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THE PROTECTION OF HIGH TECHNOLOGY INTELLECTUAL PROPERTY*

JACK E. BROWN**

Intellectual property today prominently includes not only the product of the traditional informational and entertainment businesses, but also the products and processes of high technology industries—including such key products as computer programs, semiconductor chip mask works, computer screen graphics and interfaces, computer data bases, biologically engineered organisms and other exotic materials.

High technology products and processes share several common characteristics:

They usually require for their creation a relatively large expenditure of time, money, and creative effort compared with the ease with which they are copied and exploited.

They often are created by the joint efforts of many persons employed in corporate endeavors in highly competitive industries.

The rate of technological progress in those industries has been and continues to be so rapid that their products have relatively short life cycles.

Success in such a competitive environment requires continuous efforts to plan and develop a next generation product; customers frequently insist on dealing with a company that offers the promise of an improved next generation state-of-the-art product.

Success in those industries almost always requires that products be marketed in at least two or three of the world's markets.

For such products and processes in those industries, the protection of intellectual property against appropriation by competitors or free dissemination is crucial and assumes a high priority. Without adequate protection, development work may be abandoned as uneconomic and

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thriving businesses may be bankrupted by product obsolescence. Moreover, a high order of protection is required in such industries on a worldwide basis corresponding to their worldwide markets.

In that context, it is fitting that the United States and the Soviet Union, as well as other nations, continually reexamine the adequacy of their intellectual property laws and attempt to establish and expand an international regime of intellectual property protection.

The agreement between the United States and the Soviet Union, proclaimed on June 1, 1990, announces important symbolic commitments for both nations. It reaffirms the commitments of both nations to adhere to the Berne Convention for the Protection of Artistic and Literary Works, to which the United States only recently acceded;¹ to provide copyright protection for computer programs, data bases and sound recordings; to provide product and process patent protection in other technology areas; and to provide comprehensive protection for trade secrets.²

The United States Proposal on Trade-Related Aspects of Intellectual Property Rights (TRIPs) was submitted on May 14, 1990 to a working group of the nations accepting the General Agreement on Tariffs and Trade (GATT). The proposal, similar to a proposal by the European Economic Community also supported by Japan, is a wide-reaching document designed to achieve comprehensive protection of computer programs, data bases, semiconductor chip layout designs, industrial designs, trademarks and trade secrets.³

Meanwhile, the proposed enactment by the Soviet Union of a new patent law⁴ reflects a remarkable *perestroika* advance that, if adopted, will go far to bring the Soviet Union in conformity with the intellectual property laws of the United States and other industrial countries.⁵ Such a law, providing private economic incentives for inventive activity,

1. Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1886, revised at Paris, July 24, 1971, 1974 Recueil des Traités (Fr.) No. 51 [hereinafter Berne Convention]. The United States became a member of the Berne Convention on March 1, 1989. See COPYRIGHT, Jan. 1990, at 6, 8; Berne Convention Implementation Act of 1988, Pub. L. No. 100-568, 102 Stat. 2853 (codified in scattered sections of 17 U.S.C.). As of January 1, 1990, the Berne Convention had 84 members. COPYRIGHT, Jan. 1990, at 6-8 (listing member states).

2. *Trade Pact with U.S. Commits Nations to Protect Intellectual Property*, 4 WORLD INTELL. PROP. REP. 149, 159 (1990).

3. *United States Submits TRIPs Proposal in GATT*, 4 WORLD INTELL. PROP. REP. 126, 130 (1990) [hereinafter *U.S. GATT Proposal*]; *European Community Submits New TRIPs Proposals in GATT*, 4 WORLD INTELL. PROP. REP. 99, 100, 108 (1990).

4. The draft "Law on Inventive Activity in the USSR" was released by the Presidium of the Supreme Soviet on December 23, 1988 and revised as indicated in the April 7, 1990 edition of *Izvestia*.

5. *E.g.*, Mamiofa, *The Draft of a New Soviet Patent Law*, 1 EUR. INTELL. PROP. REP.

should serve as a powerful creative stimulus for Soviet citizens and also have profound interest for foreigners who, under the Paris Convention for the Protection of Industrial Property, have the right to obtain Soviet patents on an equal basis with Soviet citizens.⁶

Some questions and problems affecting high technology intellectual property that may be anticipated under the proposed laws and treaties are discussed below.

