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THE PROTECTION OF INFORMATION TECHNOLOGY IN A CULTURALLY DIVERSE MARKETPLACE

by DORIS ESTELLE LONG†

I. INTRODUCTION

As we rapidly approach the much vaunted year 2001, one of the critical issues facing the international community is the level and scope of protection to be afforded technology and technology-based products.¹

† Copyright © 1996 Doris Estelle Long, Assistant Professor of Law, The John Marshall Law School. J.D. 1980 Cornell Law School. The genesis of this article appeared in *INTERNATIONAL INTELLECTUAL PROPERTY LAW ANTHOLOGY*, co-edited by the author and Professor Anthony D'Amato of Northwestern University School of Law. These ideas were further refined in a speech before the American Society of International Law presented in March 1996 in Washington, D.C. The author hopes that this article will be the first in a series that will explore the interrelationship between culture and the development and enforcement of international protection standards. The author hopes that as this relationship is more clearly understood, the process of reaching international accords will become less divisive.

The author wishes to thank Professor Anthony D'Amato for his thoughtful insights into the issue of cultural relativism. She would also like to thank her able research assistants, Dawn Johnson and Robert Lohman, without whose assistance this article would not have been completed. Finally, the author would like to thank Dean Robert Gilbert Johnston and Associate Dean Susan Brody for the research grant which made this article possible.

1. Scholars and commentators have long acknowledged the ambiguous nature of "technology." "Technology" appears to be a term that is widely used, but rarely defined. Thus, for example, Article 66 of the Agreement on Trade Related Aspects of Intellectual Property Rights requires members to "provide incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging *technology* transfer to least developed country members in order to enable them to create a sound and viable *technological* base." The Agreement on Trade Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods, *opened for signature* Apr. 15, 1994, 33 I.L.M. 81 at art. 66(2) (emphasis added) [hereinafter TRIPS]. See also TRIPS at art. 65(4) (permitting delay in extension of "product patent protection to areas of *technology*" for certain developing countries) (emphasis added). The treaty, however, provides no definition of "technology."

For purposes of this article, the author has adopted a functional definition of "technology," combining an informational and a functional component. See *infra* notes 2-4. Admit-

No uniform definition exists for the term "technology." The United Nations has defined technology as "a combination of equipment and knowledge."² The Organization for Economic Co-Operation and Development ("OECD") has suggested that technology be defined as "the systematic knowledge for the manufacture of a product, for the application of a process or for the rendering of a service, including any integrally associated managerial and marketing techniques."³ Scholars have suggested other definitions which focus on the functional nature of technology.⁴ Despite this lack of consensus, at the heart of the definition of "technology" lie two closely related concepts: (1) scientific knowledge or information which is in some way newly discovered or newly useful; and, (2) the ability to utilize this information, either directly or indirectly, in commerce or industry, thus giving value to the information. Closely related to these two concepts is a third—the extension of the term "technology" to encompass the expressions and other tangible forms in which this

tedly, this definition adds a degree of subjectivity to the problem since what qualifies as "technology" will change over time and from culture to culture. As recognized by David Haug, "[i]f 'technology is, in fact, the use of scientific knowledge by a given society at a given moment to resolve concrete problems facing its development' then what constitutes technology will vary with the culture and with the level of development." David Haug, *The International Transfer of Technology: Lessons that East Europe Can Learn from the Failed Third World Experience*, 5 HARV. J.L. & TECH. 209, 219 (1992).

Such subjectivity, however, helps underscore the problems in developing international standards of protection for "technology," or its diverse sub-categories, such as computer software and databases, medical and surgical drugs, devices and procedures, and manufacturing equipment and processes.

For purposes of this article, the term "technology" will be used in a broad generic sense to refer to scientific information whose value resides in its functional usefulness in enhancing or developing new commercial or industrial products and processes. See *infra* notes 2-4. Such "technology" necessarily includes the sub-categories described above, as well as digital communications media and robotic, digital and laser manufacturing processes and equipment.

The term "technology-based products" means, for purposes of this article, those tangible forms which are either created by such technology or which embody such technologies (for example, compact discs). "Technology-based processes" means those processes which utilize technology such as manufacturing processes based on laser technology for creating compact discs. The categories are necessarily over-lapping since a computer software program may qualify as both technology and a technology-based product. This overlap, however, is not fatal to the analysis set forth herein since these categories are used for illustrative purposes only and are not intended to create actual categories for protected technological works.

2. *Planning the Technological Transformation of Developing Countries*, U.N. Doc TD/B/C.66/50 (1981).

3. OECD North/South Technology Transfer—The Adjustments Ahead (1981).

4. See, e.g., ERIC W. MAYDEN, TECHNOLOGY TRANSFER TO EASTERN EUROPE-U.S. CORPORATE EXPERIENCE 23 (1973) ("Technology is the quantum of knowledge by which such aspects as patent rights, scientific principle, and S&D are translated into production of marketable industrial materials, components, and end product").

newly useful information may be embodied.⁵

Because of its emphasis on advancement, "technology" is a fluid concept that changes over time and cultures. In the 1400's, movable type was considered at the "cutting edge" of communications technology. In the Nineteenth Century, the development of radio and photography moved the border of technological development even further. In their time, the telephone, the phonograph, and the motion picture camera were all considered at the forefront of communications media.⁶ In today's global marketplace, among those developments which experts may presently consider at the "cutting edge" of technological growth are computer hardware, software and firmware, robotics and digital enhancement, and telecommunications capabilities.

There is no disputing that we live in the age of technology—personal computers, digital recordings, CD ROMS, the Global Information Superhighway,⁷ and automation in every imaginable shape and form are part of the lifestyle of the developed countries, and they are becoming part of the lifestyle (if somewhat more slowly) of the developing countries.⁸ Such technology has not only had a vast impact on the lives of the people for whom it has been available, but this technology also has served to shrink the world. Using the Internet, one person can exchange e-mail, access databases, and share information with people in countries that he may never have the opportunity to visit—and on what some would consider an almost instantaneous basis.

In today's global economy, if technology is equated with information, information has become, or is at least perceived to be, *power*. Many of the present trade disputes between the so-called developed countries⁹

5. Among some of the most notable media in which this useful information may be contained today are compact discs, computer software programs, and digital multi-media.

6. Industrialization, transportation, science, and medicine have followed similar paths of development and have likewise pushed the ingenuity of the law to expand to cover such growth.

7. Various terms have been used to refer to the networking of diverse, unrelated computers and their affiliated programs and databases, including "cyberspace," "Internet," "national information infrastructure," and "national information superhighway." Since many of these terms have a relatively narrow (domestic) focus or are rapidly becoming obsolete or out of vogue, the author has elected to use the term "global information superhighway" to refer to the potentially international networking of these computers.

