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Copyright Protection for Computer Programs in the United Kingdom, West Germany and Italy: A Comparative Overview

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I. INTRODUCTION

Computer[1] technology is a volative and everchanging industry that is international in scope. Although computers have now replaced humans in a variety of industries,[2] the "brains" of the computer, the software,[3] still depend upon human skill, an expensive commodity. For many individual and corporate users, the development of original software is cost prohibitive. Initial investment costs are substantial,[4]

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1. A computer is an "electrically activated mechanical counting device." Data General Corp. v. Digital Computers Controls, Inc., 357 A.2d 105, 106 (Del. Ch. 1975). This definition focuses upon only one component of the computer, the hardware. *See also* Tunick, *Computer Law: An Overview*, 13 LOY. L.A.L. REV. 315 (1980); *Symposium—Computer Law*, 30 EMORY L.J. 345 (1981); Comment, *Protection of Computer Software—A Hard Problem*, 26 DRAKE L. REV. 180, 180 nn.1-2 (1976-77); Note, *Protection of Proprietary Rights in Computer Programs: A "Basic" Formula for Debugging the System*, 57 ST. JOHN'S L. REV. 92, 92-93 nn.1-3 (1982).

2. Computers have been used in airline reservation systems, management information systems, manufacturing, weather forecasting, mathematical simulation, patient monitoring systems, and hospital record maintenance. D. BENDER, COMPUTER LAW: EVIDENCE AND PROCEDURE §§ 3.02-3.07 (1982).

3. Software is a term used to describe three classes of subject matter: computer programs, databases and documentation. *See* Kindermann, *Computer Software and Copyright Conventions*, 3 EUR. INTELL. PROP. REV. 6, 6-7 (1981).

A computer program is 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. *Model Provisions on the Protection of Computer Software*, World Intellectual Property Organization (WIPO) Publication No. 814(e) 6 (1978).

There are generally four stages in the development of a computer program. At stage one, a "flow chart" is created, depicting graphically the procedure or algorithm for solving a problem. Stage two is the development of a "source program" which translates the flow chart into a language understandable by the computer. The "source program" is next translated into a mechanically readable computer language, creating an "assembly program." Finally, at stage four, the assembly program is further translated into a completely machine language module, called an "object program." *See* Pope & Pope, *Protection of Proprietary Interests in Computer Software*, 30 ALA. L. REV. 527, 530-31 (1979).

4. Considerable writing and testing time is required before a program is ready for use. If a series of programs are necessary, the cost becomes substantial. *See generally* Root, *Protecting Computing Software in the '80s: Practical Guidelines for Evolving Needs*, 8 RUTGERS COMPUTER & TECH. L.J. 205, 209 (1981) ("Program development in a given instance may cost

and a great deal of time and manpower are required to produce reliable, user-oriented programs.[5] Yet, the cost of duplicating a completed program is nominal,[6] thus creating an incentive to copy existing programs.[7]

Because of this incentive to copy, the protection of proprietary rights in computer programs assumes importance as a major legal problem. To ensure further software ingenuity,[8] programmers need to be assured of broad protection and remedies. One source of protection is the copyright.[9] Copyrights protect the creator of an expression from unauthorized exploitive "copying." Literal and, more importantly, nonliteral forms of copying, such as adaptation or translation, are prohibited by copyright statutes.[10]

National and international copyright legislation perform a dual function.[11] They serve an economic function by protecting the author's right to reap a financial return, thus promoting the dissemination of works. At the same time, they serve a personal function by protecting the author's intangible personal interests.[12] These personal rights, including such matters of importance to the author as how his work is used when commercially exploited, the form in which it is used, and the circumstances under which it is used, are collectively termed "moral rights."[13]

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thousands of dollars, but once complete, additional copies may be had for a few pennies via the photocopier").

5. *Id.*

6. *See* Braunstein, *Economics of Property Rights as Applied to Computer Software and Data Bases, reprinted in* 4 COPYRIGHT, CONGRESS AND TECHNOLOGY: THE PUBLIC RECORD 3 (N. Henry ed. 1980).

7. *See generally* Wessel, *Legal Protection of Computer Programs*, HARV. BUS. REV. Mar.-Apr. 1965, at 97, 98 (a dishonest competitor can reap tremendous cost advantages by making illegal copies).

8. "Software ingenuity" as used in this Comment refers to the creative efforts expressed in arranging the instructions of a software program.

9. Other forms of protection, such as patent and trade secret laws, are beyond the scope of this Comment. For patent protection, see Note, *The Patentability of Computer Programs*, 38 N.Y.U. L. REV. 891 (1963); Bender, *Computer Programs: Should They Be Patentable?*, 68 COLUM. L. REV. 241 (1968). For trade secret protection, see Bender, *Trade Secret Protection of Software*, 38 GEO. WASH. L. REV. 909 (1969-70).

10. *See generally* Goldstein, *Adaptation Rights and Moral Rights in the United Kingdom, the United States, and the Federal Republic of West Germany*, 14 INT'L REV. OF INDUS. PROP. & COPYRIGHT L. 43, 47 (1983) (many works would be unprotected if copyright only applied to verbatim reproductions, i.e., a novel translated into a play).

11. A. DIETZ, COPYRIGHT LAW IN THE EUROPEAN COMMUNITY 66 (1978).

12. *Id.*

13. There are four main classifications of moral rights: (1) the right of disclosure or to divulge (the right to control the publication of the work); (2) the right of withdrawal (the right

Protection of software through copyright is probably the most effective means of protection presently available.[14] In Europe, treaties and national legislation have excluded computer programs from patent protection.[15] Trade secret protection exists only if absolute secrecy is maintained.[16] Secrecy precautions, however, are difficult to enforce when there is widespread distribution,[17] and compound the difficulties of detection and proof of infringement.[18] Moreover, special application problems arise because computer programs are a unique form of property.[19]

This Comment will initially review the major international copyright conventions. Next, the copyright laws of three European countries, the United Kingdom, West Germany and Italy, will be examined and compared. Specifically, the United Kingdom, a non-continental common law state, will be compared with West Germany and Italy, two continental civil law states. This comparison will re-

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to withdraw, modify or disclaim a work after publication); (3) the right of ownership or paternity (the right of authorship recognition); and (4) the right of integrity (the right to prevent any distortions of the work). *See* Goldstein, *supra* note 10, at 44.

14. BIGELOW, 5 COMPUTER L. SERV. (Callaghan) § 9-4, art. 4, at 158-59 (1972).

15. On an international level, see the Convention on the Grant of European Patents (European Patent Convention), Oct. 7, 1977, 21 O.J. EUR. COMM. (No. C 210) 10, art. 52(2)(c) (1978), *reprinted in* M. BENDER, EUROPEAN PATENT HANDBOOK (1978).

National courts and legislatures have taken a similar position. In the United Kingdom, § (2)(c) of the Patents Act of 1977 essentially disqualifies computer programs from patent protection because they are not inventions. The computer hardware itself, however, might be protected if it meets the requirements of § (1) of the Act. Thus, indirect protection might be available for software integrated into the hardware as in the case of chips (software embedded in the hardware component). Similarly, West Germany's Federal Supreme Court decided in Disposition Program of 1976, 1977 GRUR 96 (1978), that computer programs and their basic concepts are generally unpatentable. In addition, the German Patent Law of 1976 (modeled after the European Patent Convention) excludes programs from patent protection. Italy also adheres to the position of the European Patent Convention that patent protection is generally unavailable and protection by national copyright law is preferred. Braubach, *Computer Software—International Protection*, 2 EUR. INTELL. PROP. REV. 225, 226 (1980).

16. Braubach, *supra* note 15, at 226. A recent study done by the United States National Commission on New Technological Uses of Copyrighted Works indicates that 78% of the software firms rely upon trade secret protection, 15% to 17% use copyright protection, and 5% are applying for patents. *Id.*

17. *See generally* Carr, *Software Protection in the United Kingdom—Competing Policy Consideration*, 4 EUR. INTELL. PROP. REV. 181, 182 (1982).

18. *Id.*

19. Software differs from other types of works that qualify for copyright protection because it is usually unpublished or secret while other more traditional forms of copyright property are usually well-known. This makes ownership more difficult to establish. Also, the period of protection (e.g., 50 years in some countries) is unrealistically long for this type of property. Rumbelow, *Software Protection in the United Kingdom*, 10 INT'L BUS. LAW. 263, 264 (1982).

veal that the United Kingdom statute differs structurally from the statutes of West Germany and Italy in that the United Kingdom statute adheres to the historical and traditional concept of property rights.[20] The United Kingdom statute focuses upon what was once considered the most important aspect of copyright, the prohibition of copying.[21] In contrast, West Germany and Italy use the concept of "author's rights," thereby avoiding any reference to the concept of property.[22] Nevertheless, all three countries agree upon the legal nature of copyright as being an absolute right.[23] Finally, this Comment will demonstrate that the economic climate of the European Community fosters the need for software protection. This need for protection, however, must be balanced against the need to promote future development of programs.