1. *Patent Protection for Computer Programs*

It is now widely accepted that computer programs should be protectable as literary works under various copyright laws and conventions. The GATT proposals by the European Community, the United States and Japan specifically so provide.⁷ Many countries already have enacted statutes specifically extending copyright protection to computer programs.⁸

21 (1990); Meller, *Analysis of the Most Recent Soviet Draft Law for Patents*, 4 WORLD INTEL. PROP. REP. 156, 161 (1990).

The Soviet patent law as it now exists is published in INDUS. PROP., Sept. 1979, at Text 2-003 (Statute on Discoveries, Inventions and Rationalization Proposals, promulgated by Decree of USSR Council of Ministers, No. 584 of Aug. 21, 1973, as amended by Decree No. 1078 of Dec. 28, 1978); see Maggs, *The Restructuring of the Soviet Law of Inventions*, 28 COLUM. J. TRANSNAT'L L. 277 (1990).

6. Paris Convention for the Protection of Industrial Property, Mar. 20, 1883, revised at Stockholm, July 14, 1967, art. 2(1), 21 U.S.T. 1629, T.I.A.S. No. 6923 [hereinafter Paris Convention]. Article 2(1) of the Paris Convention provides that citizens of any member country shall be accorded national treatment in all other member countries. The Soviet Union became a party to the Paris Convention on July 1, 1965. See INDUS. PROP., Jan. 1990, at 6, 7. As of January 1, 1990, the Paris Convention had 100 member states. *Id.* at 6-8 (listing member states).

7. See, e.g., U.S. GATT Proposal, *supra* note 3, at 131. The United States GATT proposal provides that protected works should include "all types of computer programs (including applications programs and operating systems)" and "works created by or with the use of computers" (as well as data bases to be protected as collections or compilations "if they constitute intellectual creation by reason of the selection, coordination, or arrangement of their contents"). *Id.*

8. Legislation establishing the copyrightability of computer programs has been enacted in the United States in 1980 (17 U.S.C. § 101 (1980)); in Hungary in 1983 (Copyright Act of 1969, as amended by Decree No. 15 of the Ministry of Culture on July 12, 1983); in Australia (Copyright Amendment Act of 1984) and India (Copyright (Amendment) Bill No. XIX (1984)) in 1984; in France (Law. No. 85-660, (1985) J.O. 7495), Japan (see Choy, *Tokyo Expands Copyright Law to Cover Software*, JAPAN ECON. INST. REP., No. 28-B, at 8 (July 26, 1985)), Taiwan (Taiwanese Copyright Act arts. 3(19), 4(16) (1985)) and West Germany (Copyright Revision Act of June 24, 1985, 1985 BGBI.I 1,137) in 1985; in the Dominican Republic in 1986 (Law No. 32-86, Gaceta Oficial, July 15, 1986, No. 9689, at 1239); in Brazil (Law No. 7646 of Dec. 18, 1987), Hong Kong (U.K. Copyright (Computer Software) Amendment Act of 1985 (effective Dec. 18, 1987)), Indonesia (No. 7 (1987) on Amendments to Law No. 6 (1982) on Copyright), Malaysia (Copyright Act of 1987, No. 332), Singapore (Copyright Law of Apr. 10, 1987), South Korea (Computer Program Protection

The use of copyright as the favored means of protection does not exclude the granting of additional protection to those computer programs that also can qualify for patent protection.⁹ Copyright traditionally protects only the "expression" of an idea (but not the idea itself) in some form of communication, and it protects that expression only against copying. Patent law, on the other hand, protects inventions (including the novel process steps that a computer program directs a computer to perform) against any use thereof. As Chief Judge Markey explained, "Confusion may be avoided if it be realized that what is at issue [in a patent case] is not the 'program,' i.e., the software, but the process steps which the software directs the computer to perform."¹⁰

