computer programs, the "inventive step" required for patentability will often pertain to the "algorithms underlying the program[] which . . . like any mathematical formulae, principle or natural law" cannot be patented. See id. at 91/6.

16. See id. at 91/6-91/7.

17. In many countries (including five Member States), unauthorized exploitation or use of a computer program may be sanctioned under trade secret or unfair competition laws. In addition, parties may be held criminally liable under theft or specific computer crimes laws for such unauthorized use. See, e.g., Computer Fraud and Abuse Act of 1986,
This Comment examines the provisions for harmonizing copyright protection of computer programs under the Directive. Section II examines the genesis of the legislation and presents a summary of its legislative history. Section III describes the substantive provisions of the Directive. Section IV, summarizes the reaction of industry and users to the most contentious aspects of the legislation, and offer a prognosis on the impact of harmonized copyright protection of software in post-1992 Europe.

II. THE GENESIS OF THE PROPOSED DIRECTIVE

The Commission first recognized the significance of ensuring adequate and harmonized protection of computer programs within the EEC in its White Paper of July 1985. This document, intended as a blueprint for the completion of a single integrated internal market in Europe by 1992, stressed that differing intellectual property regimes had a “direct and negative impact on intra-Community trade and on the ability of enterprises to treat the common market as a single environment for their economic activities.” Divergences and uncertainty concerning the scope of and protection afforded by the legal regimes of the Member States not only affected the free circulation of goods and services within the Community, but also distorted competition by altering business investment and establishment decisions. To address these artificial distortions to intra-Community trade and development, the Commission resolved to examine copyright-related issues in general, and the special programs related to the legal protection of computer programs in particular, in a subsequent “consultative document.”

Three years later in its Green Paper, the Commission reasserted its interest in contributing “to an environment favourable to investment and innovation” by Community software producers by setting up a predictable and balanced framework for the legal protection of computer programs. After briefly reviewing the importance of computer software to the Community's economic, industrial, and technological fu-

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18. Completing the Internal Market, Com (85) 310 final (July 28 & 29, 1985).
19. Id. at ¶¶ 145, 149.
20. Id. at ¶ 149.
21. Green Paper, supra note 8, at Ch. 5. The Green Paper also examined issues related to the piracy of copyrighted works, home copying of audio-visual works, distribution and rental rights, data bases, and the EEC's external relations in the copyright field.
ture, the Commission emphasized the urgent need to extend to computer programs sufficient protection so that the Community industry could "catch up" with its competitors.\textsuperscript{22} Despite the general movement among the Member States to protecting computer programs under copyright,\textsuperscript{23} it was necessary to strengthen and make uniform such protection if the Community industry was to take full advantage of the internal market; the existence of similar operating conditions in all Member States constituted a pre-condition for European software developers to effectively compete with U.S. and Asian industry.\textsuperscript{24}

The \textit{Green Paper} next surveyed the "legal response" to the problem of protecting the rights of program developers. The authors traced the evolution of legal activity in this area from near absolute reliance on contract solutions through application of national patent laws and proposals to establish \textit{sui generis} regimes to the current state of affairs in the Member States.\textsuperscript{25} Concluding that approximation of patent, trade secret or contract law as applied to the protection of computer programs in the Member States appeared unnecessary, the Commission opined that such protection could most effectively be extended under copyright.\textsuperscript{26}

In proposing the Directive less than six months after the publication of the \textit{Green Paper}, the Commission's objectives were (i) to establish legal protection for computer programs in those Member States where it did not yet clearly exist, and (ii) to ensure that such Community-wide legal protection was based on "common principles."\textsuperscript{27} Enshrinement of these common principles in the Member States' copyright laws were necessary, as noted previously in both the \textit{White Paper} and the \textit{Green Paper}, to facilitate the free circulation of computer software within the Community as well as to create conditions in