8. For purposes of this article, the term "developed countries" refers to industrialized countries, such as the United States, Canada, Japan, and members of the European Union, and generally includes the member countries of the Organization for Economic Cooperation and Development (OECD). The term "developing countries" refers to those Third World countries which have not reached the level of industrialization of OECD members and generally includes less developed countries (LCD's) and members of the "Group of 77".

9. Such countries are generally perceived as owning or controlling most of the world's presently available technology.

and developing countries¹⁰ can be reduced to debates over access to information, which can fuel a country's industrial growth and development. Given this perceived equation between technology (or, more precisely, unfettered access to technology) and power, decisions regarding the scope of protection to be afforded technology (and technology-based products and processes) raise issues that may profoundly impact a country's economic, political, and cultural development.¹¹

A thorough examination of the problems posed in attempting to develop international protection norms for technology in today's global marketplace would fill hundreds of pages of text. This article cannot hope to achieve such an examination. What the article proposes to do, however, is give a brief overview of some of the more salient factors which impact present day efforts to achieve international agreement on such diverse topics as the protection of computer technology, and the enforcement of rights in technology-based inventions and products. To achieve these goals, this article briefly examines some of the key issues facing the members of today's international community as they struggle with the problems of devising international protection standards for technology and technology-based products and processes. This article uses as a fundamental paradigm the problems encountered in recent efforts to develop international protection norms for intellectual property, in particular copyright, patent, and trade secret rights. Indeed, this author's premise is that the problems arising from recent multinational efforts to establish international protection standards for intellectual property rights provide a useful insight into the issues facing those who seek to develop international protection standards for technological developments.¹²

10. Such countries are generally perceived as having little, if any, native developed technology.

11. See *infra* notes 140-48 and accompanying text (discussing the political and economic debates regarding *res communis* and the extension of protection to technology which can be used to fuel a country's industrial growth).

12. Multinational treaty regimes are not the only source for international standards. Bilateral agreements and harmonization efforts (directed at harmonizing domestic laws outside of treaty obligations) can also serve as sources for international protection norms. This article will focus on multinational treaty regimes because of their immediate and widespread impact. Congress acknowledged the following in acceding to the Berne Convention for the Protection of Literary Works:

While bilateral copyright agreements are important, there are clear advantages to a multilateral approach. First, adherence to Berne will immediately give the United States copyright relations with 24 countries with which no current relations exist. A twenty-fifth country, the Peoples Republic of China, with more than a billion potential users of American works, has given strong signals that it is considering adherence to Berne. Second, bilateral arrangements often suffer from lack of certainty or varying standards, and are more likely to be dishonored. Protection of United States works under bilateral agreements, moreover, is often problematic. The standards in these agreements vary widely, they lack the credi-

This article begins by briefly examining the relationship between "technology" and intellectual property laws. Part II provides a short overview of the bundle of rights granted by law to traditional forms of intellectual property as they are used to protect technological innovations. Part III explores the development of international protection standards for such intellectual property forms and examines some of the problems faced in creating an international consensus in light of the often conflicting protection goals of industrialized and newly industrialized countries. In Parts IV, V, and VI, the impact of multiculturalism, economics and the transitory nature of technology, respectively, in establishing international protection norms is explored. This article concludes by suggesting methods for reducing the friction caused by multicultural and economic diversity so that countries can more effectively develop and enforce international protection standards for technology.

II. THE DYNAMICS OF PROTECTING TECHNOLOGY

Early common law did not acknowledge a property right in the contents of a book, a new method for manufacturing boots, or the composition of a unique mixture of herbs to cure a fever. Over time, however, as the costs of developing these innovations increased (and individual patronage became less available), inventors and authors needed incentives to expend the time, energy, and capital required to keep the progress of science and the arts moving forward. These incentives were most often provided in the guise of protection for the intangible property rights in which such advances were embodied—in the legislative acknowledgment of protection for the rights inhering in copyright and patent protectable works. The United States Constitution gave Congress the power to "promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."¹³

National legislation providing for copyright- and patent-protection remains one of the key methods for protecting scientific and creative advances, and similar protections exists in a majority of nations today.¹⁴

bility and authority of an international convention like Berne, and sometimes they are simply ignored.

REPORT ON THE BERNE CONVENTION IMPLEMENTATION ACT OF 1988, S. Rep. No. 352, 100th Cong. 2d Sess. 4 (1988).

13. U.S. CONST. art. I, § 8, cl. 8.

14. An examination of the individual intellectual property laws of the world's recognized nation states is beyond the scope of this article. However, over 85 countries are members of the three primary multinational treaties requiring minimum domestic protection for intellectual property rights: The Paris Convention for the Protection of Industrial Property, July 14, 1967, 21 U.S.T. 1583 [hereinafter "Paris Convention"], The Berne Convention for the Protection of Literary and Artistic Works, July 24, 1974, 828 U.N.T.S. [hereinafter "Berne Convention"], and The Agreement on Trade Related Aspects of Intellectual Prop-

Since the purpose of such laws is to encourage authors and inventors in their endeavors, national laws theoretically should be sufficient to provide needed incentives for creation. Yet over the past 100 years, there has been a growing trend toward developing *international* standards for protecting intellectual property rights. The perceived need for these international standards cannot be based solely on incentives for creators and inventors. It is difficult to imagine a situation where a computer programmer in the United States, for example, would not spend the labor and capital necessary to devise a new digital compression program simply because the People's Republic of China, for example, does not currently provide a strong level of protection for U.S. computer software programs.¹⁵ The drive for such standards must derive then, at least in part, from some other perceived value.

With the globalization of the marketplace, trade between nations has increasingly included products that embody the intangible rights represented by intellectual property laws. Copyrighted computer programs, motion pictures, compact discs, and patented drugs and machinery comprise exponentially increasing percentages of the industrialized

erty Rights, *supra* note 1. For further discussion of these treaties, see *infra* text at Part II. Even the newly emerging nations of the former Soviet Union, which provided little, if any, protection for intellectual property rights prior to the break-up of the Soviet Union, have developed intellectual property protection laws. See, e.g., Treaties Accessions, 49 PAT. TRADEMARK, & COPYRIGHT J. (B.N.A.) (Jan. 1995) (containing Russia's declaration of accession to the Berne Convention for the Protection of Literary and Artistic Works on Dec. 9, 1994); The Law of Ukraine "On the Protection of Rights for Inventions and Utility Models" of Dec. 15, 1993; The Law of Ukraine "On Copyright and Related Rights" of Dec. 21, 1993; Russian Federation Patent Act, Sept. 23, 1992; Russian Federation Law on Copyrights and Neighboring Rights, Aug. 3, 1993.