In the United States, case law has developed to the point where vir-

Law, Law No. 3920 of Dec. 31, 1986 (effective July 1, 1987)) and Spain (Intellectual Property Act of 1987 arts. 95-100) in 1987; in Canada (Amendments to the Copyright Act, Can. Stat. C-60 (1988)), Nigeria (Copyright Law of Dec. 29, 1988) and the United Kingdom (U.K. Copyright, Designs and Patents Act of 1988 (effective Aug. 1, 1989)) in 1988; and in Denmark (see Schluter, *Software Protection in Denmark—the New Legislation*, 6 COMPUTER L. & PRAC. 120 (1990)), Saudi Arabia (see Keplinger, *International Protection for Computer Programs*, J. PROPRIETARY RTS., May 1990, at 26, 40) and Sweden (see Keplinger, *supra*, at 40-41) in 1989.

Furthermore, judicial decisions in Argentina, Austria, Italy, the Netherlands, New Zealand and South Africa have recognized copyright protection for computer software. See *IBM Corp. v. Computer Imports, Ltd.* CP 494/86 (Mar. 20, 1989); *S.I.A.E. v. Domenico Pompa*, (Nov. 24, 1986); *Northern Office Microcomputers Ltd. v. Rosenstein*, 4 C.P.D. 123, (1982) 8 F.S.R. 124 (S. Afr. S. Ct. June 19, 1981); Fenwick, Davis & West, *International Legal Protection for Software*, SOFTWARE PROTECTION, Feb. 1990, at 1, 9 n.2, 10 n.13; Keplinger, *supra* at 27, 29, 38-40; Keustermans, *Protection of U.S. Computer Software in Belgium and the Netherlands*, COMPUTER LAW., Oct. 1985, at 19.

The screen displays and imagery of graphic user interfaces and video games also are protectable under various copyright laws as "audiovisual" or "cinematographic" works. As to United States law, see 17 U.S.C. § 102(a) (1976) (Category 6); *Lotus Dev. Corp. v. Paperback Software Int'l*, 740 F. Supp. 37 (D. Mass. 1990) (protecting the appearance of the Lotus electronic spreadsheet); *Atari, Inc. v. North Am. Philips Consumer Elecs. Corp.*, 672 F.2d 607 (7th Cir.) (protecting "PAC-MAN"), *cert. denied*, 459 U.S. 880 (1982). As to French law, see Bertrand & Couste, *Current Issues Concerning French Software Protection*, SOFTWARE PROTECTION, May 1988, at 1. As to Italian law, see Casati & Pavesio, *Legal Protection of Computer Software in Italy*, COMPUTER LAW., Apr. 1988, at 17, 18.

Particular screen displays also have been protected under the category of "pictorial" or "graphic" works (17 U.S.C. § 102(a) (1976) (Category 5)). *Digital Communications Assocs. v. Softklone Distrib. Corp.*, 659 F. Supp. 449, 465 (N.D. Ga. 1987); *Broderbund Software, Inc. v. Unison World, Inc.*, 648 F. Supp. 1127, 1134 (N.D. Cal. 1986); Bender, *Software Copyright: "Look and Feel" Issues*, SOFTWARE PROTECTION, Nov. 1989, at 1.

9. 35 U.S.C. § 101 provides as follows: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."

10. *In re Gelnovatch*, 595 F.2d 32, 44 (C.C.P.A. 1979) (Markey, C.J., dissenting). See Einhorn, *Copyright and Patent Protection for Computer Software: Are They Mutually Exclusive?*, SOFTWARE PROTECTION, May 1990, at 1.

tually all computer programs that meet the standard of "invention" (novelty and nonobviousness) will qualify for patent protection, particularly if described as part of a process or apparatus, unless the program expresses only a pure algorithm or is "tantamount to an unapplied mathematical equation."¹¹ Software-related patents have ranged from a patent on a "method and apparatus for optimizing resource allocations"¹² to a "generalized system for generating programs or apparatus using a process model which simulates human intelligence."¹³

The European Patent Convention, in language similar to the draft Soviet Patent Law, declares that "programs for computers" are not patentable subject matter.¹⁴ Nevertheless, the trend of the European cases

11. Sumner & Lundberg, *The Versatility of Software Patent Protection: From Subroutines to Look and Feel*, COMPUTER LAW., June 1986, at 1, 3 (discussing validity and infringement of software patents); Davidson, *Protecting Computer Software: A Comprehensive Analysis*, 23 JURIMETRICS J. 337, 359 (1983) ("[t]he key distinction is the dynamic use of the software; its 'real-time' use . . . affecting the environment"). See generally Barrett, *Patentable Subject Matter: Mathematical Algorithms and Computer Programs*, SOFTWARE PROTECTION, Oct. 1989, at 6; Bender, *The Case for Software Patents*, COMPUTER LAW., May 1989, at 2.