II. INTERNATIONAL CONVENTIONS

There is no international copyright law per se. Protection against unauthorized use within a particular country depends upon the laws of that country. Most countries, however, now extend copyright protection to works of foreign nationals or to works first published in other countries in compliance with international conventions on copyrights.[24] The earliest effort to create a uniform level of copyright protection was the Berne Convention.[25] As of January 1, 1982, seventy-three nations, including the United Kingdom, West Germany and Italy, have participated in the Berne Convention.[26]

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20. A. DIETZ, *supra* note 11, at 55-57.

21. *Id.*

22. *See id.* at 18.

23. An absolute right is a complete or pure right, solely owned by that person.

24. Buck, *Copyright, Harmonization and Revision: 'International Conventions on Copyright Law,'* 9 INT'L BUS. LAW. 475 (1981).

25. Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1886, *reprinted in* WIPO, *Diplomatic Conference for the Revision of the Berne Convention*, 7 COPYRIGHT 135 (1971) [hereinafter cited as Berne Convention]. The Berne Convention was revised in 1896 at Paris, in 1908 at Berlin, in 1928 at Rome, in 1948 at Brussels, in 1967 at Stockholm, and in 1971 at Paris. *Id.* at 135. Neither the United States nor the Soviet Union are participants to this convention. *Id.*

26. *See* Ulmer, *The Revisions of the Copyright Conventions*, 2 INT'L REV. INDUS. PROP. & COPYRIGHT L. 345, 346 (1971). Members of the Berne Convention include: Argentina, Australia, The Bahamas, Belgium, Benin, Brazil, Bulgaria, Cameroon, Canada, Central African Republic, Chad, Chile, Congo, Costa Rica, Cyprus, Czechoslovakia, Denmark, Egypt, Fiji, Finland, France, Gabon, Federal Republic of Germany, German Democratic Republic, Greece, Guinea, Holy See, Hungary, Iceland, India, Ireland, Israel, Italy, Ivory Coast, Japan, Lebanon, Libya, Liechtenstein, Luxembourg, Madagascar, Mali, Malta, Mauritania, Mexico, Monaco, Morocco, the Netherlands, New Zealand, Niger, Norway, Pakistan, Philippines, Po-

After the Second World War, another attempt was made to create a uniform level of protection under copyright law. The result was the Universal Copyright Convention (Universal Convention).[27] Since all three countries discussed in this Comment are signatories to both conventions,[28] there exists a common basis for copyright protection among them.

Two main principles were established by the Berne and Universal Conventions. First, each participating country must give the same level of protection to the nationals[29] of other signatory nations as it gives to its own nationals.[30] Second, a minimum level of protection is mandated for any work published in a member country.[31] Rights for authors, composers, artists and film makers are covered by the Berne and Universal Copyright Conventions.[32] No protection is afforded, however, to makers of sound recordings, performers or broadcasting organizations.[33]

Although the statutory provisions of each of the three countries examined in this Comment comport with the most recent revision of the Universal Convention, the United Kingdom does not comply with all of the provisions of the Berne Convention.[34] Unlike the Universal Convention, the Berne Convention protects "moral rights" in its Article VI *bis*.[35] These rights are not expressly protected under the United

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land, Portugal, Romania, Senegal, South Africa, Spain, Sri Lanka, Suriname, Sweden, Switzerland, Thailand, Togo, Tunisia, Turkey, United Kingdom, Upper Volta, Uruguay, Yugoslavia, Zaire, and Zimbabwe. *Berne Union*, 18 COPYRIGHT 10 (1982).

27. Universal Copyright Convention of Geneva, Sept. 6, 1952, 6 U.S.T. 2731, T.I.A.S. No. 3324, *as revised* in Paris, July 24, 1971, 25 U.S.T. 1341, T.I.A.S. No. 7868, *reprinted in* UNESCO, COPYRIGHT LAWS AND TREATIES OF THE WORLD (1952) (this collection is not separately paginated) [hereinafter cited as Universal Convention].

28. The Universal Convention was adopted in the United Kingdom on June 27, 1957. 10 UNESCO COPYRIGHT BULL. 204. West Germany and Italy adopted the Convention on September 16, 1955, and January 24, 1957, respectively. *Id.* at 203. These three countries are also members of the Rome Convention for the Protection of Producers of Phonograms and Broadcasting Organizations. *Id.*

29. Presumably, a "national" may refer to a legal entity as well as a physical person, depending upon the definition used by the individual country. *Cf.* Buck, *supra* note 24, at 475 ("the form and extent of copyright in each country is determined by the law of that country").

30. *Id.*

31. *Id.*

32. *Id.*

33. These rights are protected by the Rome Convention of 1961. *Id.* at 476.

34. *See generally* Marvin, *The Author's Status in the United Kingdom and France: Common Law and the Moral Right Doctrine*, 20 INT'L & COMP. L.Q. 675 (1971).

35. *See* Goldstein, *supra* note 10, at 48-49. Article VI *bis* of the latest version of the Berne Convention provides in part:

(1) Independently of the author's copyright and even after transfer of the said copy-

Kingdom's copyright law. Arguably, however, section 43 of the United Kingdom Copyright Act of 1956, which prohibits false attribution of authorship and the alteration of artistic works, functionally complies with Article VI of the Berne Convention.[36] The United Kingdom maintains that moral rights are protected by section 43 of the 1956 Act along with the common law of contracts, defamation and passing off.[37] Nevertheless, there is a gap between the law of the United Kingdom and the Berne Convention's minimum requirements, as will be discussed more fully below.[38]

The minimum standard of protection accorded by the Berne Convention is much higher than that prescribed by the Universal Convention.[39] Article I of the Universal Convention provides that each contracting state must provide "adequate and effective protection" for works regardless of where they were originally published.[40] In comparison, the Berne Convention "lays down proscribed rights in considerable detail," and distinguishes between the extent of protection provided in the country of origin and other member countries.[41] Domestic law controls the level of protection in the country of origin.[42] But, in other countries belonging to the Berne Convention, the author is protected by rights granted under the domestic laws as well

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right, the author shall have the right, during his lifetime, to claim authorship of the work and to object to any distortion, mutilation or other alteration thereof, or any other action in relation to the said work which would be prejudicial to his honor or reputation. . . .

Berne Convention, *supra* note 25, art. VI *bis* (1).

36. Report of the Commission to Consider the Law on Copyright and Designs 17 (Cmnd. 6732 H.M.S.O. Mar. 1977) (section 43 protects the author's economic rights, while the common law of defamation protects an author's moral rights) [hereinafter cited as the *Whitford Report*].

The *Whitford Report* was somewhat skeptical regarding whether existing law satisfactorily meets the obligations of even the earlier text of the Berne Convention. *Id.* at 19. The Government issued a report in response to the *Whitford Report* called the *Green Paper*. The *Green Paper* states that "the occasion of a new Copyright Act presents a good opportunity to clarify the position and to bring all the provisions necessary to meet the Paris Act (latest version of the Berne Convention) together in a single statute." Reform of the Law Relating to Copyright, Designs and Performer's Protection, A Consultative Document 58 (Cmnd. 8302 H.M.S.O. July 1981) [hereinafter cited as the *Green Paper*].

The right against passing off is confined to commercial contexts, and the defamation right deals with the author. The moral right to integrity, being a personal right, extends to 50 years after the death of the author. Goldstein, *supra* note 10, at 48.

37. *See* Buck, *supra* note 24, at 476.

38. *See infra* notes 104-15 and accompanying text.

39. Buck, *supra* note 24, at 475.

40. Universal Convention, *supra* note 27, arts. I-II.

41. Buck, *supra* note 24, at 476.

42. *Id.*

as rights granted by the Convention.[43]

The range of works protected by the Berne and Universal Copyright Conventions does not appear to exclude computer software. Article II of the Berne Convention defines "literary and artistic works" as including every production in the literary, scientific and artistic domain irrespective of the form or purpose of the expression.[44] Similarly, Article I of the Universal Convention protects "literary, scientific and artistic works."[45] Writings, ostensibly including computer software, fall within the purview of protected expressions as works of the human intellect, expressed in language, and fixed by means of conventional signs susceptible of being read.[46] The Universal Convention imposes no restrictions with respect to the purpose of the work, its use, or its form of expression.[47]

The Berne and Universal Copyright Conventions protect both published[48] and unpublished works. The Berne Convention protects unpublished works only if the authors are nationals of, or habitually reside in, one of its member countries.[49] This prerequisite is not applicable to published works if the first publication took place in one of the member countries or if the work was published concurrently in both a member and non-member country.[50] In contrast, the Universal Convention protects unpublished works only if they are created by a national of a member state.[51]

The Berne Convention grants protection free of any formalities.[52] Additionally, this protection is considered independent of the existence of protection in a country of origin where formalities are required, but where the author has failed to comply with them.[53] In

43. *Id. See* Kindermann, *supra* note 3, at 8, 10.