15. The current problems of enforcing China's existing copyright laws against U.S. computer software pirates has been the subject of intense media attention. Patrick Tyler, *U.S. Threatening Sanctions on China Over Copyrights*, WALL ST. J., Apr. 15, 1995, at A1; *US Threatens Action on IP*, CHINA LAW BRIEFING, Vol. 1, No.9, Jan. 1996, at A1; *29 Countries on IPAA Hit List*, 29 IP WORLD 1, Mar. 1996; David D. Hamilton, *PC Makers Find China is a Chaotic Market Despite its Potential*, WALL ST. J., Apr. 8, 1996; David E. Sangler with Steven Erlanger, *US Warns China Over Violations of Trade Accord*, N.Y. TIMES, Feb. 14, 1996; Seth Faison, *Copyright Pirates Proper in China Despite Promises*, N.Y. TIMES, Feb. 20, 1996, at A1; Steven Mufson, *Bootleg CD Video Plants in China Still Cause US Firms Concern*, WASH. POST, June 12, 1995; *IPR Fight is Judged Success*, CHINA DAILY NEWS, May 27, 1995; Helene Cooper and Kath Chen, *China Averts Trade War with US, Promising a Campaign Against Piracy*, WALL ST. J., Feb. 27, 1995, at A1; David E. Sanger, *In a Trade Pact with China, A Ghost of Japan*, N.Y. TIMES, Feb. 25, 1995, at D1; Seth Faison, *US and China Sign Accord to End Piracy of Software, Music Recordings, Film*, N.Y. TIMES, Feb. 27, 1995, at A1.

Since 1991, China has been placed on the priority watch list established by the U.S. Trade Representative under Special 301, 19 U.S.C. § 2411, for its failure to protect U.S. intellectual property rights. See *infra* notes 45 and 116.

nations' exports to Third World and other developing countries.¹⁶ The use of "technology" as an exportable "product" by industrialized nations has been matched by an increasing drive by such "have" countries to obtain value for these exports through the increased recognition and enforcement of intellectual property rights by the importing "have-not" countries. Although efforts to obtain value for the creative endeavors of foreign authors and inventors could be directed toward achieving bilateral agreements between trading partners, countries are increasingly striving to achieve these ends through the development of multinational accords.¹⁷

Technology and intellectual property laws share a unique relationship. As noted above, intellectual property laws were often created to encourage the progress of science and the arts. Such progress necessarily includes the advance of "technology." Thus, intellectual property laws, at least facially, serve as a potential initial source for technology protection. For example, although originally developed as a means for maintaining the monopoly of printers over the content of their perishable

16. See, e.g., J. Thomas McCarthy, *Intellectual Property—America's Overlooked Export*, 20 DAYTON L. REV. 809 (1995).

In supporting the decision to accede to the Berne Convention, the U.S. Congress stressed the need to protect its intellectual property rights as a trade matter, stating:

The United States is the world's largest exporter of copyright material. At a time when the United States is suffering a large overall trade deficit, works protected by copyright—such as books, sound recordings, motion pictures, and computer software—routinely generate a trade surplus. For 1987 alone, the surplus was greater than \$1.5 billion. This performance is strong, but it is weakened by the existence of wide-spread piracy in many countries that are markets for U.S. copyrighted products. The U.S. International Trade Commission estimated recently that U.S. companies lost between \$43 billion and \$61 billion during 1986 because of inadequate legal protection for United States intellectual property, including copyrights.

REPORT ON THE BERNE CONVENTION IMPLEMENTATION ACT OF 1988, *supra* note 14. For more recent figures on the harm caused by the worldwide piracy of U.S. goods, see *infra* note 115.

17. Early large scale multinational efforts to develop international intellectual property protection standards include the establishment of the Berne Convention for the Protection of Literary and Artistic Works in 1886 and the Paris Convention for the Protection of Industrial Works in 1883. See discussion *infra* text at Part II.

One of the most noteworthy recent examples of using multinational efforts to resolve problems among trading partners are efforts to develop a model anti-counterfeiting code as part of the Tokyo Round of The General Agreement on Trade and Tariffs. Although the Tokyo Round ended without agreement on the substantive provisions for such a code, these negotiations set the stage for renewed efforts during the Uruguay Round. For discussions regarding the debates over the scope of such a code and history of these efforts, see Joseph A. Greenwald, *The Protection of Intellectual Property Rights, in GATT AND THE URUGUAY ROUND: THE US VIEWPOINT IN CONFLICT AND RESOLUTION IN US-EC TRADE RELATIONS AT THE OPENING OF THE URUGUAY ROUND* 229 (Seymour J. Rubin & Mark L. Jones, eds., 1989); LESLIE A. GLICK, *MULTILATERAL TRADE NEGOTIATIONS: WORLD TRADE AFTER THE TOKYO ROUND* (1984); TERRENCE P. STEWART, *THE GATT URUGUAY ROUND: A NEGOTIATING HISTORY* (1986-1992)(1993).

materials,¹⁸ copyright law has become the foremost methods for expanding the law's protection to include the products of new technological advances in the communication arts. From the development of photography, to computer software and the intricacies of the Global Information Superhighway, the history of United States copyright law has become a history of the law's struggle and ultimate expansion to provide protection for the unique products derived from advances in communications technology.¹⁹ Although the propriety of using copyright laws to protect the unique products of today's digital technology has been hotly debated,²⁰ such laws remain at the forefront of the international community's efforts to develop international protection norms.²¹ Consequently, an examination of the factors affecting the development of international norms for technology protection must necessarily begin with an exami-

18. See, e.g., Jane C. Ginsburg, *A Tale of Two Copyrights: Literary Property in Revolutionary France and America*, 64 TUL. L. REV. 991 (1990); David Lange, *At Play in the Fields of the World: Copyright and the Construction of Authorship in the Post Literate Millenium*, 55 SPG LAW & CONTEMPORARY PROBLEMS (1992); MARSHALL LEAFFER, UNDERSTANDING COPYRIGHT LAW §1.2 (2d ed 1995).

19. The first United States Copyright Act of 1790 protected a relatively limited category of literary and artistic works—maps, charts and books. Copyright Act of 1790, Act of May 31, 1790, ch. 15, 1 Stat. 124. Subsequent revisions expanded the categories of works to expressly include the products of newer communications media and technology. Thus, for example, the Act of 1865, 13 stat. 530, added photographs as copyrightable subject matter while the 1909 Copyright Act added motion pictures. Copyright Act of 1909, 17 U.S.C. § 5 (1909 Act). Most recently, the Copyright Act of 1976 was amended to expressly include "computer programs" as a category of copyright protectable works. Copyright Amendments of 1980, Pub. L. No. 96-517 § 10, 94 Stat. 3028, 3028. See 17 U.S.C. § 101 (defining a computer program under the Copyright Act as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result"). See also 17 U.S.C. § 117 (granting the owner of a copy of a computer program the right to create an archival back-up copy). For a general history of the development of United States copyright laws, see WILLIAM F. PATRY, COPYRIGHT LAW AND PRACTICE (1994).