12. Karmarkar U.S. Patent 4,744,028 issued May 10, 1988.

13. Reiners U.S. Patent 4,866,610 issued Sept. 12, 1989. *Compare In re Iwahashi*, 888 F.2d 1370 (Fed. Cir. 1989) (directing issuance of patent for "an auto-correlation unit for use in pattern recognition" (a voice recognition circuit) as an apparatus notwithstanding its general description and emphasis on an improved mathematical algorithm) with *In re Grams*, 888 F.2d 835 (Fed. Cir. 1989) (method of testing a complex system to determine whether the system condition is normal or abnormal and, if abnormal, to determine the cause of the abnormality held to be nonpatentable as a mathematical algorithm, even as part of a claim in which the method is to be performed with a programmed computer).

Patent protection for computer programs may have reached its zenith in the protection of a patent on a "securities brokerage/cash management system" (Musmanno U.S. Patent 4,346,442 issued Aug. 24, 1982). See *Paine, Webber, Jackson & Curtis, Inc. v. Merrill Lynch, Pierce, Fenner & Smith, Inc.*, 564 F. Supp. 1358 (D. Del. 1983). But see *Merrill Lynch's Application* (1989) R.P.C. 561 (Eng. C.A.) (affirming rejection of patent application for a data processing "system" and "apparatus" for "implementing an automated [securities] trading market," monitoring stock inventory and profit and "qualifying and executing orders").

14. Convention on the Grant of European Patents, adopted in Munich, Oct. 5, 1973, art. 52(2)(c), 13 I.L.M. 270, 285 [hereinafter European Patent Convention]. Article 52 of the Convention provides:

(1) European patents shall be granted for any inventions which are susceptible of industrial application, which are new and which involve an inventive step.

(2) The following in particular shall not be regarded as inventions within the meaning of paragraph 1:

....

(c) schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers;

(3) The provisions of paragraph 2 shall exclude patentability of the subject-matter or activities referred to in that provision only to the extent to which a European patent application or European patent relates to such subject-matter or activities as such.

follows the Guidelines of the European Patent Office directing that "patentability should not be denied merely on the ground that a computer program is involved in its implementation."¹⁵ This seems to be similar to the developmental trend of the American cases.

The reason for this trend is not that copyright protection for computer programs has proved inadequate or encountered insuperable difficulties. To the contrary, the system is working very well.¹⁶ However, the increasing use and integration of computer programs in various methods, processes and apparatus that call for patent protection naturally sets a powerful force in motion favoring the more expansive reach of patent protection for qualified inventions.¹⁷

Id. art. 52. The provision excluding computer programs "as such" from patent protection has been written into several national patent laws. See, e.g., United Kingdom: Patents Act of 1977, § 1; West Germany: Patent Law of Jan. 2, 1968, as amended Dec. 16, 1980, § 1.

The European Patent Convention came into force on October 7, 1977 and has thirteen members (Switzerland, Austria, Sweden and Liechtenstein and all of the EC member states, except Portugal, Denmark and Ireland).

15. The Guidelines of the European Patent Office state that:

patentability (of [the] subject-matter [of a patent application]) should not be denied merely on the ground that a computer program is involved in its implementation. This means, for example, that program-controlled machines and program-controlled manufacturing processes should normally be regarded as patentable subject matter. It follows also that, where the claimed subject matter is concerned only with the program-controlled internal working of a known computer, the subject matter could be patentable if it provides a technical effect.