44. Berne Convention, *supra* note 25, art. II.

45. Universal Convention, *supra* note 27, art. I.

46. A. BOGSCH, THE LAW OF COPYRIGHT UNDER THE UNIVERSAL CONVENTION 8 (3d ed. 1968).

47. Universal Convention, *supra* note 27, art. I.

48. "Publication" in the Universal Convention "means the reproduction in tangible form and the general distribution to the public of copies of a work from which it can be read or otherwise visually perceived." *Id.* art. VI. A work is published within the meaning of the Berne Convention if, with the consent of the author, tangible copies of the work are made available to the extent necessary to meet the reasonable requirements of the public. Berne Convention, *supra* note 25, art. III.

49. Berne Convention, *supra* note 25, arts. III(1)(a), II & VIII.

50. *Id.*

51. Universal Convention, *supra* note 27, art. II(2).

52. Berne Convention, *supra* note 25, art. V(2).

53. *Id. See also* Kindermann, *supra* note 3, at 9.

contrast, the Universal Convention requires some minimal formalities (i.e., specific markings or symbols), which may be exceeded by the domestic law of the author's nation.[54] With respect to computer programs, this basically means that there is no obligation to register a software package or deposit a copy of it with an official institution.[55]

The scope of the "reproduction" right protected in Article IX(1) of the Berne Convention is extremely beneficial to the protection of computer software.[56] The author's privilege to authorize the reproduction of his work is valid for "any manner or form"[57] of reproduction. As applied to computer software, this provision is broad enough to include magnetic recording on disks, cassettes and tapes.[58] Additionally, there are no requirements concerning the life, use or readability of the reproduction. Thus, even works that are readable only with the aid of a device to transform the copy into a visual form would be protected.[59]

Likewise, the 1971 revision of the Universal Convention confers the "right to authorize reproduction by any means."[60] Reproduction within the meaning of Article IV *bis*[61] encompasses every conceivable process of reproduction and is identical to Article IX(1) of the Berne Convention discussed above.[62] This is consistent with the purpose of Article IV *bis*: protection of an author's economic interests.[63] The Universal Convention also provides for the exclusive right of the author to make,[64] publish,[65] and, with authorization, translate his

54. Universal Convention, *supra* note 27, art. III(1) & (2). The minimum formalities privilege applies only to works first published outside of a state requiring the observance of formalities where the author is not a national. The specified marking is to consist of three elements: the symbol ©, the name of the copyright proprietor, and the year the work was first published. All published works require this three-element marking with the authorization of the copyright owner. No marking is necessary for unpublished works. As a practical matter, only the United States requires formalities for copyright protection. None of the three countries discussed in this Comment require formalities. *See generally* Kindermann, *supra* note 3, at 6, 11.

55. Kindermann, *supra* note 3, at 9.

56. Article IX(1) provides: "Authors of literary and artistic works protected by this Convention shall have the exclusive right of authorizing the reproduction of these works, *in any manner or form*." Berne Convention, *supra* note 25, art. IX(1) (emphasis added).

57. *Id.*

58. Kindermann, *supra* note 3, at 9.

59. *Id.*

60. The 1952 text did not discuss economic interests such as reproduction rights. Universal Convention, *supra* note 27, art. IV *bis* (a) (1952 version).

61. *Id.*

62. Berne Convention, *supra* note 25, art. IX(1).

63. Kindermann, *supra* note 3, at 10.

64. To "make" means to make in order to publish. *Id.* at 11.

work.[66] Thus, computer generated translations such as compilations and assemblies of computer programs would be covered by this provision.[67] Seven years after the date of first publication, any national can obtain a nonexclusive license to translate and publish the work in the national language or languages.[68] Arguably, this provision does not apply to computer programs and is directed toward more traditional forms of literary works, because it refers to translations to a "language in general use."[69] Nevertheless, some parts of computer software, such as the accompanying manuals or other documentation, might be susceptible to this provision.

III. National Forms of Protection

A. United Kingdom

Copyright law in the United Kingdom is exclusively statutory.[70] There is no common law of copyright. The United Kingdom Copyright Act of 1956[71] protects "every original literary dramatic or musical work which is unpublished, and of which the author was a qualified person . . . ."[72] Published works are also protected if first publication took place in the United Kingdom.[73]

Computer programs were not specifically mentioned in the 1956 Act. A special legislative committee, however, concluded in the *Whitford Report*[74] that the term "literary works"[75] was broad enough

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

66. Universal Convention, *supra* note 27, art. V(1).

67. Kindermann, *supra* note 3, at 11.

68. Universal Convention, *supra* note 27, art. V(2)(a).

69. *Id.*

70. United Kingdom Copyright Act of 1956, enacted Nov. 5, 1956, *revised* Oct. 25, 1968, and Feb. 17, 1971. *Eliz. II Ch. 68*; of Feb. 17, 1971, *Eliz. II, 1971, Ch. 4; reprinted in* UNESCO, COPYRIGHT LAWS AND TREATIES OF THE WORLD (1952) (this collection is not separately paginated) [hereinafter cited as United Kingdom Copyright Act].

71. United Kingdom Copyright Act, *supra* note 70, § 2(1).

72. A "qualified person" is "a person who is a British subject or British protected person or a citizen of the Republic of Ireland or . . . is domiciled or resident in the United Kingdom or in another country to which that provision extends, and . . . a body incorporated under the laws of any part of the United Kingdom . . . ." *Id.* § 2(2)(a).

73. *Id.*

74. The *Whitford Report, supra* note 36, at 128. Reform of the present copyright law in the United Kingdom has been underway for a number of years. The *Whitford Report* was prepared by a special committee assigned to review protection of computer programs by existing laws. The Report was submitted to Parliament in 1977 and has been widely accepted in the United Kingdom. Ulmer & Kolle, *Copyright Protection of Computer Programs*, 14 INT'L REV. INDUS. PROP. & COPYRIGHT L. 159, 166 (1983).

75. Under the narrow definition of a "literary work," any written table or compilation

to encompass computer programs regardless of whether the program could be perceived directly or only with the aid of a machine or device.[76] Although the committee concluded that legislation specifically tailored to computer software was unnecessary,[77] it did recommend an amendment clarifying the extent of copyright protection under the Act.[78] Subsequently, in 1981, the British Government published a document entitled the *Green Paper*.[79] The *Green Paper* is consistent with the position taken by the *Whitford Report,* stating that copyright protection is appropriate for computer programs.[80] There are, however, no United Kingdom court decisions on the question of whether computer programs are in fact protected by copyright.[81]

To be protected under the Act, a computer program must possess sufficient originality to warrant copyright protection in the same manner as any other work capable of being copyrighted.[82] Originality in the context of copyright protection refers to the requirement that the idea must begin with the author, rather than referring to the qual-

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would be included. United Kingdom Copyright Act, *supra* note 70, § 48(1). The contrary view is that "literary work" includes any form of notation. *See* Rumbelow, *supra* note 19, at 264.

76. *Whitford Report, supra* note 36, at 128.

77. *Id.*

78. *Id.* at 133.

79. *Green Paper, supra* note 36. The *Green Paper* adopted most of the provisions contained in the *Whitford Report*, particularly the recognition that computer programs were protected by copyright law. *Id.* at 33. The *Green Paper* also noted that the copyright law should be clarified with respect to computer programs. "[T]o remove any uncertainty that may exist it is proposed to make explicit in new legislation that computer programs attract protection under the same conditions as literary works . . . ." *Id. Cf.* Carr, *supra* note 17, at 181 (existing law provides adequate and effective protection).

80. *Green Paper, supra* note 36, at 33. The Government states in this Paper that copyright protection should extend to works fixed in any form from which they can be reproduced. *Id.*

United Kingdom courts have provided procedural remedies. For example, "Anton Pillar" orders have been granted to copyright owners in civil proceedings. These are orders granted to a plaintiff without the knowledge of the defendant, empowering the plaintiff to enter the defendant's premises to inspect and remove articles that contain evidence of copyright infringement. Plaintiffs visit the defendant unannounced, giving the defendant no opportunity to destroy incriminating evidence. Tarnofsky, *Reform of United Kingdom Copyright*, 18 COPYRIGHT 367, 371 (1982). *See generally* Saga Enter., Ltd. v. Alca Elecs., (1982) F.S.R. 57 (Ch. D.) (Anton Pillar orders granted for an alleged infringement of copyright in computer programs).