\begin{footnotesize}
\begin{enumerate}
\item[22.] \textit{Id.} § 5.2.
\item[23.] \textit{Id.} §§ 5.3.7-5.3.9; \textit{see supra} notes 6-8.
\item[24.] As troubling as the disparate legislative treatment may have been, the Commission viewed the risks posed by divergent jurisprudential evolution of the Member States' software protection laws as an equally significant obstacle to legal clarity. The adoption of Community legislation would effectively preempt national courts from interpreting unique national laws, which judicial exegesis would otherwise be certain to aggravate already inconsistent protection schemes. \textit{Green Paper, supra} note 8, §§ 5.3.11, 5.6.2.
\item[25.] \textit{Id.} § 5.3. For the authoritative study of the evolution of the debate over the appropriate form of legal protection to be granted to computer programs, \textit{see} Kinderman, \textit{The International Copyright of Computer Software: History, Status and Development}, \textit{COPYRIGHT}, Apr. 1988, at 201.
\item[26.] \textit{Green Paper, supra} note 8, §§ 5.5.2-5.5.3; 5.5.13.
\item[27.] The Commission underscored its rationale for introducing this legislation by stating in the Explanatory Memorandum that "[t]he current absence of [] clear and congruent legislative provisions in Member States concerning the rights of authors of computer programs has [] prompted the Commission to make this proposal to the Council." \textit{Explanatory Memorandum, supra} note 12, at 91/5-91.6.
\end{enumerate}
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which the industry could best take advantage of the single market. To this end, the Commission identified four fundamental principles around which it structured its proposed legislation:

1. protecting computer programs as literary works by extending to the right holder exclusive exploitation rights under national copyright laws;
2. defining the person in whom the right arose;
3. describing those acts which required the right holder's authorization, as well as those acts which did not constitute infringement; and
4. setting forth the terms and conditions by which the program would be protected.

Expected to be a non-controversial piece of legislation which would be placed on the "fast track" to Council approval, the Directive instead generated vigorous debate between software producers and users, and within the industry itself, on key issues relating to "reverse engineering," interoperability, and the scope of "restricted uses." Despite virtually unanimous agreement among industry, the Community institutions, and the Member State governments that harmonizing legislation was needed, over two years passed before the Commission's proposal was finally adopted as binding Community law.

The Commission submitted its original proposal to the Council on January 5, 1989. Pursuant to the Community's legislative cooperation procedure, the Economic and Social Committee delivered its opinion

28. The legal basis underlying the Directive is, in fact, Article 100A of the Treaty of Rome. This provision authorizes the Council to adopt measures harmonizing national legislative, regulatory, and administrative provisions "which have for their object the establishment and functioning of the internal market."


30. Comments of Bridget Czarnotaa, Principal Administrator, Directorate General III (Department F-4) of the EEC Commission, at the Intellectual Property Workshop sponsored by the EEC Committee of the U.S. Chamber of Commerce in Belgium (June 28, 1990).


33. Article 149 of the Treaty of Rome sets forth the Community's legislative procedure where the Council seeks to enact legislation proposed to it by the Commission. The Commission initiates this process by presenting its proposal to the Council and Parliament for consideration. After the Parliament has deliberated on the legislation (i.e., held hearings, adopted amendments, etc.) and voted on it, the Council will adopt a "common

III. THE SUBSTANTIVE PROVISIONS OF THE DIRECTIVE

The Directive is composed of nine substantive articles. Addressed to all of the Member States, the legislation establishes cumulative protection for computer programs, i.e., in addition to that available under patent, trademark, unfair competition, trade secret, contract and other applicable laws. The Member States' implementing provisions must have a retroactive effect, so that programs created prior to January 1, 1993 may benefit from copyright protection.

A. THE OBJECT OF PROTECTION

Under Article 1.1 of the Directive, "Member States shall protect computer programs by copyright as literary works within the meaning of the Berne Convention for the Protection of Literary and Artistic Works."
The term "computer program" is not defined in the operative provisions of the Directive.\textsuperscript{43} Rather than risk obsolescence by proposing a fixed description, the Commission embraced an evolving concept of the subject matter eligible for protection as a computer program.\textsuperscript{44} This definitional exercise is not left wholly open-ended, however. In the Explanatory Memorandum, for example, the Commission stated that the term "should be taken to encompass the expression in any form, language, notation or code of a set of instructions [both humanly perceivable and machine readable], the purpose of which is to cause a computer to execute a particular task or function."\textsuperscript{45} In addition, the Directive expressly incorporates into the legislation's ambit all "preparatory design material" which leads to the development of a computer program.\textsuperscript{46} Such preparatory work does not encompass user and maintenance manuals, except in so far as "substantial parts of the program are reproduced therein."\textsuperscript{47}

The Berne Convention for the Protection of Literary and Artistic Works ("Berne"), established in 1886, was the first international agreement to extend copyright protection to literary works.\textsuperscript{48} While Berne does not expressly recognize computer programs as among the literary works covered under the Convention, the broad range of protected works identified as copyrightable, as well as the fact that the Convention does not contain any limitation as to the use or purpose of a work, supports the conclusion that computer programs fall within its terms.\textsuperscript{49} Linking the Directive to Berne thus enhances the legal certainty of the

\textsuperscript{43} In Recital 7 of the Directive, the Council states merely that the term "computer program" includes "programs in any form, including those which are incorporated into hardware."