Recent cases have affirmed the patentability of a method for digital image processing in the form of a two-dimensional data array having elements arranged in rows and columns (*In re Vicom Systems Inc.*, No. T 208/84 (EPO Technical Board of Appeal 3.5.1 July 15, 1986), translated in 18 INT'L REV. INDUS. PROP. & COPYRIGHT L. 101 (1987)); an apparatus having a data processing unit which stores X-ray tube information used to set the two voltage values for the exposure parameters selected (European Patent Application 78 101 198.6 (corresponding to U.S. Patent 4,158,138)); and a system in which a plurality of data processing devices are interconnected as nodes in a telecommunication network (European Patent Application 79 101 907.8 (corresponding to U.S. Patent 4,274,139)).

See also the following cases upholding software-related patents: In France, *In re Schlumberger*, Cours d'appel, Paris (June 15, 1981), reprinted in *Annales Propriete Industrielle* 24 (1982) (patentability cannot be denied to a process merely because one or more steps is performed by a computer program); in Italy, *SNAM v. Patent Office*, Corte Cass. Ruling 3169 (May 14, 1981), *Giur. Annotata Di Diritto Industriale*, 58 No. 1371 (1981) (computer programs patentable if combined with generally accepted patenting of production processes or machines); in the Netherlands, see Martin, *The Patentability of Program-Related Inventions in the Netherlands*, 18 INT'L REV. INDUS. PROP. & COPYRIGHT L. 621 (1987); in the United Kingdom, *Slee & Harris' Application*, (1966) R.P.C. 194, 198, and *Burroughs Corp. (Perkins)' Application*, (1974) R.P.C. 147, 161; and in West Germany, e.g., *Elektronisches Übersetzungsgera t* (Federal Patent Court, Mar. 18, 1986), translated in 18 INT'L REV. INDUS. PROP. & COPYRIGHT L. 805 (1987) (application programs and operating system programs patentable).

16. See, e.g., Goldberg & Burleigh, *Copyright Protection for Computer Programs: Is the Sky Falling?*, 17 AIPLA Q.J. 294 (1989).

17. See Bender, *supra* note 11, at 2. It should be kept in mind that patent protection,

2. "Misuse" and Antitrust

Enforcement of patents in the United States has been denied to patentees engaged in overreaching conduct under the doctrine of "patent misuse." Illustratively, patent misuse has been found where a patentee demanded royalties for a period extending beyond the expiration date of the licensed patent or, in some circumstances, required a licensee, as a condition of the license, to license unwanted additional patents or acquire unwanted additional products (effectuating a tying arrangement). Some patent misuse conduct also has been condemned as violating American antitrust law.¹⁸ Patent misuse defenses, asserting invalidity on account of alleged fraud on the Patent Office or other similar inequitable conduct, have become commonplace in American patent suits.¹⁹

It seems inevitable that any patent system will be drawn into the continuing swirl of controversy that surrounds the employment of a "patent misuse" doctrine and antitrust principles to curb or modify patent, copyright, trade secret and trademark protection. The one comment I would venture to make in that regard is that, to the extent

accorded only to inventions of processes, machines, articles of manufacture and compositions of matter, probably would be available for only a minute proportion of computer programs. A World Intellectual Property Organization report estimates that perhaps as few as one percent of the computer programs written have sufficient inventiveness to satisfy the requirements of any extant patent law. See Note, *Copyrightability of Object Code and ROM in Japan, Australia, and Germany: Surpassing Traditional Copyright Limits*, 6 *COMPUTER/L.J.* 513, 516 (1986) (citing International Bureau of the World Intellectual Property Organization and Advisory Group of Governmental Experts on the Protection of Computer Software, *Model Provisions on the Protection of Computer Software*, *COPYRIGHT*, Jan. 1978, at 2).

Some critics have pointed out that the United States Patent Office does not have the expertise available to distinguish between those applications that are sufficiently innovative to warrant patent protection and those that merely reflect prior art and that which is obvious to those skilled in the art. Professor Bernard A. Galler of the University of Michigan has proposed the creation of a Software Patent Institute to assist the Patent Office by creating and managing a data base of prior art in the computer software area.