81. N. BOORSTYN, COPYRIGHT LAW 23 (1981).

82. *See* LORD HAILSHAM, 9 HALSBURY'S LAWS OF ENGLAND ¶¶ 801, 831, at 501, 529 (4th ed. 1974).

ity of the work.[83] The Act does not protect ideas or opinions, only the form in which they are expressed.[84] Therefore, two programmers are free to independently develop identical programs and each would be entitled to a separate copyright. This is a basic concept of the copyright laws of all three countries discussed in this Comment.

The author's exploitation rights under the United Kingdom Copyright Act, i.e., the right to reproduce, publish and adapt,[85] are not as comprehensive as those under the laws of West Germany and Italy.[86] Nevertheless, the author has exclusive control over reproduction of the work in any material form.[87] Any adaptation or translation of the work is restricted.[88] This would include translating a computer program into other higher level languages or into machine language.[89] Merely loading a program into a computer would be considered a violation of the author's reproduction rights.[90] Computer

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83. *See* Donoghue v. Allied Newspapers, Ltd., 1938 Ch. 106, [1937] 3 All E.R. 503. In *Donoghue*, the court stated:

> [T]here is no copyright in an idea or in ideas. A person may have a brilliant idea for a story, or for a picture, or for a play, and one which appears so far as he is concerned, to be original, but, if he communicates that idea to a playwright or an artist, the production which is the result of the communication of the idea to the author or the artist or the playwright is the copyright of the person who has clothed the idea in a form . . . .

[1937] 3 All E.R. at 507.

84. United Kingdom Copyright Act, *supra* note 70, § 2(5)-(6).

85. *Id.* § 2(5)(a) & (f).

86. For example, legal definitions of exploitation rights may differ between the three countries discussed in this Comment. *Cf.* United Kingdom Copyright Act, *supra* note 70, § 2(5); Gesetz uber Urheberrechte und Verwandte Schutzrechte, *Urheberrechtsgesetz* (West German Copyright Statute), § 15, Sept. 9, 1965, *published in* 1965 BGB 1.I 1273, *reprinted in* UNESCO, COPYRIGHT LAWS AND TREATIES OF THE WORLD (1952) (this collection is not separately paginated) [hereinafter cited as West German Copyright Statute]; and Italian Copyright Law, § 12, civil code, confirmed by Royal Decree No. 262, of 16 Mar. 1942, Book V, *reprinted in* UNESCO, COPYRIGHT LAWS AND TREATIES OF THE WORLD (1952) [hereinafter cited as Italian Copyright Law].

Reproduction rights are also granted by all three countries, but with limitations on the author's rights. *See infra* notes 83, 84, 164-67, 219-22 and accompanying text.

87. United Kingdom Copyright Act, *supra* note 70, § 2(5)(g).

88. *See generally* A. DIETZ, *supra* note 11, at 35-36 (translations include the translation of a work from one computer language into another).

89. *See id.* Higher level languages more closely resemble human language. Common higher level languages include FORTRAN, COBOL and BASIC. *See* D. CASSEL, INTRODUCTION TO COMPUTERS AND INFORMATION PROCESSING 265, 300 (1980). Machine language is a translation of the higher level language into binary digits, a form readable by the computer. *Id.* at 443.

90. When a computer program is loaded, it is translated from a human-readable to a machine-readable language. Unauthorized loading infringes upon the author's reproduction and translation rights. Carr, *supra* note 17, at 182.

A majority of the Whitford Committee recommended that the unauthorized use of a com-

input is a form adapted from the original program. As long as that form could be read with a device, a copy has been made in violation of the Act.[91] Thus, the owner's control would extend to any initial use of the program.

After the initial loading, the author's reproduction rights may extend to any subsequent use of his work. An invisible copy now exists within the computer which may be stored on a tape, disk or surface of a silicon chip. These are reproductions derived from the original and are still within the author's exclusive control.[92] Whether such a magnetically stored program is entitled to copyright protection depends upon whether an internal copy falls within the definition of a "literary work."[93] Under the broader definition of a "literary work," an original program written in some form of notation would be protected.[94] Protection should extend to such works if they are fixed in any form in which they can be reproduced.[95] If using the stored program involves reproduction, then the copyright has been infringed. In some modern computers, however, stored programs are part of the hardware,[96] fixed permanently within the computer.[97] It follows then that running a fixed program should not be considered a copyright violation because reproduction is not necessary in order to use the program.

Displaying a stored program on a visual display unit or printing it out as a tangible copy would also be an infringement.[98] In order to display the output, one must extract the stored program. According to the *Green Paper*, copyright protection extends to works stored in a computer database irrespective of their form.[99] Thus, if the copyright owner has control over the storage, arguably he must also have con-

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puter program should be an infringement of copyright, whereas the *Green Paper* preferred a "loading restriction." *Whitford Report*, *supra* note 36, at 129-30, 133; *Green Paper*, *supra* note 36, at 33.

91. "[P]rotection should extend to such works when they are fixed in any form from which they can be reproduced." *Green Paper*, *supra* note 36, at 127.

92. Tarnofsky, *supra* note 80, at 370.

93. *See* United Kingdom Copyright Act, *supra* note 70, Part II, §§ 12-16.

94. *Id.*

95. *Green Paper*, *supra* note 36, at 127.

96. The hardware refers to the central processing unit itself and all of the peripheral equipment such as disk drives and printers. *See, e.g.*, Comment, *supra* note 1, at 180 n.1.

97. Programs fixed permanently within the computer memory are known as firmware. Firmware programs reside permanently in read-only-memory. *See Software Protection in the UK*, 5 EUR. INTELL. PROP. REV. 55 (1983).

98. *See* United Kingdom Copyright Act, *supra* note 70, §§ 18 & 48(1).

99. *Green Paper*, *supra* note 36, at 33.

trol over the output.[100] By analogy then, displaying a program on a screen should not be an infringing act. Opening and silently reading a book has never been regarded as a copyright violation.[101] The analogy is, however, imperfect due to the peculiarities of electronic data processing.[102] In order to display a program on a screen, it may have to be run. Running a stored program produces a copy in the main memory (which is a reproduction), thus violating the author's copyright.[103]

Under United Kingdom law, output in the form of tables or compilations fall within the definition of a "literary work."[104] Even though such an output is not tangible, it is a written form appearing on the screen. Moreover, the output is a derivation of the original program translated into a different form. Since translations are restricted acts requiring consent,[105] this too is a copyright infringement.

Artistic works protected by copyright include drawings.[106] A drawing includes any diagram, map, chart or plan.[107] Flowchart diagrams should be "drawings" qualified for protection. This is essential to the programmer because the ideas expressed in the finished program begin with a flowchart. Therefore, copyright protection should commence at the first stage of the programming process.

United Kingdom copyright law focuses on protecting the author's right to enjoy the financial benefits of his work. The author has no moral rights[108] in the United Kingdom.[109] According to the *Green Paper*, the "[e]ssential need is for the protection against copying . . . ."[110] Unauthorized copying deprives the author of his right to

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100. *See generally* Carr, *supra* note 17, at 183.

101. *See* Rumbelow, *supra* note 19, at 263-64.

102. *See supra* note 90.

103. *See id.*

104. United Kingdom Copyright Act, *supra* note 70, § 48(1).

105. *Id.* § 17(2).

106. *Id.* § 3(1)(a).

107. *Id.* § 48(1).

108. European copyright theory, according to Professor Dietz, classifies moral rights into the following four categories:

(1) the right of publication;
(2) the right of recall because of a change of opinion;
(3) the right to claim authorship; and
(4) the right to integrity of the work.

See A. DIETZ, *supra* note 11, at 68-73; *See generally* Marvin, *supra* note 34, at 675.

109. *Green Paper*, *supra* note 36, at 33. *See also* Ulmer & Kolle, *supra* note 74, at 167 (citing a provision from the *Green Paper*).

110. West German Copyright Statute, *supra* note 86, § IV, art. 12(1)-(2); Italian Copyright Law, *supra* note 86, art. 20.

economically exploit his efforts. In contrast, West Germany and Italy ensure protection for the author's personal rights.[111] Moreover, the United Kingdom is a signatory to the Berne Convention, which expressly recognizes moral rights.[112] This creates an ambiguity regarding the status of the moral rights doctrine in the United Kingdom.