20. See, e.g., Michael Lehman, *TRIPS, the Berne Convention and Legal Hybrids*, 94 COLUM. L. REV. 2621 (1994); Pamela Samuelson, et al., *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2308 (1994); Pamela Samuelson, *Counterpoint: An Entirely New Legal Regime is Needed*, 12 COMPUTER LAW 11 (1995); J.M. Reichman, *The Know-How Gap in the TRIPS Agreement: Why Software Fared Badly and What are the Solutions*, 17 HASTINGS COMM. & ENT. L.J. 763 (1995); J.H. Reichman, *Charting the Collapse of the Patent-Copyright Dichotomy: Premises for a Restructured International Intellectual Property System*, 13 CARDOZO ARTS & ENT. L.J. 475 (1995).

The author's intention is not to use this article as a means for commenting on this debate. The arguments are interesting and strongly felt on both sides and will no doubt inform future debates over the standards to be used in protecting certain categories of intellectual property. This debate, however, does not undermine the underlying premise of this article—the multicultural, political and economic issues that surround the development of international intellectual property protection norms serve as useful guideposts to the issues that inform the debate over international technology protection norms.

21. See discussion *infra* Part II (regarding efforts to protect computer software through the expansion of the definition of copyright protectable works under the Berne Convention).

nation of those factors that have affected the development of international intellectual property protection norms.

III. TECHNOLOGY AND TRADITIONAL INTELLECTUAL PROPERTY FORMS: THE DEVELOPMENT OF A STANDARD BUNDLE OF RIGHTS

"Technology," if subject to protection, is generally protectable under a country's patent, copyright, or trade secret laws.²² Technology-based products—those which embody a technological advance such as computer software or compact disc recordings—are most often protected, if at all, under that nation's copyright laws. Similarly, technology-based processes (including manufacturing processes) are most often protected, if at all, under a country's trade secret law.²³

There is no world-wide uniformity in the definitional subject matter of a particular intellectual property right.²⁴ Thus, the bundle of rights

22. To a lesser extent technology may also be subject to protection under industrial design legislation and, in some instances, tangentially protected under neighboring rights theories. See discussion *infra* Part III (regarding the scope of protection afforded under industrial design and neighboring rights laws).

23. Currently, no multinational treaty is directed exclusively to the protection of trade secret rights. Indeed, part of the current debate over developing such standards arises over the nature of rights which a trade secret comprehends. While some view trade secrets as a property right, similar to the intangible property rights embodied in a copyright or patent, others consider trade secrets to arise from the law of unfair competition. Thus, protection of a trade secret does *not* involve protecting a property right, per se, but ascertaining the balance to be struck between competitors.

Article 10*bis* of the Paris Convention, with its prohibition against "unfair competition," has been cited as a basis for requiring the international protection of trade secret and other confidential information. This view received its greatest prominence in Article 39 of TRIPS, which required adherents to protect "undisclosed information" "[i]n the course of ensuring effective protection against unfair competition as provided in Article 10*bis* of the Paris Convention." TRIPS, *supra* note 1, at art. 39(1). Such protection must include the ability to prevent the disclosure to or acquisition or use by others without the owner's consent "in a manner contrary to honest commercial practices." *Id.* at art. 39(2). To qualify for such protection the information must be "secret in the sense that it is not, as a body or in the precise configuration and assembly of its components, generally known among or readily accessible to persons within the circles that normally deal with the kind of information in question," the information must have "commercial value because it is secret," and the information must have "been subject to reasonable steps under the circumstances by the person lawfully in control of the information, to keep it secret." *Id.* See also *infra* note 53 and accompanying text (discussing protection of trade secrets under the North American Free Trade Agreement).

24. In fact, there is presently no single definition for "intellectual property". Based on present national laws and international treaties, however, most nations appear to include as "intellectual property" copyright, patents, trade secrets, trademarks (including service marks and other source designations), and industrial designs (including utility models). Since trademark laws are not directly related to the protection of technological innovations, except tangentially as a source designator for products containing or embodying such tech-

granted "technology" under a particular form of intellectual property protection varies from country to country. Nevertheless, some general consensus on the basic attributes of these forms (and the rights they protect) can be derived from multinational treaties and the laws of those countries which recognize the particular intellectual property form at issue. These basic attributes can be used as the cornerstone for an international technology protection standard.

A. COPYRIGHTS

"Copyrights" provide a useful starting place in many countries for protecting technology and technology-based products. Generally included within the scope of protected subject matter of copyright are works of artistic and literary expression, including books, poems, pamphlets and other writings, musical compositions, cinematographic works, drawings, paintings, sculpture, photographic works, illustrations, maps, and dramatic works.²⁵ Differences among nations arise regarding the precise categories of works that are protected, including the extension of copyright protection to computer software and databases.

The need for fixation of works in a tangible medium of expression and the degree of creativity or originality required for copyright protection varies according to domestic practices. For example, U.S. copyright law defines a copyrightable work as "an original expression of authorship" and requires that such expression be "fixed in a tangible medium of expression" before copyright protection attaches.²⁶ By contrast, recent Russian copyright laws require no fixation before a work is protected. Instead, a work is protected if the work is in objective form."²⁷ "Objec-

nology, this article focuses on patents, copyrights, trade secrets and (to a lesser extent) utility models.

25. See generally Berne Convention, *supra* note 14, at art. 2. See also 17 U.S.C. § 102 (enumerating eight categories of protectable works, including "literary works; musical works; . . . dramatic works; . . . pantomimes and choreographic works; pictorial, graphic and sculptural works; motion pictures and other audiovisual works; sound recordings; and architectural works"); Copyright Law of the People's Republic of China at Article 3 (Nov. 1990) (protecting literary, oral, dramatic, musical, and choreographic works, works of fine art, photographic works, cinematographic works, maps, engineering designs, and computer programs); Russian Federal Law on Copyright and Neighboring Rights at Article 7 (July 1993) (protecting literary, musical, choreographic, audiovisual works, paintings, decorative applied and stage art, architectural and garden-park art, computer programs, and oral works); Convencion Universal sobre Derechos de Autor at Article 7 (Sept. 6, 1952) (literary, scientific, pedagogical, musical, choreographic, pictorial, architectural, audio-visual and photographic works, and computer programs); and United Kingdom Designs and Patents Act of 1988 at c48, § 1(1) (literary, dramatic, musical and artistic works, computer programs, cinematographic and audio-visual works).