18. An in-depth review of recent cases and their antitrust implications is found in Hoerner, *Patent Misuse: Portents for the 1990s*, published in 1990 Annual Meeting Program Materials 283 (A.B.A. Sec. Pat. Trademark & Copyright L. Aug. 4-8, 1990). The effect of the Patent Misuse Reform Act of 1988, Pub. L. 100-703, enacted as part of 35 U.S.C. § 271(d) (generally immunizing from attack as a patent misuse license refusals or tying arrangements unless market power is proven), is discussed in Hoerner, *Patent Misuse: The Law Changes*, *J. PROPRIETARY RTS.*, Feb. 1989, at 10.

19. Inequitable conduct charges have become so frequent that Judge Markey (when he was Chief Judge) of the United States Court of Appeals for the Federal Circuit has admonished that "[i]nequitable conduct' is not, or should not be, a magic incantation to be asserted against every patentee." *FMC Corp. v. Manitowoc Co.*, 835 F.2d 1411, 1415 (Fed. Cir. 1987).

feasible, the highest desideratum and the focus of attention in every case should be on the long-term promotion of technological innovation.

Of course it is not always easy to discern whether a given rule or a particularized ruling will promote or hinder innovation. However, if that is kept in mind as the ultimate goal, there is at least an improved chance that experience will guide those who must decide in the right direction.

The most recent decision by an American appellate court on the subject of misuse is the opinion of the United States Court of Appeals for the Fourth Circuit in *Lasercomb America, Inc. v. Reynolds*,²⁰ issued on August 16, 1990. In that case, the court refused to enforce a copyright on a computer program used in the mechanized creation of steel rule dies (used to cut and score paper and cardboard for folding into cartons and boxes) that the defendants had infringed. The refusal was based on the ground that the plaintiff had entered into license agreements that provided that the licensees would not, during the term of the agreements, develop, produce or sell any other computer-assisted die-making software. The court overstated the extent to which a copyright accords monopoly status similar to that of a patent grant, inasmuch as a copyright protects only the individual expression of an idea and not the idea itself. However, its misuse analysis, based on the overbreadth of the license in excluding competition by discouraging technological innovation, seems entirely concordant with traditional public policy. "The ultimate aim [of copyright law] is, by this incentive, to stimulate artistic creativity for the general public good."²¹

The current controversy concerning the European Council Proposed Directive on the Legal Protection of Computer Programs ("Proposed Directive") reflects another facet of the antitrust overlay. On July 11, the European Parliament voted to include in that Proposed Directive a provision (sponsored by the European Committee for Interoperable Systems, whose members favor "open" computer systems) that would permit "reverse engineering" (decompilation) of computer programs for the purpose of achieving "interoperability."²² The provision directs that a copyright "shall not be exercised by the author to prevent any act essential to ensure the maintenance of the program and the creation or operation of interoperable programs." That permission was qualified by conditions that the decompiled information not be used to create or market a program that violates the copyright of the decom-

20. 911 F.2d 970 (4th Cir. 1990).

21. *Id.* at 978 n.20 (quoting *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975)).

22. *Parliament Okays Software Directive with Reverse-Engineering Compromise*, 4 WORLD INTELL. PROP. REP. 176-77 (1990).

piled program, or that "unreasonably prejudices the rights-holder's legitimate interests or conflicts with a normal exploitation of the computer program."²³

Beyond the policy debate, two interesting international law questions have been posed: (1) Are the proposed exclusions consistent with the Berne Convention?²⁴ and (2) Does the Treaty of Rome contemplate a directive that goes beyond existing law in any member state?²⁵ Meanwhile, the Parliamentary enactment pointedly reveals the extent to which the contours of antitrust or unfair competition law may be politically arranged to resolve marketplace conflicts.

23. An informal translation of the proposed provision is set forth in A. Clapes, Address to the Committee on Technology and Intellectual Property of the American Bar Association 19-21 (Aug. 5, 1990).

24. The Berne Convention grants authors of literary or artistic works the rights to authorize reproduction (art. 9(1)), adaptations, arrangements and other alterations (art. 12) and translations (art. 8) of their works.

Commentators have argued that reverse compilation of a computer program to create a competing work interferes with the above rights protected by the Convention. See, e.g., Burkill, *Reverse Compilation of Computer Programs and Its Permissibility Under the Berne Convention*, 6 COMPUTER L. & PRAC. 114 (1990).