The *Green Paper* proposed to clarify the law regarding moral rights.[113] First, the author was given the right to claim authorship of the work. The prohibition against passing off a work was retained.[114] Second, to protect the right of integrity, changes in any work cannot be made without the author's consent, although there is an exception for changes to which the author could not in good faith withhold consent. Finally, only the author or, after his death, his personal representative can exercise these rights.[115] Even if existing law is not amended, some provisions of the 1956 Act could effectively approximate rights labeled as moral rights elsewhere.[116] For example, section 43 of the Copyright Act partially accredits the right of integrity by prohibiting false attributions of authorship.[117] The author's exclusive right to adapt[118] seemingly covers the right of integrity by prohibiting any distortion of the author's expression.[119] Adaptation rights, however, attach to the work, not to the author. Moreover, the continental moral right against distortion is a somewhat broader concept than adaptation rights.[120]

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111. Under Article VI *bis* of the Berne Convention, the United Kingdom is under an obligation to protect the author's moral rights in a case where international copyright protection is sought. Article VI *bis*, paragraph 3, however, allows the United Kingdom to protect moral rights by means other than copyright laws, such as the common law right against libel. *See* A. DIETZ, *supra* note 11, at 68.

112. *See* Tarnofsky, *supra* note 80, at 371-72.

113. The passing off doctrine prohibits passing off a work of a particular author by substituting his name for another's work in such a way as to imply that he is the author. *Id.* at 371. The right against passing off is confined to commercial contexts. *See* Goldstein, *supra* note 10, at 48.

114. Goldstein, *supra* note 10, at 48-49.

115. *Id.*

116. This section does not directly relate to protection against alterations. It is intended to indirectly protect the author's reputation. *See* A. DIETZ, *supra* note 11, at 76.

117. United Kingdom Copyright Act, *supra* note 70, § 43.

118. Goldstein, *supra* note 10, at 48.

119. *Id.*

120. *See generally* Comment, *International Copyright Law Applied to Computer Programs in the United States and France*, 14 LOY. U. CHI. L.J. 105, 119-21 (1982) (discussing the scope and various subcategories of the moral rights doctrine and its broad applicability to computer programs under French Law, in contrast to its general inapplicability to computer programs under United States law) [hereinafter cited as *Int'l Copyright Law*].

Moral rights apply to computer programs.[121] They should not be overlooked as a means of protecting the author's proprietary rights in his work. The right to claim authorship (paternity rights),[122] protects the creativity interjected into a computer program (i.e., the particular sequence of instructions). A programmer is protected when a pirate forges another program that looks like the original.[123] If a pirate modifies the program by adding features or changing the structure of the program, this might also violate the author's paternity rights.[124] Piracy, however, is different from independently developing a functionally similar or identical program.[125] In sum, the right of authorship acts as an alternative to the economic right of reproduction and adaptation.[126]

The right of disclosure gives the author the power to control the distribution of his work, although it does not prevent the dissemination of his ideas.[127] Allowing the author to restrict the use of his work to privileged users should increase the value of the program.

The right of integrity protects the software developer from any distortions, mutilations or other alterations in his work. Contractual agreements between the author and user may modify this right. If the user is responsible for software maintenance, permission to make alterations when necessary should be granted under the contract. The author should not be able to unreasonably withhold consent if the contract is silent on the issue.[128]

Finally, the right of withdrawal permits an author to withdraw a work that has already been made public. With respect to computer programs, this may work as a hardship to the end user who may have incurred considerable cost in adapting the program to the particular needs of his business. This right can only be granted if the user is compensated for his loss.[129]

As a general rule, the copyright belongs to the natural person or persons who created the work. The United Kingdom follows this premise in that the author of the computer program will be entitled to

121. The right to recognition of authorship goes to the core of the moral rights doctrine. It protects the author's relationship to his work. A. DIETZ, *supra* note 11, at 73.

122. *See Int'l Copyright Law*, *supra* note 120, at 119-20 & n.82.

123. *Id.*

124. *Id.* at 119-20.

125. *See supra* note 80 and accompanying text.

126. *Int'l Copyright Law*, *supra* note 120, at 120.

127. *See* LORD HAILSHAM, *supra* note 82, ¶¶ 801, 831, at 509, 529 (4th ed. 1974).

128. A. DIETZ, *supra* note 11, at 76.

129. *Id.* at 76-77.

the rights granted under the copyright law.[130] The Act departs from this principle, however, with respect to works created for hire.[131] Computer programs created by an employee author belong to the employer software firm.[132] For newspapers and periodicals, for example, the employer owns only the publication and reproduction rights.[133] All other rights belong to the author.[134]

Programs created by the combined efforts of programmers and analysts where individual contributions are inseparable are called "works of joint authorship."[135] Neither the Act nor the *Green Paper* addresses the interesting problem of joint authorship with the aid of a computer.[136]

There are no formal requirements under the Act for copyright protection.[137] Protection begins at the moment of fixation (creation) of the work.[138] There is no registration requirement.[139] The term of copyright protection spans the life of the author plus fifty years.[140] Perpetual copyright protection exists for unpublished works.[141]

Perhaps the most beneficial aspect of United Kingdom copyright law for computer program protection is the breadth of the statute itself, particularly Part 1. All types of programs are potentially protected.[142] On the other hand, however, the most detrimental aspect of United Kingdom copyright law is the uncertain state of the author's moral rights. The statutory sections supposedly approximating these

130. United Kingdom Copyright Act, *supra* note 70, § 4(1).

131. *Id.* § 4(2)-(4).

132. The *Whitford Report* suggests that when a work is made by an employee, copyright vests in the employer for the purposes of his business but the employee should have control over the use of his work for other purposes. *Whitford Report*, *supra* note 36, at 141-42. For works created on a commission basis, the commission payor should own the work for the purposes of the commission, but the author retains control for all other purposes. *Id.* at 139.

133. United Kingdom Copyright Act, *supra* note 70, § 4(2).

134. *Id.*

135. *Id.* § 11(3).

136. It has been suggested that there should be joint authorship between the person who derived the program and the person who originated the data on which the program was worked. Another possibility is to treat the computer as a tool only. Thus, the author of the work would be the person running the data through the programmed computer. Tarnofsky, *supra* note 80, at 370.

137. *See* United Kingdom Copyright Act, *supra* note 70, §§ 1-16.

138. *Id.* §§ 2(1) & 3(4).

139. *See id.* § 20.

140. *Id.* §§ 2(3) & 3(4).

141. *See id.*

142. Thus, the Act would equally protect both operating systems and application programs.

rights seem to fall short because they protect the work and not the author. Thus, they are not personal in nature in the same way as moral rights.

B. West Germany

Article 1 of the West German Copyright Statute provides that "authors of literary, scientific and artistic works" are entitled to copyright protection.[143] "Works" within the meaning of the West German statute are limited to personal intellectual creations.[144] Computer programs would enjoy copyright protection as literary or scientific works only if they represent a personal intellectual creation. Thus, use of the word "creation" implies that a work capable of being copyrighted must possess an aesthetic quality. Nowhere in the Statute, however, is there a requirement that a work be aesthetically pleasing.[145]

Although the Statute does not explicitly include computer programs,[146] recent court decisions have dealt with the applicability of copyright to computer programs. While these court rulings have suggested that copyright protection is available for computer programs, the question of whether copyrightable works must contain an aesthetic quality has caused a split among the courts.[147]

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143. West German Copyright Statute, *supra* note 86, art. 1.

144. *Id.* art. 2(2).

145. Ulmer & Kolle, *supra* note 74, at 169, 173-80.

146. The Federal Republic of Germany published comments made by the German Association for Industrial Property & Copyright Law regarding the WIPO Model Provisions on the Protection of Computer Software. This committee did not recommend special legislation for the protection of computer programs. Furthermore, it was of the opinion that existing law adequately provided for computer programs. *Id.* at 167-68.

147. The West German Copyright Statute does not define "personal intellectual creations." Courts attempting to do so have arrived at conflicting conclusions.

On May 21, 1981, the Kassel District Court held that programs used in the field of building statistics enjoy copyright protection. The first published decision by a West German court on the question of copyright protection for computer programs, however, appeared on June 12, 1981. The Mannheim District Court held that computer programs are, as a general rule, ineligible for copyright protection because the programs lack intellectual-aesthetic substance.

In contrast, on July 13, 1981, the Mosbach District Court held that to the extent computer programs represent personal intellectual creations, they are eligible for copyright protection without demonstrating any aesthetic quality. Similarily, on December 21, 1982, the division of the Munich District Court which specializes in intellectual property matters concluded that computer programs are to be regarded as literary works and represent a scientific nature and thus are eligible for copyright protection. In addressing the question of whether programs are personal intellectual creations, the court reasoned that the creativity of a program can be found in the selection of instructions, information and format. The court concluded that computer programs are therefore creative expressions. *Id.* at 168-69.