26. 17 U.S.C. § 102.

27. Russian Federation Law On Copyright and Neighboring Rights at Article 6 (July 1993).

tive forms" include oral (unfixed) works as well as written (fixed) works.²⁸

The requirement of originality may be one of the most important differences in copyright laws which affects the protection of technology. In a seminal decision, the United States Supreme Court in *Rural Telephone Service Co. v. Feist Publications, Inc.*,²⁹ refused to extend copyright protection to the white pages of a telephone directory on the grounds that such factual compilations lacked the requisite modicum of originality to qualify for copyright protection. This requirement of originality has been used to refuse copyright protection for computer interfaces,³⁰ for the structure, sequence and organization of a particular program,³¹ for logic trees,³² and for certain computer databases.³³

Among the bundle of rights granted to a copyright owner are the exclusive rights to reproduce the work, to disseminate that work to the public, and to adapt and/or translate the work.³⁴ Restrictions on these rights may exist in the form of compulsory licenses and "fair use" exceptions to an owner's exclusive rights. While such exceptions are generally

28. *Id.* at art. 6(2). See also Chinese Copyright Law at Article 3 (Nov. 1990) (including "oral works" among the categories of protected "works").

29. 499 U.S. 340 (1991).

30. See, e.g., *Synercom Tech., Inc. v. University Computing Co.*, 474 F. Supp. 37 (N.D. Tex. 1979).

31. See, e.g., *Computer Assoc. Int'l v. Altai, Inc.*, 982 F.2d 693 (2d Cir. 1992).

32. See, e.g., *Lotus Development Corp. v. Borland Int'l Inc.*, 49 F.3d 807 (2d Cir. 1995), *aff'd per curiam*, 116 S.Ct. 804 (1996).

33. See, e.g., *Atari Games Corp. v. Nintendo of America*, 30 U.S.P.Q. 2d 1401 (N.D. Cal 1993).

Copyright usually attaches upon the creation of a protected work. See, e.g., 17 U.S.C. §§ 102, 104 (affixing copyright protection upon creation; registration is not required for foreign authored works). See Berne Convention, *supra* note 14, at art. 5 (stating no formalities may be imposed).

34. See, e.g., 17 U.S.C. § 106 (granting U.S. copyright owner five exclusive rights including the right of reproduction; the right to prepare derivative works, including the right to prepare translations; the right to publicly display the work; the right to publicly perform the work; and the right of public distribution). See Chinese Copyright Law *supra* note 25, at arts. 21, 45; Russian Federation Copyright Law *supra* note 25, at art. 15; UK Copyright Law *supra* note 25, at § 16(1).

The adaptation right, particularly the right to translate a work into another language, has not been uniformly acknowledged. Although Article 8 of the Berne Convention requires adherents to protect foreign author's "exclusive right of making and of authorizing the translation of their works throughout the term of protection of their rights in the original works," Berne Convention at Article 8, many developing countries fail to prohibit the creation and dissemination of works translated in domestic idioms. See, e.g., Russian Copyright Law, *supra* note 25, at art. 12(2) (providing that "copyrights of translators . . . do not prevent other individuals from doing their own translations"). See also Chinese Copyright Law, *supra* note 25, at art. 12 (granting copyright in a translation to the translator "provided that his exercise of such right may not prejudice the copyright in the original work").

granted for purposes such as criticism, news reporting, and education,³⁵ broadly applied fair use exceptions based on the perceived need for greater public access to technological advances can raise serious issues about the actual protection afforded to a particular technological innovation. A noteworthy example of the protection posed by such exceptions is the debate over whether reverse engineering constitutes fair use as applied to computer software programs. The United States and the European Union have reached divergent conclusions regarding this issue.³⁶ Although there is no consensus on the duration of copyright protection, the Berne Convention establishes a copyright term of the life of the author plus fifty years for most protectable works.³⁷

As noted above, domestic copyright laws often protect technology-based products.³⁸ In addition, some countries, including the United States, specifically protect computer software under their copyright laws.³⁹ Other countries have created a *sui generis* form of protection⁴⁰ or

35. For useful discussions on the role of compulsory licensing and other governmental sponsored "takings" of intellectual property, see, for example, MICHAEL D. SCOTT, *COMPULSORY LICENSING OF INTELLECTUAL PROPERTY IN INTERNATIONAL TRANSACTIONS* (1988); Gianna Julian-Arnold, *International Compulsory Licensing: The Rationales and the Reality*, 33 *IDEA* 349 (1993); Cole M. Fauver, *Compulsory Patent Licensing in the United States: An Idea Whose Time Has Come*, 8 *Nw. J. INT'L L. & BUS.* 666 (1988).

36. See, e.g., *Sega Enterprises v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992) (holding that reverse engineering for purposes of gaining an understanding of ideas and functional aspects of a computer program qualifies as fair use). By contrast, the European Union permits reverse engineering only for the purpose of creating an interoperable (compatible) computer program. See Council Directive 1122/42 of 14 May 1991 on the Legal Protection of Computer Programs 1991 O.J. See generally E. Brendan Magrab, *Computer Software Protection in Europe and the EC Parliamentary Directive on Copyright for Computer Software*, 23 *LAW & POL'Y INT'L BUS.* 709 (1992).

37. Berne Convention, *supra* note 14, at art. 7(1). The Berne Convention, however, allows countries to establish shorter terms of protection for cinematographic works (roughly 50 years after authorized distribution), for certain anonymous and pseudonymous works (roughly 50 years from lawful distribution); and for photographic works and works of applied art (roughly 50 years from the making of the work). Berne Convention, *supra* note 14, at arts. 7(2)-(4). Countries may grant terms of protection in excess of these minimum terms. Berne Convention, *supra* note 14, at art. 7(6).

38. See *supra* notes 22-23 and accompanying text (describing copyright protection for technologically advanced products).

39. United States copyright laws expressly include "computer programs" among protectable works under United States copyright law. See, e.g., 17 U.S.C. §§ 102, 117. Section 101 defines a "computer program" as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." *Id.* at § 101. Other countries which expressly protect computer programs under their domestic copyright laws include the United Kingdom, The People's Republic of China, Mexico, Australia, Canada, Czech Republic, France, Germany, Greece, Hong Kong, Hungary, India, Israel, Italy, Japan, The Netherlands, Poland, Saudi Arabia, Spain, Sweden, Switzerland, Thailand, and Venezuela.

provide no copyright protection at all.⁴¹

B. PATENTS

“Patents” are generally defined to include scientific inventions concerning products and processes in all fields of technology, including machines, manufacturing products, chemical and electrical structures and compositions, and processes, so long as such inventions are new, useful and non-obvious.⁴² Although patents have provided a questionable form of protection for software,⁴³ they serve as one of the principle sources of protection for other technological advances, including those in medicine, agriculture, and engineering. Differences among countries in the bundle of rights that they grant to a patent owner arise regarding the category of scientific inventions receiving protection, the degree of novelty and/or non-obviousness required for protection to attach,⁴⁴ and the obligation to

40. Included among those countries which presently protect computer programs under a *sui generis* form of protection are Russia, Brazil, and Korea. For example, although Russia lists “computer programs” among the categories of works protected under its copyright laws, see Russian Copyright Law, *supra* note 25, at art. (7), Russia has also enacted a separate act specifically to protect computer software and databases. See Computer Software and Database Protection Act, R.F. Act No. 3523-1 (Sept. 23, 1992).