Article 9(2) of the Berne Convention provides an exception to an author's right to authorize reproduction: "It shall be a matter for legislation in the countries of the Union to permit the reproduction of such works in certain special cases, provided that such reproduction does not conflict with a normal exploitation of the work and does not unreasonably prejudice the legitimate interests of the author." The last paragraph of the Proposed Directive tracks the language of article 9(2). However, there are no analogous exceptions to the rights concerning adaptation, arrangement, alteration and translation. *Id.* at 115. Reverse compilation to create a competing work may conflict with the exploitation of a work and unreasonably prejudice the author. See *id.*

25. The Treaty of Rome, which established and governs the European Economic Community (Common Market), was signed March 25, 1957 and became effective January 1, 1958.

Article 100a of the Treaty of Rome, pursuant to which the Proposed Directive was issued, provides a qualified majority procedure for "approximation of the provisions laid down by law, regulation or administrative action in Member States which have as their object the establishment and functioning of the internal market." The European Court of Justice has ruled that the identical language of article 100a empowers the European Council to take appropriate measures "to remedy differences between the provisions laid down by law, regulation or administrative action in Member States if they are likely to distort or harm the functioning of the Common Market." *Rewe-Zentralfinanz eG and Rewe-Zentral A.G. v. Landwirtschaftskammer für das Saarland* (preliminary ruling), (1976) E.C.R. 1989, (1977) 1 C.M.L.R. 533 (Eur. Ct. J. Dec. 16, 1976).

At least one commentator has suggested that because "no Member State has legislation expressly authorizing disassembly of computer programs (indeed, the national laws of the Member States appear uniformly to prohibit disassembly for the purpose of marketing a substitute or replacement product)," the Proposed Directive would violate the language of article 100a, which is limited to harmonizing differences among the laws of member states. See A. Clapes, *supra* note 23, at 21-23.

3. *Reconciliation of National Laws*

The increasing efforts of the World Intellectual Property Organization and other organizations to harmonize the intellectual property laws of the member nations, and the Berne Convention itself, reflect the perceived need not only to overcome parochial discriminatory laws, but also to attain a high absolute level of protection in every country.

Among the differences in protection that should be reconciled are (i) the differing standards of originality under copyright laws²⁶ and (ii) the different approaches to the recognition or nonrecognition in different countries of the rights generally referred to as authors' moral rights.²⁷

Harmonization also may result in some needed reforms. Illustratively, almost all nations award a patent where there are competing patent applications to the first applicant to file. The United States (emulated only by the Philippines) accords priority to the applicant who proves that he was the first inventor. Notwithstanding the sentiment of American patent lawyers favoring the first-to-invent priority system, the United States Patent Office has announced its willingness to adopt a "first-to-file" priority system if agreement can be reached reconciling various other differences with the laws of the other industrial countries.²⁸ The implications of that anticipated concession may be more far-reaching than is at first apparent.

Most industrial countries commence the term of patent protection

26. *E.g.*, the 1985 decision of the German Federal Supreme Court in the *Inkasso* case, No. I ZR 52/83 (May 9, 1985), is said to have established a standard of creative achievement that makes the German law provide "the most limited copyright protection of software in Europe." Hoeren, *The Protection of Software in the Federal Republic of Germany—Recent Developments*, 6 *COMPUTER L. & PRAC.* 134 (1990).

27. The moral rights are generally said to encompass rights of paternity, integrity, divulgation and withdrawal. See Baumgarten, Gorman & Meyer, *Preserving the Genius of the System: A Critical Examination of the Introduction of Moral Rights into United States Law*, 12TH ANN. INT'L PROTECTION OF INTELL. PROP.: CURRENT ISSUES & DIRECTIONS 180, 190 (P-H Law & Bus. 1990). Article 6bis of the Berne Convention explicitly refers to the author's "right to claim authorship of the work and to object to any distortion, mutilation, or other modification of, or other derogatory action in relation to, [his] work, which would be prejudicial to his honor or reputation."

Regardless of difficulties in other areas, the recognition of inalienable author's rights would be quite unworkable if applied to computer programs in the present business environment, in which programs most often are developed by teams and are subject to constant "bug fixes," updates and enhancements. France and Japan have made exceptions to their recognition of moral rights in the case of computer programs and England has excluded computer programs from its moral rights law. See Hoffman, Grossman & Nawashiro, *Moral Rights and Computer Software: An International Overview*, *COMPUTER LAW.*, June 1988, at 9-12.