Under the Statute, computer programs may be protected as either literary or scientific works.[148] Article 2 provides for a non-exclusive list of protected works. In particular, item 7 of Article 2 grants copyright protection to "illustrations of a scientific or technical nature, such as drawings, plans, maps, sketches, tables and plastic representations."[149] This provision alone is broad enough to encompass all individual expressions of a computer program, from problem analysis to the machine-readable object code. Irrespective of whether programs fall into the category of literary or scientific works, they must reflect "intellectual effort."[150] Logically, computer programs would satisfy this requirement. The degree of intellectual effort required to create a program is considerably more than most other forms of copyrightable works.[151] Programming requires high analytical-conceptual abilities, skill, and a wealth of ideas for problem-solving.[152]

In addition, the work must be a *personal* intellectual creation.[153] In other words, the work must reflect the author's personal touch.[154] Current programming techniques allow sufficient room for individual decisions and solutions to satisfy this requirement. The programmer can fulfill the individuality requirement through the arrangement of the program's content[155] or structure.[156] Copyright only requires individual expression and effort. Thus, simple routing programs, typically used in a beginning programming course, might not qualify for

148. *Id.* at 174.

149. West German Copyright Statute, *supra* note 86, art. 2(1). This provision implies that a work susceptible of copyright protection need not involve aesthetic features. *See* Ulmer & Kolle, *supra* note 74, at 171-72.

150. West German Copyright Statute, *supra* note 86, art. 2(2).

151. The VIIIth Civil Senate of the Federal Supreme Court has conceded that computer programs are an intellectual achievement. In addition, German case law suggests that the level of intellectual effort required for copyright protection is low. Even a moderate level of intellectual activity has been sufficient. Heuwinkel v. Remy & Hass, Case no. 1 ZR/d 106/78 (Nov. 21, 1980) (decision of the Federal Supreme Court), *reprinted in* 14 INT'L REV. OF INDUS. PROP. & COPYRIGHT L. (WEST GERMANY) 136, 137 (1983) (state examination thesis).

152. Ulmer & Kolle, *supra* note 74, at 175-76.

153. West German Copyright Statute, *supra* note 86, § I, art. 2(2).

154. Ulmer & Kolle, *supra* note 74, at 176.

155. There is an opportunity to express individuality by the way input and output items are selected. Algorithms can be manipulated and modified as the author sees fit in order to solve problems. Even the choice of what computer language to use involves creativity. *Id.* at 177.

156. The selection and arrangement of program instructions is a creative decision. The programmer can use individual or groups of instruction. Sections of the program can be linked together by using subroutines. *Id.* at 177-78.

copyright protection. For example, most programmers would use a similar set of instructions for a program that adds two numbers. The room for individuality is limited because of the simplicity of the program. Nevertheless, most programs worth copyrighting are sufficiently complex to allow ample room for individual design regarding form and substance.[157]

In West Germany, another requirement for copyright protection is that the work be perceptible by others.[158] The work must exist outside of the author's mind. All computer programs, including the products of the preliminary stages, are capable of being perceived by a skilled programmer.[159] With the proper equipment, even programs carried in discrete forms on magnetic tape, disk or as part of internal computer storage may be perceived.

Additionally, under the West German Copyright Statute, copyright in computer programs would extend to adaptations such as translations and other derivative works.[160] Thus, a computer program being translated into or from another higher level language would be protected in both its new and original form. In contrast, the United Kingdom has no express regulation with regard to adaptation rights.[161] The West German Copyright Statute also restricts the exploitation of derivative works absent the author's consent.[162] The mere creation of a derivative work is prohibited, not just the dissemination or exploitation. Creation of a derivative work by a third party

157. *See id.* at 175 (programs that perform routine work may not possess sufficient intellectual effort to qualify for copyright protection).

158. *Id.* at 182.

159. *Id.* at 183.

160. West German Copyright Statute, *supra* note 86, art. 3.

161. But, according to United Kingdom jurisprudence and legal practice, adaptations are also protected in order to protect the rights of the original author. A. DIETZ, *supra* note 11, at 36. The United Kingdom, however, is also a party to the Berne Convention. Article II, paragraph 3, states: "Translations, adaptations, arrangements of music and other alterations of a literary or artistic work shall be protected as original works without prejudice to the copyright in the original work." As a party to the Berne Convention, the United Kingdom is bound to protect adaptations. Berne Convention, *supra* note 25, art. II(3).

Both the United Kingdom and West Germany are members of the Convention for the Protection of Producers of Phonograms Against Unauthorized Duplication of Their Programs, Oct. 29, 1971, 10 UNESCO COPYRIGHT BULL. 203.

West German copyright law emphasizes the author's interest in his work, both personal and intellectual. *See* West German Copyright Statute, *supra* note 86, § IV, art. 11. In fact, the copyright law is designated "Urheberrecht," which literally means "author's right." The United Kingdom, on the other hand, focuses on the right to make copies. *See* Goldstein, *supra* note 10, at 54-58.

162. West German Copyright Statute, *supra* note 86, § IV, art. 23.

is considered to be enough of a threat to the author's economic interests to be a violation of the copyright.[163]

As in the United Kingdom, the author in West Germany has the exclusive right to exploit his work in any form.[164] More specifically, he has the right to reproduce, distribute and exhibit his work.[165] Moreover, the author's reproduction rights are much more detailed in West Germany than they are in the United Kingdom.[166] The right of reproduction is the right to make copies of the work irrespective of the method and number.[167] Reproduction rights are critical for protecting proprietary rights in computer software. Each reproduced copy, however, must be capable of perception directly or with the aid of a device. Temporary copies would also be protected as reproductions, provided they meet the perceptibility requirement.[168]

When information is loaded into a computer, an internal copy is created. Programs loaded into a computer would therefore be a violation of the author's reproduction rights, if loaded without consent.[169] After loading, a magnetically stored program exists within the computer, fixed on a data carrier. As long as this storage medium is in a form which allows for its contents to be perceived, it is protected.[170]

Information stored within a computer can be displayed on a screen or printed in a tangible form. The question of whether the copyright owner of a stored program should have control over the output displayed on a visual screen is also addressed by the West German Copyright Statute. Article 16(2) provides that the transfer of a work onto image or sound carriers constitutes a reproduction.[171] Displaying the program on a screen without consent would violate the

163. *Cf.* Goldstein, *supra* note 10, at 55-56. The second sentence of Article 23 provides: "[T]he creation of such adaptation or transformation shall require the author's consent." West German Copyright Statute, *supra* note 86, § IV, art. 23.

164. West German Copyright Statute, *supra* note 86, § IV, art. 15(1).

165. *Id.*

166. Article 11 of the West German Copyright Statute grants to the author the exclusive right to financially enjoy the work. This provision is supported by Article 15, which contains the general rule that the author has the exclusive right to enjoy his work. The United Kingdom statute does not have a provision comparable to Article 11 of the West German statute. It must be implied from the general rule that only the author possesses the exploitation rights. Moreover, neither the Stockholm nor the Paris version of the Berne Convention contains a similar provision. A. DIETZ, *supra* note 11, at 82-83.

167. Ulmer & Kolle, *supra* note 74, at 184-85.

168. *Id.*

169. *Id.* at 185.

170. *Cf.* West German Copyright Statute, *supra* note 86, § IV, art. 16(2).

171. *Id.*

author's reproduction rights.[172] Transmitting the program from one storage medium to another (e.g., from punched card or tape to a disk) would be considered a reproduced copy since it is in a form capable of being perceived.[173]

The right of distribution is the right to offer the program, or copies of it, to the public or to put it into circulation.[174] The copyright owner is protected against infringements when copies of the program are offered to the public. As long as the copy has not been sold by the owner or otherwise disposed of, the right of distribution is not exhausted.[175] Computer programs are usually not "sold" in a literal sense. The owner grants the right to use the intellectual property embodied in the program.[176] Granting an exclusive or nonexclusive right to use the program does not exhaust the right to distribute.[177]

The West German copyright system also protects programs developed by a team for joint use and joint exploitation.[178] They are considered works of joint authorship because individual shares cannot be exploited separately.[179] Moreover, unlike the United Kingdom, West Germany regulates the relationship between joint authors (i.e., the manner in which joint authors of a program commercially exploit it).[180] In the case of employed programmers, the employees usually grant the exclusive right to exploit the program to the employer.[181] In the absence of an agreement, the employer's purpose in hiring a programmer usually implies that such rights will be granted to the employer.[182] There is also the problem of joint authorship with the aid of a computer. For example, computer art is created with the use of a computer. Arguably, though, the computer is only a tool con-

172. Ulmer & Kolle, *supra* note 74, at 185.

173. West German Copyright Statute, *supra* note 86, § IV, art. 15(1).

174. *Id.* art. 17(1). This provision permits redistribution of the original work or copies thereof, if the work has been offered to the public with the consent of the owner, for sale or disposal. Ulmer & Kolle, *supra* note 74, at 186.