41. Many countries in the former Soviet Union, in Eastern Europe and in the Middle East do not expressly protect computer programs under domestic statutory copyright laws. Many of these countries, either through harmonization efforts or as part of their obligations under TRIPS and other bilateral and multilateral treaty obligations, are in the process of constructing such laws.

42. See, e.g., TRIPS, *supra* note 1, at art. 27. See also 35 U.S.C. § 101 (stating that anyone who invents or discovers any new and useful process through machines, composition of matter, or manufacture, may obtain a patent). Under Article 27, patents must be “available, for any inventions in all fields of technology.” Such inventions, however, must be “new,” “involve an inventive step,” and “be capable of industrial application.” TRIPS, *supra* note 1, at art. 27.

43. Under United States patent law, neither a mathematical formula nor an algorithm can be patented per se. See, e.g., *Parker v. Flook*, 437 U.S. 584 (1978) (stating that patentable subject matter is not described where a new and presumably better method’s only novel feature constitutes an algorithm or mathematical formula); *Gottschalk v. Benson*, 409 U.S. 63 (1972) (holding that a mathematical formula was not a patentable process). Nevertheless, patents have been granted to systems or processes which incorporate computer software structures. See generally DONALD CHISUM & MICHAEL JACOBS, UNDERSTANDING INTELLECTUAL PROPERTY LAW at 2(c)[1][f] (1992). The debate over what qualifies as a protectable inventive step, as opposed to a phenomena in nature, however, continues to make patent protection for software potentially even less certain than copyright protection.

44. “Novelty” means that only inventions which have not been anticipated in previous publications or inventions will be granted protection. See, e.g., 35 U.S.C. §§ 101-102 (prohibiting United States patent protection for inventions that are known, used by others, or patented or described in a publication prior to invention by the applicant). “Non-obviousness,” also referred to as an “inventive step,” means that only those inventions which would not be obvious to a person having ordinary skill in the relevant art to which the subject matter pertains will be granted protection. See, e.g., 35 U.S.C. § 103 (limiting pat-

“work” or use the patented product or process in the country granting the patent.⁴⁵ Generally, patent protection from the government is received only upon review of an application filed by the inventor containing specific claims describing the invention.⁴⁶ Differences exist in the degree of disclosure regarding the invention required in an application. These differences consist primarily in the effect of filing upon a patent applicant’s right as against prior inventors of substantially similar inventions; the nature of the application review, including what acts constitute prior art sufficient to bar patent protection; and whether the application may be published prior to the patent grant to permit challenges to the patentability of the claimed invention.⁴⁷

ent protection to those inventions which ‘as a whole’ would not have been ‘obvious at the time the invention was made to a person having ordinary skill in the art to which [the subject matter of the patent] pertains’; *Graham v. John Deere Co.*, 383 U.S. 1 (1966) (describing factors to apply in making the obviousness determination).

45. For example, some developing countries do not protect inventions concerning pharmaceutical or agricultural products. See, e.g., Bruce Stokes, *The Diminishing Returns of Slapping China for Piracy of U.S. Copyrights*, L.A. TIMES, May 26, 1996, at M2, available in 1996 WL 10488895 (discussing United States \$3 billion loss from China’s pirating of patented drugs). See generally Frederick M. Abbott, *Protecting First World Assets on the Third World: Intellectual Property Negotiations in the GATT Multilateral Framework*, 22 VAND. J. TRANSNAT’L L. 689 (1989). In the late 1980’s Thailand’s failure to grant pharmaceutical patents contributed to its identification by the U.S. as a priority country under Special 301. See generally Stefan Kirchanski, *Protection of U.S. Patent Rights in Developing Countries: U.S. Efforts to Enforce Pharmaceutical Patents in Thailand*, 16 LOY. L.A. INT’L & COMP. L.J. 569 (1993); Ted L. McDorman, *U.S.—Thailand Trade Disputes: Applying Section 301 to Cigarettes and Intellectual Property*, 14 MICH. J. INT’L L. 90 (1992). More recently, the U.S. has threatened similar sanctions to encourage China to enforce pharmaceutical patents. See, e.g., Bruce Stokes, *The Diminishing Return of Slapping China for Piracy of U.S. Copyrights*, L.A. TIMES, May 26, 1996, at M2, available in 1996 WL 10488895. See also *infra* note 116.

Similarly, requirements that an invention be “worked” (or practiced) in the granting country may lead to loss of patent protection where the inventor does not want to make the investment to develop a manufacturing plant in a particular country or for some other reason may fear loss of control of his product through licensing.

46. See generally Paris Convention, *supra* note 14, at arts. 4, 4bis, 4ter (establishing rights of priority for member nations, and independence of applications). See also 35 U.S.C. §§ 111-14 (setting forth United States patent application procedures); TRIPS, *supra* note 1, at art. 29 (requiring sufficient disclosure in a patent application to permit a ‘person skilled in that art’ to carry out the invention). Unlike copyrights, patent rights only accrue upon governmental grant. Compare *supra* note 33. Grant of patent rights in one country, therefore, does not assure a grant of rights in a neighboring country. See Paris Convention at Article 4bis (providing that patent grants are independent).

47. The issue of whether priority in patent rights are granted on the basis of prior invention or prior application is hotly contested internationally. Currently, only the United States and the Philippines grant priority on the basis of prior conception. See, e.g., 35 U.S.C. § 102. For a brief examination of the current debate, see, for example, Charles R.B. Macedo, *First to File: Is American Adoption of the International Standard in Patent Law Worth the Price?*, 1988 COLUM. BUS. L. REV. 543 (1988). Robert W. Pritchard, *The*

Among the rights a patent owner usually receives is the right to exclude others from making, using, or selling in the granting country the product or process claimed by the patent.⁴⁸ Restrictions on these rights may exist in the form of compulsory licenses. These licenses require the "working" (or the use) of the patent in the granting country, or they allow others to use those patents deemed to be of "national significance" to the public health or welfare of the granting country.⁴⁹ Similar to compulsory licenses for copyright protected works, compulsory licenses of patented inventions can have an adverse impact on the scope of protection afforded a particular technological advance.⁵⁰ For example, the requirement that a patent for a particular drug be "worked" may require the owner to establish manufacturing facilities inside the country, requiring an outlay of capital the owner may be unwilling or unable to expend. Moreover, construction of such a facility may result in the disclosure of trade secret technology. Instead of risking such disclosure, the owner may elect either not market the drug in the country in question or not seek patent protection for the drug, thereby potentially denying others the ability to build on the patented technology.