\textsuperscript{44} Explanatory Memorandum, supra note 13, at 91/5, 91/9.

\textsuperscript{45} Id. at 91/9; cf. Green Paper, supra note 9, at § 5.1 (a computer program is "a set of instructions the purpose of which is to cause an information processing device, a computer, to perform its functions").

\textsuperscript{46} Directive, supra note 1, at Recital 7 and art. 1.1; see also Explanatory to the Amended Proposal, COM (90) 509 final—SYN 183 (Oct. 18, 1990), at 4 (hereinafter cited as "Explanation"). Such materials may include, for example, flow charts or other schematic descriptions, so long as a program may result from such work at a later stage. Embodiments of the program within the computer hardware, whether in permanent or removable form, are also covered by the Directive. Explanatory Memorandum, supra note 13, at 91/5.

\textsuperscript{47} Explanatory Memorandum, supra note 13, at 91/9.


\textsuperscript{49} Article 2 of Berne defines copyrightable works as including, inter alia, "every production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression. . . ." The Convention also sets forth a non-exclusive catalogue of covered works, ranging from books and other writings to three-dimensional scientific
nature and scope of protection extended under the Community legislation.

The Directive maintains the traditional idea-expression dichotomy of copyright law by protecting the expression of an idea in any form, but not the underlying idea itself. This principle is intended to apply to every element of a program, including its interfaces. In addition, the sole criterion for extending copyright protection to such expression is that it represents "the author's own intellectual creation;" as is the case for all other copyrightable works, protection may not be conditioned upon any aesthetic or qualitative judgment.

B. OWNER OF THE COPYRIGHT: BENEFICIARIES OF PROTECTION

Article 2 regulates the issue of authorship with respect to works created by sole and joint authors, as well as under employment contracts.

Copyright in a program vests in the natural person or group of persons who (or which) has created the program. Where the program has been created jointly by a group of natural persons, they will jointly own the exclusive rights in the program, absent an alternative contractual agreement. Where the legislation of the Member State so permits, a legal person may be designated as the rightholder in a program. Similarly, where "collective works" are recognized under the legislation of a Member State, the person who is considered to have "created" the work under the relevant statute shall be deemed its author. By expressly recognizing the existence of differing "regimes of authorship" within the Community, the Commission has decided to re-

works. See GUIDE TO THE BERNE CONVENTION 13 (WIPO ed. 1978); see generally INT'L COMPUTER LAW, supra note 5, at § 8.03(A).

51. See id. at Recital 13.
52. Directive, supra note 1, at Recital 8 and Art. 1.3. The Proposed Directive had contained a separate provision which expressly extended the originality criterion to programs created, in whole or in part, with the aid of or directly by a computer. Proposed Directive, supra note 32, at Art. 1.4(b). The Commission deleted this provision in its amended proposal, however, after agreeing with the Parliament that it was "premature" to regulate computer-generated programs explicitly in the Directive. See Explanation, supra note 46, at 5.
54. Id. Art. 2.2.
55. Id. Art. 2.1.
56. Id. A "collective work" is a work to whose creation several persons have contributed, and in which the personal contribution of each "author" are merged in the totality of the work so that it is impossible to attribute separate rights in the finished work. See Chesnais, "FRANCE," in Stewart, supra note 13, at 377. Thus, under certain European copyright regimes a computer program created by a team of programmers might be considered a collective work, while a film (considered a "collaborative work" because the in-
frain from harmonizing—at least within the framework of the Directive—these more general copyright issues.

Computer programs are frequently written in the course of an employment relationship. Where the program is created by an employee in the execution of his duties or following instructions given by his employer, the employer will be entitled to retain all economic rights in the program. This "off-the-rack" rule may, of course, be modified by contract.

In accordance with Berne, the Directive extends the rules of national treatment of literary works to computer programs. Where an author's works are currently protected by copyright in a Member State by virtue of his nationality or residence, and where a Member State affords copyright protection on the basis of first publication in that Member State, such criteria will also apply to computer programs.