28. Macedo, *First-to-File: Is American Adoption of the International Standard in Patent Law Worth the Price?*, 18 *AIPLA Q.J.* 193, 195 (1990).

upon the filing of a patent application or, in some instances, by reference to the date of publication.²⁹ However, in the United States, a patent is enforceable for seventeen years from the date of its issuance.³⁰ Also, in most countries, patent applications are published eighteen months after they are filed. Early publication is viewed as part of a deferred patent examination system under which examination of a patent application by the Patent Office does not begin until such examination is requested by the applicant. However, in the United States, patent applications and materials on file are not disclosed in ordinary course except in those cases where patents are issued, which means only after the patent is issued; examination of any application proceeds in regular course without the necessity of any special request.

The combined economic effect of (i) a first-to-invent priority system, (ii) commencing protection upon issuance of the patent, and (iii) disclosure only after issuance of the patent can be consequential. For example, on July 17, 1990, a patent was issued by the United States Patent Office to Gilbert P. Hyatt on his invention of a "Single Chip Integrated Circuit Computer Architecture," for which invention Mr. Hyatt first filed a patent application on November 24, 1969, based on work he commenced in 1968. Prior to learning of the Hyatt patent, almost everyone in the semiconductor and computer industries thought that the first microprocessor was invented by Ted Hoff at Intel Corporation in 1971.

The use of microprocessors has become ubiquitous in a host of products used in every part of the world. If the Hyatt patent is held to be valid and sufficiently broad to cover even a modest portion of all of the microprocessors currently being manufactured, and the patent is enforceable for seventeen years from the date of its issuance, its impact on many industries could be enormous.³¹ Self-evidently, such a situation

29. See, e.g., PATENTS THROUGHOUT THE WORLD 134 (West Germany), 207 (Japan) (A. Jacobs 3d ed. 1987).

A World Intellectual Property Organization proposed treaty provides (in article 305(1)) for a twenty-year term from the filing date of the patent application—also the term stated in article 6 of the latest draft Soviet Law on Inventive Activity—but would permit any national law to provide for a longer term. Macedo, *supra* note 28, at 206 n.70. Article 305(2), however, would allow any signatory nation whose national law provides for a shorter term to declare itself not bound by the twenty-year term stated in article 305(1). *Id.* at 206 n.71. Charles R.B. Macedo, Clerk of the United States Court of Appeals for the Federal Circuit, has stated that the option provision "is a disaster for the United States" since a major goal of the United States is to achieve "an adequate term of patent [protection]" in developing countries. *Id.* at 206 n.72.

30. 35 U.S.C. § 154 (1988).

31. The same is true to a lesser extent of the patent issued to Texas Instruments in Japan in 1990 for an integrated circuit invention first applied for in 1959. The Japanese law provides a term for protection of fifteen years from the date of publication for opposi-

presents not only the risk of unfairness but also severe economic dislocations to many persons and companies who built businesses based on cost assumptions and obligations while unaware of Hyatt's work. Hopefully, such a result will be avoided or ameliorated in a new harmonized system.

CONCLUSION

At the birth of the United States, the pamphleteer Tom Paine observed that the participants had the power to begin the world over again.³² This awesome opportunity also exists in the Soviet Union for those engaged in the fashioning of new, liberating laws for a market economy and a free society at this historic time. Taking up the challenge of Tom Paine, let us hope and dare and strive to be equal to the occasion.

tion. That did not occur until 1986 (and, indeed, the opposition was not overruled until 1990). Thus, the protection for this 1959 invention will extend until the year 2001.

32. T. Paine, *The American Crisis: XIII*, in *COMMON SENSE AND OTHER POLITICAL WRITINGS* 64 (N. Adkins ed. 1953) ("To see it in our power to make a world happy, to teach mankind the art of being so, to exhibit on the theater of the universe a character hitherto unknown, and to have, as it were, a new creation entrusted to our hands are honors that command reflection and can neither be too highly estimated nor too gratefully received.").