The term of patent protection varies. However, the Agreement on Trade Related Aspects of Intellectual Property Rights (hereinafter "TRIPS") establishes a patent term of at least twenty years from the date of filing the application.⁵¹

C. TRADE SECRETS

"Trade secrets" generally includes secret information that has commercial value due to its secret nature and that has been subject to reasonable steps under the circumstances by the person lawfully in control

Future Is Now—The Case of Patent Harmonization, 20 N.C. J. INT'L L. & COM. REG. 291 (1995).

The issue of pre-grant publication of patent applications is also hotly debated. In the U.S., patent applications remain confidential unless and until a patent issues on the applied-for invention. 35 U.S.C. § 122. Thus, the inventor of a new and non-obvious improvement to a digital sound recorder would not be required to disclose her invention to the public unless her application was successful. If the U.S. Patent Office determined that patent protection was barred under Section 102 because it had been anticipated in the prior art, 35 U.S.C. § 102, the applicant might still be able to protect her invention under trade secret laws (depending on the extent of the disclosure in the prior art). In Japan, which requires publication for opposition and comment prior to the grant of patent rights, denial of a patent application would *not* leave the applicant free to pursue trade secret protection. John C. Lindgren & Craig J. Yudell, *Protecting American Intellectual Property in Japan*, 10 COMPUTER & HIGH TECH. L.J. 1 (1994).

48. See, e.g., 35 U.S.C. §§ 154, 271. See also TRIPS, *supra* note 1, at art. 28.

49. For discussions on the role of compulsory licensing and other governmental sponsored "takings" of intellectual property, see *supra* note 35.

50. See *supra* note 35 (discussing compulsory licensing of intellectual property).

51. TRIPS, *supra* note 1, at art. 33.

of the information to keep it secret.⁵² Among the types of secret information which are generally considered to constitute trade secrets are know-how and show-how relating to confidential formulas, programs, processes, devices, and the like. Trade secrets are often used to protect technology-based processes, in particular, manufacturing processes. Unlike other traditional forms of intellectual property, trade secrets have not been the subject of multinational treatment until recently.⁵³ Consequently, the precise bundle of rights protected by trade secrets is subject to even greater vagaries based on domestic peculiarities.

Among the differences which may exist in the scope of protection afforded trade secrets are the categories of information to be protected, the degree of commercial or economic value which the secret nature of such information must have for protection to attach, and the steps which must be taken by the owner to maintain the secrecy of such information. Trade secrets do not have to be registered in order to be protected.⁵⁴ Generally, the owner is granted the exclusive right to use and disseminate the trade secret under circumstances designed to protect its continued confidentiality. Trade secret rights may be restricted through compulsory licensing under situations similar to those arising under the

52. See, e.g., ROGER M. MILGRIM, MILGRIM ON TRADE SECRETS, § 1.01[1] at 1-3, 1-23 (1996). The U.S. Supreme Court in *Kewanee Oil Co. v. Bicron Corp.*, defined a trade secret as:

Any formula, pattern, device or compilation of information which is used in one's business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it. It may be a formula for a chemical compound, a process of manufacturing, treating or preserving materials, a pattern for a machine or other device, or a list of customers. . . . The subject of a trade secret must be secret, and must not be of public knowledge or of a general knowledge in the trade or business. This necessary element of secrecy is not lost, however, if the holder of the trade secret reveals the trade secret to another in confidence, and under an implied obligation not to use or disclose it.

416 U.S. 470, 474-75 (1974) (citations omitted).

The European Union generally refers to trade secrets as "know-how" and defines the term as "a body of technical information that is secret, substantial and identified in any appropriate form." EC Regulation on Know-how Licensing, Reg. No. 556/89, 1989 O.J. (L. 61) at art. 1 IC7.

53. Until the North American Free Trade Agreement, Dec. 17, 1992, 32 I.L.M. 289 (hereinafter "NAFTA"), trade secrets per se had not been the express subject of a multinational treaty regime. The paucity of international standards for trade secret protection may derive, in part, from the often inconsistent treatment which confidential information receives internationally. Even the United States, which has often been at the forefront of the effort to develop international protection standards in recent years, has left the protection of trade secrets to a patchwork of state laws. See generally Milgram, *supra* note 52, vol. 1-4.

54. Since the nature of a trade secret is to protect commercially valuable information whose value lies in its secret nature, registration would destroy the value of the trade secret.

patent laws.⁵⁵ Trade secret protection generally has no specified duration and lasts only as long as the information remains secret.

D. INDUSTRIAL DESIGNS AND UTILITY MODELS

Many countries also include the term "industrial designs" as a traditional form of protected intellectual property. "Industrial designs" generally includes those design elements which are not subject to patent protection but have some degree of novelty and/or originality that warrants protection against unauthorized use.⁵⁶ Some countries distinguish between functional aspects of a design (which are protected as a "utility model") and aesthetic or ornamental aspects of a design (which are referred to in such countries as "industrial designs").⁵⁷ Utility models may be useful in protecting technology, and technology-based products and processes, however, wide divergence in availability under domestic law makes their usefulness in developing international protection standards uncertain.⁵⁸ Great diversity in protection exists among nations regard-

55. For a brief discussion of the role of compulsory licensing and other governmental sponsored "takings" of intellectual property, see *supra* note 35.

56. See, e.g., TRIPS, *supra*, note 1, at art. 25. Unlike trade secrets, industrial designs are not required to contain confidential information. They are, however, generally required to contain some degree of novelty or originality. This alternative requirement of novelty (generally required of patentable subject matter) or originality (generally required of copyrightable subject matter) demonstrates the potentially hybrid nature of industrial designs.

57. Utility models often serve as a supplement or alternative to patent protection. Qualifying designs must usually demonstrate some level of non-obviousness, but of a lower degree than the level required for patents. In Germany and Japan, for example, utility model protection is often extended to tools, implements, or other articles with a novel, non-obvious configuration having industrial application. See, e.g., STEPHEN PHADAS, PATENTS, TRADEMARKS AND RELATED MATTERS: NATIONAL AND INTERNATIONAL PROTECTION 949-50 (1975); Margaret Boulware, *An Overview of Intellectual Property Rights Abroad*, 16 HOUS. J. INT'L L. 441 (1994).