C. CONTENTS OF THE COPYRIGHT: THE AUTHOR'S EXCLUSIVE RIGHTS

Subject to the exceptions provided for in Articles 5 and 6 of the Directive, a copyright owner has an exclusive right to reproduce, adapt and distribute his program. The copyright owner may exercise these rights himself, or he may assign all or a part thereof to third parties.

Unauthorized reproduction of a program "by any means and in any form, in part or in whole," and whether permanent or temporary, is prohibited by the Directive. In particular, the Commission specifies the acts of "loading, displaying, running, transmission or storage" of a program as being subject to the rightholder's authorization, at least in individual components can be distinguished and exploited separately) would not. Loi No 57-598 du 11 mars 1957 (Journal Officiel du 14 mars 1957 et du 19 avril 1957).

57. Id. Art. 2.4. Although the economic rights in a work may be assigned by or transferred from the author to a third party, the author will retain his moral rights in the work. Explanation, supra note 46, at 6. With respect to the author's moral rights, see supra note 14.

58. "[T]he freedom to negotiate contracts of employment and terms for commissioned works must remain to a large extent a subject for contractual negotiation between the parties." Explanatory Memorandum, supra note 12, at 91/10.

59. Directive, supra note 1, Art. 3.1.

60. Explanatory Memorandum, supra note 12, at 91/10.

61. Directive, supra note 1, Art. 4.

62. Id. Art. 4(a). In the Explanatory memorandum, the Commission distinguished between the "reproduction" and the "replication" of a computer program. The latter process occurs each time the program is "re-created" in part or in whole by the internal processes of the computer itself. This transient form of reproduction—whereby the copying and storing operations "leave no trace once the operation of the machine has been terminated"—cannot, by the very nature of the copyrighted matter, be proscribed. Rather, only those acts which could be prejudicial to the author's interests—and which cannot be performed except by reproduction—fall within the copyright owner's right of control. Explanatory Memorandum, supra note 12, at 91/10.
so far as such acts necessitate a reproduction of the program. Each of these methods of reproducing the program could, in the Commission's view, be prejudicial to a rightholder's interests, i.e., by permitting a user to adapt, alter or destroy a program, and can only be controlled by granting rightholders broad powers to prohibit unauthorized reproduction.

A program may be legitimately adapted only where such adaptation has been authorized by the copyright owner. Adaptation includes the translation of the program from one code or programming language into another, as well as the modification of the program to perform a specific task and any other "arrangement" or "alteration" of the program and the reproduction of the results thereof.

A copyright owner has the right to control the public distribution of the original program and copies thereof; this right expressly includes the right to control public distribution through "rental." Consistent with the European Court of Justice's intellectual property jurisprudence, the copyright owner's right to control distribution of a copy of a program will be exhausted after its "first sale" in the EEC by the rightholder or with his consent. This means that a rightholder may not interfere with the sale of a program within the Community, nor its importation into a Member State, after he or his assignee authorizes its commercialization. However, the Directive carves out an important exception to the "exhaustion doctrine" with respect to the rental of a program: the copyright owner's distribution rights will not be exhausted by the first marketing of the program. This exception permits a rightholder to exercise exclusive, continuing control over the rental of a program which has been previously distributed to the public by the rightholder or with his authorization.

The Commission views this exclusive right to control rentals as a
prophylactic against unauthorized copying. The nominal economic cost of copying a program and the virtually non-existent legal risk (i.e., detection of infringement)\textsuperscript{69} create a powerful incentive for many users to engage in unauthorized reproduction rather than incur the substantial cost of purchasing or licensing copies of the program.\textsuperscript{70} Thus, the inability to regulate the rental market represents a significant gap in current copyright protection and should, in the Commission's view, be subject to the rightholder's control.

D. AUTHORIZED USES: EXCEPTIONS TO THE AUTHOR'S EXCLUSIVE RIGHTS

1. Permissible Reproduction for Use

The distribution\textsuperscript{71} of a copy of program necessarily transfers certain rights of use from the copyright holder to the purchaser. By definition, a user must temporarily reproduce the program each time he loads and runs it; these acts cannot be prohibited by contract, and the user need not seek specific authorization from the rightholder, so long as he is a "lawful acquiror" and the use is in accordance with the intended purpose of the program.\textsuperscript{72} Thus, for example, an authorized user may load, display, run, transmit or store the program, provided that such acts are necessary for the use of the program and do not result in its unauthorized reproduction.\textsuperscript{73} Any form of reproduction other than that required for the normal use of the program is prohibited absent express authorization of the copyright owner.