175. West German Copyright Statute, *supra* note 86, art. 17(a).

176. *Cf. id.* art. 37(1).

177. *Id.* art. 15(1).

178. *Id.* art. 8.

179. It does not relate to physical separability. A. DIETZ, *supra* note 11, at 45.

180. All co-authors are jointly entitled to exploit a work, and if a co-author denies consent to exploit, it must be in good faith. West German Copyright Statute, *supra* note 86, art. 8(2).

181. *Id.* art. 43.

182. *Id.* For works by employees, however, the employee-author retains his moral rights. His moral rights do not include the right to be named as the author. The right to be named as the author will depend upon contractual relations and business practices. Ulmer & Kolle, *supra* note 74, at 187-88.

trolled by the programmer.[183]

Unlike the United Kingdom's statute, West Germany's statute contains a well-defined system of moral rights.[184] This includes the right of publication,[185] the right of paternity,[186] the right to prohibit any distortions,[187] the right of withdrawal,[188] and the right of access to the work after its sale.[189] The author's moral rights are inalienable[190] and terminate seventy years after his death.[191] Good business practice should provide for these rights because they do promote software protection. For example, the right against a work's distortion protects the author against false claims of authorship and the passing off of forgeries which resemble the original.[192]

Finally, there are no formalities for copyright protection in West Germany.[193] The author is not required to report or register his work with a state administrative body. Protection begins at the time of creation, which is unlike the United Kingdom where protection begins at the time of fixation (when capable of being perceived).[194]

C. Italy

The Italian copyright statute[195] is more detailed and elaborate than that of the United Kingdom or West Germany. In general, copyright protection is granted to intellectual works.[196] But, not all intellectual activities are protected, only those which rise to the level of a "work."[197] The "work" includes the design, sketch, or study, if

183. Joint authorship with a computer is not a problem when the work is completely determined by the instructions of a program. *See also supra* note 136 and accompanying text.

184. West German Copyright Statute, *supra* note 86, arts. 11, 12(1) & (2). Article 11 emphasizes the dual structure of copyright by providing that copyright protects the author's intellectual and personal interests in his work. *See generally* A. DIETZ, *supra* note 11, at 66-69.

185. West German Copyright Statute, *supra* note 86, art. 12.

186. *Id.* art. 13.

187. *Id.* art. 14.

188. *Id.* art. 42.

189. *Id.* art. 25.

190. *Id.* art. 29. *But see* Goldstein, *supra* note 10, at 51 (statutory language indicates that to a degree, moral rights are alienable. For example, under Article 39(1), the author can transfer part of his right to integrity to a licensee).

191. West German Copyright Statute, *supra* note 86, art. 64.

192. *Id.* art. 14.

193. *See generally id.*

194. United Kingdom Copyright Act, *supra* note 70, § 49(4).

195. Italian Copyright Law, *supra* note 86.

196. *Id.* art. 1.

197. *See* A. DIETZ, *supra* note 11, at 33.

they express more than one idea.[198] On this point, flowcharts would be protected as works because they are graphical representations of the programmer's ideas in an expressed form. Moreover, Article 1 requires that the work be of a creative nature.[199] Comparing this with the two previous statutes, the United Kingdom protects only "original works,"[200] while West Germany protects only "personal intellectual creations."[201] Similarly to the West German statute, Article 1 contains a detailed listing of works protected within the copyright field.[202] No legal differences should be deduced from this list, however, because they are only intended as examples.[203] Again, as with the United Kingdom and West German statutes, computer programs are not expressly provided for. Literary and scientific works, however, are protected,[204] and either one would include computer programs.

The objective of the Italian copyright law is to reward the creator of the work with a fair return for his efforts.[205] This is one objective of every copyright statute. Additionally, it is a general principle of copyright law that the author is the creator of the work.[206] Under the Italian copyright statute, however, it is possible for a person other than the creator of the work to receive the copyright. Article 11 gives state administrative authorities, provinces and municipalities a copyright in works created and published in their name and at their expense.[207] An employer can receive copyright protection for works created by employed authors.[208] West Germany differs in that the author is always the creator of the work.[209] Moreover, only West

198. *Id.* at 33-34.

199. Italian Copyright Law, *supra* note 86, art. 1.

200. *See* United Kingdom Copyright Act, *supra* note 70, art. 2(1).

201. *See* West German Copyright Statute, *supra* note 86, art. 2(2).

202. *Cf.* Italian Copyright Law, *supra* note 86, art. 1; and West German Copyright Statute, *supra* note 86, § II, art. 2 (protected works include literary works, such as writings and speeches, musical works, pantomines, choreographic works, etc.).

203. A. DIETZ, *supra* note 11, at 32.

204. Italian Copyright Law, *supra* note 86, art. 2(1).

205. *Id.* arts. 2 & 6.

206. *See* Berne Convention, *supra* note 25, art. 1 (stating that the countries to this Convention constitute a union for the protection of the rights of authors over their literary and artistic works). *See also* A. DIETZ, *supra* note 11, at 41.

207. Italian Copyright Law, *supra* note 86, art. 11.

208. Italy has no general rules regarding employed authors. This situation is controlled by contractual agreements. The Berne Convention similarily did not address the question of employed authors.

209. West German Copyright Statute, *supra* note 86, art. 7.

Germany provides for a conceptual definition of "author."[210] The United Kingdom, on the other hand, has greater restrictions on the concept of an author.[211]

The Italian copyright statute recognizes the requirement of fixation as a prerequisite for copyright protection, but only for choreographic works and pantomines.[212] In comparison, the United Kingdom requires fixation as a basic requirement for copyright protection.[213] West Germany has no fixation requirement.[214] The fixation requirement for choreographic works is the only provision in the Italian statute in which the author's rights depend upon the right to property. In all other respects, the Italian copyright law employs the concept of author's rights, thereby avoiding property right connotations.

Italy, like West Germany, also provides that copyright in the adaptation exists without prejudice to the rights of the author in the original work.[215] Adaptations are expressly protected.[216] Exploitation of any adapted or amended form of the original work requires permission from the author.[217] The United Kingdom contains no such express provision.[218]

Reproduction rights are also covered by the Italian statute, although Italy has a narrower concept of reproduction.[219] Article 13 lists the different methods of reproduction but not the forms protected.[220] The last sentence of Article 13 is a catch-all phrase which includes "any other process of reproduction."[221] Since magnetic re-

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210. *Id.*

211. In the United Kingdom, the employer is deemed to be the creator of works by employees. This principle is, however, restricted in the case of newspapers and periodicals in that the employer acquires press exploitation rights only. United Kingdom Copyright Act, *supra* note 70, § 4(2).

212. Italian Copyright Law, *supra* note 86, art. 2, No. 3.

213. *See* United Kingdom Copyright Act, *supra* note 70, §§ 2(1) & 3(2).

214. A. DIETZ, *supra* note 11, at 28.

215. Italian Copyright Law, *supra* note 86, art. 4.

216. *Id.*

217. *Id.*

218. *See generally* A. DIETZ, *supra* note 11, at 36. United Kingdom jurisprudence would protect adaptations under the clause "without prejudice to the rights of the original author . . . ." *Id.*

219. The Italian Copyright Law does not define reproduction rights. It only lists the methods of reproduction. *See, e.g.*, Italian Copyright Law, *supra* note 86, art. 13 (methods of reproduction include handcopying, printing, lithography, engraving, etc.).

220. *Id.*

221. *Id.* Article 13 provides: "The exclusive right of reproduction has for its object the multiplication of copies of the work by any means, such as handcopying, printing, lithography,

cording is a method of reproduction, recording a program on a disk or tape is subject to the author's rights. The exclusive right to reproduce applies to a program in its entirety and to each of its parts.[222]

As previously noted, computer programs can be reproduced in different forms depending upon what stage the programmer is at during the programming process. Article 1, read in conjunction with Article 13, could broaden the reproduction rights to coincide with the broad coverage provided by the United Kingdom and West German statutes. Thus, programs derived from the original are subject to the author's reproduction rights.[223] Reproductions of any adaptations would also be protected.

Both the Italian and West German copyright statutes regulate the right of distribution.[224] Article 17 of the Italian copyright law confers upon the author a special right to market his work or parts of the work for gainful purposes. Thus, the copyright owner has the exclusive right to distribute copies of the copyrighted program by sale, lease or rental, provided it is done with gainful intent.[225] Italian law contains no express provision regulating the exhaustion of distribution rights.[226]

Finally, the author has the exclusive right to public performance[227] and diffusion (distribution).[228] These rights apply to computer programs for video games and computer art, as well as other types of programs. Both West Germany[229] and the United Kingdom[230] include similar rights within their statutory schemes.