The Directive does not incorporate the Anglo-American concept of "fair use," by which reproduction of a copyrighted work is permitted in certain circumstances.\textsuperscript{74} For licensed programs, the Commission appa-

\textsuperscript{69}. But see INT'L FIN. L. REV. Jan. 1991, at 4 (software producers have become more aggressive in pursuing alleged copyright infringers in Europe).
\textsuperscript{70}. In economic terms, the cost of copyright infringement can be calculated as (i) the rental fee plus (ii) the cost of the fixation material plus (iii) the cost of computer time, multiplied by (iv) the probability of detection by the rightholder.
\textsuperscript{71}. In the earlier drafts of the Directive, the Commission distinguished various forms of distribution, including sale, licensing, and leasing. In particular, the term "sale" was used to describe the practice of "shrink wrap" licensing whereby the "licensee" is advised of his rights in the program by means of a printed notice contained in the packaging surrounding the fixation material (disk, tape, etc.). On the other hand, the term "licensing" referred to a means of distribution by which the rights, duties and obligations of the copyright holder and user are specified in a written and signed agreement. See Explanatory Memorandum, supra note 12, § 5.1, at 91/11.
\textsuperscript{72}. Directive, supra note 1, § 5.1; see also Recital 18.
\textsuperscript{73}. Explanatory Memorandum, supra note 12, § 5.1, at 91/11.
\textsuperscript{74}. The "fair use" doctrine permits copying for uses which do not threaten the right holder's ability to commercially exploit his work, such as for research or private study. See 17 U.S.C. § 107 (1989); cf. Explanatory Memorandum, supra note 12, at 91/11, which
ently views the contracting parties as sufficiently competent to negotiate for themselves control reproduction; where the distribution of a program is realized by other means (e.g., a sale), the provisions of national copyright law relating to the use of literary works should apply. The Directive does, however, expressly permit authorized users to make back-up copies of a program where such reproduction is "necessary" for its use. Any contractual provision which purports to restrict this right "shall be null and void."

2. Permissible Adaptation

The Directive also waives the authorization requirement for adaptation of a program by a lawful acquiror in the absence of contrary contractual provisions. For example, an authorized user may generally adapt a program in order to maintain it in accordance with its intended purpose. This limited right of adaptation includes the right to correct errors in the program, i.e., "de-bug" it, with respect to its normal use.

3. Observation, Study, and Testing During Normal Use

A person who is authorized to use a program in accordance with Article 4(a) of the Directive may "observe, study or test the functioning of the program" without further authorization of the rightholder. This exception to the exclusive rights regime cannot be restricted by contract.

The Council reasons that if a user is authorized to, inter alia, load and run a program, he may carry out any non-infringing act necessary to identify the unprotected elements of its architecture, i.e., the non-copyrightable ideas and principles underlying the protected work. Thus, an authorized user may attempt to parse the internal workings of a program so long as he remains within the bounds of the uses—"any of the acts of loading, displaying, running, transmitting or storing"—to which he is entitled to put the program. A user may not, however, assert rights beyond those necessary for authorized use merely to carry out additional study of the program.

incorrectly characterizes the concept as permissible copying of "insubstantial parts" of a work.

75. See Explanatory Memorandum, supra note 12, at 91/11.
76. Directive, supra note 1, Art. 5.2.
77. Id. Art. 9.1.
78. Id. Art. 5.1.
79. Id., Recital 8; see Explanation, supra note 46, at 7.
80. Id., Recital 19 and Art. 5.3.
81. Id., Art. 9.1.
4. Limited Right to "Reverse Engineer" the Program

The Directive carves out an additional exception to the exclusive rights regime by granting authorized users a right to "reverse engineer," or "decompile," a protected work: subject to certain limitations expressed in the Directive, a program's object code may be reproduced and translated without the rightholder's express authorization where such acts are "indispensable to obtain the information necessary to achieve the interoperability of an independently created interoperable program." This right may not be restricted by any contractual provisions other than those embodying the limitations discussed below.

As used by the Commission and Council, the term "interoperable" refers to the ability of a program to interconnect and interact, i.e., communicate and function, with hardware and other computer software. For example, if a programmer wants to develop an applications program for use with a particular operating software, he must know how to "plug into" that operating system. Sometimes such "interface specifications" are publicly available, e.g., in manuals published by the programmer or because they are standardized and documented by international standards bodies. Where such information is inadequate or unavailable, and where the observation, study and testing of a program pursuant to Article 5.3 is insufficient, Article 6 enables a programmer to make his independently created program interoperable with existing software, even if the author of the original program has opted not to reveal its interface structure. In effect, Article 6 creates a circumscribed safe harbor from liability for copyright infringement: an authorized user's otherwise infringing acts of reproducing and translating copyrighted program code to achieve interoperability for his work constitutes a sanctioned use.

This permissible infringement provision represents an instrument of "last resort" for a licensee or other authorized user seeking to achieve interoperability, however; invocation of this Article will be justified only where non-infringing means of obtaining the necessary information are not "readily available." In addition, acts of reproduction...
and translation performed pursuant to this Article must be limited to those parts of the original program whose function is to provide for its interconnection with other elements of an operating system.⁸⁷ Read in conjunction with paragraph 6.2(c) of the Article—which prohibits any information gleaned from reverse engineering to be used to develop, produce, or market a work “substantially similar in its expression” to the program in question—the Council’s intention is to prevent the creation of clone programs while granting programmers enough leeway to develop open operating systems.

In addition, information obtained through such sanctioned decompilation may not be used for goals other than to achieve the interoperability of the independently created program, or be given to third parties, except insofar as necessary to attain such legitimate interoperability.⁸⁸

Finally, the Council further restricts the reverse engineering right by providing that permissible infringement under Article 6 may not “unreasonably prejudice[] the rightholder’s legitimate interests [in] or conflict[] with a normal exploitation of” his work.⁹⁰ This suggests that a user will be unable to rely on this Article when he creates an update or enhancement of a protected work under the pretext of maintaining the interoperability of an independently created program. The right to adapt the original program thus clearly remains within the bundle of rights held by the author.

E.  “SECONDARY INFRINGEMENT”

Article 7 of the Directive gives the legislation some teeth to penalize “secondary infringement” of protected works. Under this Article the Member States are required, in accordance with their national legislation, to provide for “appropriate remedies” against persons committing any of three specified acts: (i) the act of putting an infringing copy of a computer program into circulation; (ii) the possession, “for commercial purposes,” of an infringing copy; and (iii) the act of putting into circulation, or possessing for commercial purposes “any means the sole intended purpose of which is to facilitate the unauthorized removal or circumvention of any technical device which may have been applied to protect a computer program.”⁹⁰ The Directive stipulates that an accused secondary infringer must know, or at least should have known, that he was dealing in or possessing an infringing copy in order to be successfully prosecuted.

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⁸⁷. Directive, supra note 1, art. 6.1(c).
⁸⁸. Id. art. 6.2(a), (b).
⁸⁹. Id., Recital 24 & art. 6.3.
⁹⁰. Id., arts. 7.1(a), (b), & (c).
While the Member States are free to specify their own remedies to rectify secondary infringement, the Directive affirms that infringing copies "shall be liable for seizure..." (emphasis added). Thus, the Directive introduces the principle that all infringing software is automatically subject to seizure as illegal goods. The Directive is less emphatic with respect to "copyright-busting" devices: Member States "may provide for the seizure" of these materials. (emphasis added). Nevertheless, both provisions should be extremely useful in combatting software piracy.

F. TERM OF PROTECTION

In conformity with the Berne Convention, the Directive protects a program under copyright for the life-of-the-author plus fifty years. Where the program is an anonymous or pseudonymous work, or where a legal person is designated as the author by national legislation, the term of protection will be fifty years from the date the work was first made available to the public. In both cases, the fifty year term begins to run on January 1 of the year following the author's death or the first publication of the program, as the case may be.

Member States which already have a term of protection longer than that described above may maintain such terms until the Community harmonizes the copyright protection term in a more general way. This transitional rule is relevant only to Germany, whose copyright term of protection runs for seventy years post mortem auctoris.

IV. THE MERITS OF COMPROMISE

"Perfection is not of this world."

The legislative history of the Directive constitutes a case study in the efficacy of high-pressure, high-stakes lobbying at the Community
The differences between early drafts of the Directive and the definitive text are dramatic, and each change may be traced to the intervention of industry and user groups. The ultimate product—the archetypal "fragile compromise" between software producers great and small, hardware vendors, and users—was greeted by virtually all interested parties as a workable and broadly acceptable end result, a "major step forward for software in Europe."  