The Italian copyright statute, like the West German statute, also protects the author's moral rights.[231] Moral rights protect the author's personal relationship to the work.[232] They are inalienable in

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engraving, photography, phonography, cinematography, and any other process of reproduction." *Id.*

222. *Id.* art. 19.

223. *Id.* art. 12.

224. *Id.* art. 17; West German Copyright Statute, *supra* note 86, art. 17.

225. Italian Copyright Law, *supra* note 86, art. 17.

226. A. DIETZ, *supra* note 11, at 92.

227. Italian Copyright Law, *supra* note 86, art. 15.

228. *Id.* art. 16.

229. West German Copyright Statute, *supra* note 86, arts. 17 & 19.

230. *See* United Kingdom Copyright Act, *supra* note 70, § 2(3).

231. Italian Copyright Law, *supra* note 86, art. 20 (if the author indemnifies the licensee for the costs, but excluding the licensee's lost profits).

232. *Id. See also* A. DIETZ, *supra* note 11, at 66-77.

Italy[233] and remain with the author even after the computer program and exploitation rights have been transferred.[234] All contractual provisions attempting to waive these rights are void.[235]

The author also has the right to claim authorship of his work.[236] With respect to computer programs, the author has the right to be acknowledged as the creator and the right to disclaim authorship of works mistakenly attributed to him. This right also protects a programmer against forgeries that look similar to the original. The right of publication is not expressly provided for under the moral rights provision.[237] Granting the author the exclusive right to publication, however, relates to his personal rights as well as to his commercial ones.[238] Thus, the author has the basic right to determine whether and how his work is to be published. This also protects the right of first publication, which is essential because protection for the finished program commences at the point of creation or first publication, whichever occurs first. Under this right, the author may withhold his program from the general public and distribute it to a few privileged users, or exploit it commercially to the widest extent possible. However, this right appears to protect the author's financial interests and not his intellectual or moral interests.

The right of retraction allows the author to recall an exploitation right already transferred.[239] The Italian copyright law qualifies this right by requiring serious moral reasons in order to recall.[240] Granting the right of recall to an author of a stored program may substantially prejudice the system's owner. The West German moral rights provision permits a recall only if the work no longer corresponds to the opinion of the author, and for this reason exploitation of the work would no longer reasonably be expected of him.[241] The United Kingdom has no similar substantive provision on this point.[242]

The author also has the right to integrity of the work.[243] This

233. Italian Copyright Law, *supra* note 86, art. 22.
234. *Id.* art. 21.
235. *Id.*
236. *Id.* art. 20.
237. *See* A. DIETZ, *supra* note 11, at 69-70.
238. *Id.*
239. Italian Copyright Law, *supra* note 86, art. 143.
240. *Id.*
241. West German Copyright Statute, *supra* note 86, art. 42(1) & (2).
242. The United Kingdom statute does not contain a provision for moral rights. *See supra* notes 108-20 and accompanying text.
243. Italian Copyright Law, *supra* note 86, art. 20.

right coincides with the right of recognition of authorship. It is independent of the author's economic rights of adaptation and reproduction.[244]

The major benefit of West German and Italian copyright law is that both statutes provide the author with a comprehensive list of economic rights, including adaptation rights, and moral rights. As previously discussed, they help to protect proprietary rights in computer programs. The downfall of both the West German and Italian copyright statutes, however, is the complexity of the statutes. Certain conditions must exist before a work qualifies for copyright protection. In West Germany, a qualifying work must be a "personal, intellectual, creation," and in Italy a work must be "intellectual" and of a "creative" nature. While computer programs probably satisfy these criteria, it raises the uncertainty of software protection in these two countries.

IV. Other Considerations: Possible Conflict with the European Economic Community Treaty

There is a potential clash between the European Economic Community (EEC) Treaty,[245] an international agreement to promote the free movement of goods and competition,[246] and national copyright laws. Commentators, however, claim that it is possible to harmonize these two bodies of law.[247]

The EEC Treaty regulates the movement of goods, including cultural goods[248] such as copyrights. Italy and West Germany, however,

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244. *Id.*

245. Treaty of Rome, Mar. 25, 1957, 298 U.N.T.S. 3, 11 (establishing the European Economic Community) [hereinafter cited as EEC Treaty]. Ten countries belong to the EEC: Belgium, Denmark, France, Greece, Ireland, Italy, Luxembourg, the Netherlands, West Germany, and the United Kingdom. (The applications of Spain and Portugal were approved in March, 1985; both will be admitted on January 1, 1986.) All EEC member states are signatories to the Berne Convention and the Universal Copyright Convention.

246. EEC Treaty, *supra* note 245, art. 30. *See also* Dietz, *The Possible Harmonization of Copyright Law Within the European Community*, 10 INT'L REV. OF INDUS. PROP. & COPYRIGHT L. 395, 398 (1979) [hereinafter cited as *Harmonization of Copyright Law*].

247. *See, e.g.*, Dietz, *Copyright and EEC—Harmonization of National Laws*, 2 EUR. INTELL. PROP. REV. 189, 191 (1980). Dietz explains that there are four ways of harmonizing copyright law in the EEC: (1) The case-by-case decision process; (2) a European copyright convention; (3) a regulation based on Article 235 of the Treaty of Rome; and (4) directives based on Article 100 of the Treaty of Rome. *Id.*

248. Cultural goods are intellectual goods that carry the culture, such as books, films, etc. Irrespective of whether cultural goods are protected by copyrights, the rules of the EEC do not exclude them. *Harmonization of Copyright Law*, *supra* note 246, at 399.

expressly give the copyright owner the right to restrict the territorial distribution of his program. This creates a conflict between the EEC Treaty's objective of free movement of goods and the national copyright laws.[249] Nevertheless, the objective of the EEC Treaty can be harmonized with the author's distribution rights by using the exhaustion principle,[250] which states that the author's right of distribution terminates with respect to sold copies.[251] It is unlikely that a computer program would be sold. Programs are usually leased or licensed by the owner. For policy reasons, the author's right of distribution should be limited because it inhibits the dissemination of ideas, but it should not be eliminated if the author has decided to only lease his program.

The EEC Treaty also regulates competition.[252] The individual author creating a work is not an entrepreneur within the meaning of the competition law.[253] Thus, exploitation activities by the author, such as reproduction, are not relevant to competition law.[254]

The duration of copyright protection, however, is of particular interest in the context of the EEC Treaty.[255] Both Italy and the United Kingdom provide protection for fifty years, while West Germany provides protection for seventy years. During the period between fifty and seventy years, a work could become part of the public domain in either Italy or the United Kingdom, but not in West Germany.[256] Fifty to seventy years is longer than necessary to protect software programs. Computer technology is a rapidly expanding and volatile industry.[257] Most computer programs would become obsolete before the period of copyright protection expired. Neither the United Kingdom, West Germany, nor Italy provide an exception from the general term of copyright protection for computer programs. If an exception was made, it would conflict with the term of protection under the Berne Convention, which prescribes a period of fifty

249. *Id.* Other EEC countries that expressly regulate the right of distribution include Denmark and the Netherlands. The countries that do not regulate distribution rights are Belgium, France, Luxembourg, the United Kingdom, and Ireland.

250. A. DIETZ, *supra* note 11, at 93-94.

251. *Id.* at 91.

252. EEC Treaty, *supra* note 245, art. 85.

253. A. DIETZ, *supra* note 11, at 40-41, 93-98.

254. *Id.*

255. Tarnofsky, *supra* note 80, at 371.

256. *Id.*

257. For a brief history about computer development, see *Int'l Copyright Law*, *supra* note 120, at 105 n.1.

years.[258] The World Intellectual Property Organization Model Provisions suggest a twenty year minimum to a maximum twenty-five year period from the time the program is first used or commercialized.[259]

V. CONCLUSION

The United Kingdom extends copyright protection to computer programs if they are original works of authorship fixed in a medium of expression that is capable of being perceived by others. West Germany requires that a computer program be a personal intellectual creation. Along this line, Italy requires that a computer program be an intellectual work of authorship. The latter two continental countries provide protection at an earlier stage in the programming process because there is no fixation requirement. Hence, the statutory schemes of West Germany and Italy are more advanced in that they grant broader and earlier protection for software.

Since the term of copyright protection varies between these three countries, a standardized term would eliminate the problem of software becoming part of the public domain in the United Kingdom and Italy, but not in West Germany. The term of protection should be no longer than necessary to protect the interests of the author. Unrestricted exploitation of computer programs should begin as soon as possible to encourage the production of advanced programs.

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258. A revision or a special agreement for a new treaty law would have to be initiated, something which is not likely to happen. Tarnofsky, *supra* note 80, at 371.

259. The International Bureau of WIPO submitted a draft Treaty on the Protection of Computer Software. *See* WIPO document LPCS/II/3 of Feb. 24, 1983.