Although several provisions of the initial text came under fire, debate—and lobbying efforts—were most intense over the extent to which the Directive would protect interface specifications and permit reverse engineering. One group of computer manufacturers, software producers, and users (organized under the banner of the "European Committee for Interoperable Systems," or "ECIS") fought to ensure unencumbered access to interface specifications and a liberal right to engage in decompilation and other non-infringing analysis of protected works. Opposing this group was another, established by the major American hardware and software vendors (the "Software Action Group for Europe," or "SAGE"), which sought to restrict access to proprietary specifications and vigorously argued in favor of a ban on unauthorized reverse engineering.

As originally drafted, the Directive promoted the SAGE vision of an absolute exclusive rights regime. Article 1.3 of the Proposed Directive left open the possibility that, in certain cases, interface specifications might not constitute "ideas and principles" and therefore could be protected under copyright. In ECIS' view, such a provision would grant certain dominant (and, not coincidentally, non-European) vendors monopoly control over their specifications, thereby enabling them to block independent programmers from developing interoperable and often competing products.

In addition, ECIS criticized Article 4 of the Proposed Directive as similarly threatening the normal development of competition within the industry through its express prohibition of unauthorized reverse engineering. By granting the rightholder the absolute right to prevent
independent analysis of a program in order to achieve interoperability, ECIS predicted “disastrous” competitive consequences for the continued viability of independent programmers in Europe.

SAGE and its industry allies replied to both of these concerns that such restrictions on unauthorized use were essential in order to “spur innovation” in software development. From this perspective, weakening the exclusive rights regime by excluding interface specifications from copyright protection or permitting unauthorized analysis of a program would open the door to cloning and computer piracy; incorporating such exceptions into the Community’s software protection scheme would “change the ground rules of copyright to favour imitators and to reduce the rewards for innovation.”

As the battle among these and other industry and user groups waged on in Brussels and Strasbourg, EC policymakers were soon persuaded that the ECIS worldview would be more likely to promote software development within the Community. The convergence of two factors—control by non-European companies of a concentrated market and the potentially anti-competitive effects inherent in an exclusive property rights regime—enabled ECIS and its allies to portray a post-Directive world in which an already struggling European industry would be denied a fair fight against IBM, Microsoft, and the other American behemoths. This concern about users being “locked into” relationships with a few dominant vendors due to the absence of interoperable and competitive products persuaded the Commission to modify the original proposal to ensure that an overly-protective property rights scheme did not impair competition.

Since compromise inevitably invites ambiguity, once the Directive is codified into national law the courts will no doubt be called upon to stake out the boundaries of copyright protection of computer programs. In addition to being requested to settle those issues raised by the Council’s use of certain terminology in describing authorized decompilation—for example, how much information obtained through reverse engineering is “necessary,” and at what point an “independently created program” becomes “substantially similar” to its decompiled predecessor—the courts will be forced to apply the reverse engineering right to more or less common industry practices, e.g., the extent to which decompilation may be used to “maintain” a protected work.

At least through January 1993, attention will be focused on the Member States’ parliaments to ensure that, as the codification process progresses, copyright protection of computer programs is, in fact, har-

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monized throughout the Community. For the minority of Member States which already confer copyright protection on software, modifications to the terms and conditions of the protection will be necessary; for the rest, draft legislation must be introduced and placed on a "fast track" for adoption. This shift of focus to the national legislatures may spur a redeployment of the lobbying groups previously installed in the corridors of the Community's law-making bodies, whilst these groups monitor whether the ambiguities in EC Internal Market Commissioner Bangemann's "valid and honest compromise" are properly redressed.

Regardless of the deficiencies in the legislation and the ultimate resolution of ambiguities in the statutory language, the Directive represents a giant leap forward in extending specific and uniform protection to, and promoting competition within, this critical component of the Community's economy and key to its technological future. As the first copyright legislation adopted by the Community since the publication of the White Paper in 1985, the Directive also represents another important link in the chain of European economic integration proposed for the end of 1992.

100. See supra note 6 and accompanying text.
101. For example, the U.K. will have to revise its "fair use" provision, which currently regulates users' reverse engineering rights.
102. Comment from ECIS spokesman Philippe Wacker, reprinted in 5(6) WORLD INTELLECTUAL PROPERTY REP. at 142.
103. Software piracy in seven Member States alone is purported to have cost the industry approximately $4.5 billion in 1989.