58. The Paris Convention remains one of the key sources for establishing international norms for industrial designs. Although the Paris Convention requires the protection of industrial designs, it does not establish minimum substantive requirements for determining the categories of designs to be protected under such laws. See Paris Convention, *supra* note 14, at art. 6*sexies*. This Article was incorporated into TRIPS. TRIPS, *supra* note 1, at art. 2. Similar to the TRIPS provisions governing the protection of patented inventions, those TRIPS provisions governing industrial designs clarified that protectable designs must be "new or original." TRIPS, *supra* note 1, at art. 25(1). TRIPS further clarified that member countries may decline to protect designs whose features are "dictated essentially by technical or functional considerations." TRIPS, *supra* note 1, at art. 25(1).

The United States does not protect utility models *per se*. It does, however, protect new and non-obvious ornamental designs under its design patent laws. 35 U.S.C. § 171. It also protects expressive, non-functional designs under its trade dress laws (which are a branch of United States trademark law). See, e.g., *Two Pesos, Inc. v. Taco Cabana, Inc.*, 505 U.S. 763 (1992) (holding that non-functional designs may be protected under United States trademark law where such designs serve as source designators and are either inherently distinctive or have acquired secondary meaning).

ing the degree of novelty or originality required to obtain design protection⁵⁹ and whether such designs must also be non-obvious or distinctive in some fashion before protection attaches.⁶⁰

Whether industrial design protection is a result of use or registration depends on national laws.⁶¹ Similarly, the scope of rights afforded owners of such designs and the duration of those rights differs based on whether the country considers design protection analogous to patents, trademarks, copyrights, or some combination of the three.⁶²

E. NEIGHBORING RIGHTS

In addition to the four traditional forms of intellectual property discussed above, many nations also provide protection for "rights neighboring" to traditional intellectual property rights. These "neighboring rights" may be loosely defined as rights which do not arise directly from the five major types of intellectual property (patents, copyrights, trade secrets, trademarks, and industrial designs), but which are "neighboring" to such rights. The most prevalent example of "neighboring rights," at least among European nations, is the protection granted to performers and broadcast organizations.⁶³ Most neighboring rights have no direct

59. See *supra* note 56 (discussing novelty for industrial designs).

60. See *supra* note 44 (discussing novelty). The requirement of distinctiveness derives from trademark law and is required to avoid protection of utilitarian and aesthetically functional designs. See *Two Pesos*, 505 U.S. 763. See generally LONG, UNFAIR COMPETITION AND THE LANHAM ACT, ch. 4 (BNA 1993) (discussing distinctiveness and non-functionality requirements for protection of trade dress designs under United States law).

61. Under United States law, design patent protection arises only upon application and review procedures similar to those for utility patents. See, e.g., 35 U.S.C. § 171. By contrast, trade dress design may be protected without registration. See, e.g., *Two Pesos, Inc.*, 505 U.S. at 763.

62. In the U.S., design patents are granted a term of protection of 14 years from the date of grant. 35 U.S.C. § 173. By contrast, trade dress is considered the equivalent of a trademark under U.S. law and is protected for as long as the trade dress retains its source designating qualities. See, e.g., *Two Pesos*, 505 U.S. at 763. Article 26 of TRIPS requires adherents to grant industrial designs protection for at least ten years. TRIPS, *supra* note 1, at art. 26(3). Member countries, however, may refuse to extend protection to "designs dictated essentially by technical or functional considerations." TRIPS, *supra* note 1, at art. 25(1).

63. One of the primary multinational treaty sources for neighboring rights protection is The Rome Convention of 1961 (The International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations). Briefly, the Convention established certain minimum levels of protection for the performers, producers and in certain instances, broadcasters of sound recordings and live performances. Among the rights granted to them are the "possibility of preventing [the unauthorized] broadcasting and the communication to the public" of their live (unfixed) work. International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations, Oct. 26, 1961, 496 U.N.T.S. 43 at art. 7 [hereinafter Rome Convention]. The Convention also requires payment of a "simple equitable remuneration" by the user of "a

application to technology protection (one notable exception being the United States Semiconductor Chip Protection Act which provides a *sui generis* form of protection for computer mask works).⁶⁴ Such “neighboring rights” usually protect technology in an indirect manner at best, such as, for example, the protection afforded performance and broadcast rights which have only a tangential relationship to digital communications technology.

F. ESTABLISHING A UNIFORM BUNDLE OF RIGHTS

The absence of a uniform definition for those traditional forms of intellectual property that might be used to protect technology makes the development of a uniform international protection standard problematic at best. The simple fact that no uniform definitions exist for the four basic forms of intellectual property used as a potential source of technology protection norms throws into strong relief the scope of the problem. In fact, the use of the term “property” to describe the bundle of rights represented by these basic forms incorporates an array of philosophical and cultural assumptions about the nature of those rights (*i.e.*, that such

phonogram, published for commercial purposes, or a reproduction of such phonogram” for broadcast or “any communication to the public” of the phonogram. *Id.* at art. 12. This simple payment should be paid to the performers or the producers of the phonogram (or to both), depending on domestic law. Since the remuneration is premised on reciprocity, foreign performers can only obtain such funds if their country is a signatory to the Convention and if such country grants a performance right in sound recordings for foreign nationals. *Id.*

Article 14 of TRIPS has incorporated this “neighboring rights” concept by requiring adherents to grant performers “the possibility” of preventing the unauthorized broadcast “by wireless means” and “communication to the public” of their live performances. TRIPS, *supra* note 1, at art. 14(1). Performers also have the right to prevent the reproduction of bootleg recordings of such performances. TRIPS, *supra* note 1, at art. 14(1). Producers of phonograms are given the right to control the “direct or indirect reproduction of their phonograms.” TRIPS, *supra* note 1, at art. 14(2). Broadcasting organizations receive similar rights to prohibit the unauthorized fixation, reproduction, and/or rebroadcast of their broadcasts. TRIPS, *supra* note 1, at art. 14(3).

In accordance with these requirements, the United States has established one of its first “rights neighboring to copyright.” Under Section 511 of the Uruguay Round Agreements Act, 108 Stat 4809, civil remedies under the Copyright Act are available to prohibit the unauthorized fixation and “trafficking in” sound recordings and music videos of live (unfixed) musical performances. 17 U.S.C. § 1101. Since fixation is a constitutional requirement under the Copyright Clause of the Constitution, these rights are not rights arising under United States copyright laws; instead, they arise under the Commerce Clause. *See, e.g.*, WILLIAM F. PATRY, COPYRIGHT AND THE GATT: AN INTERPRETATION AND LEGISLATIVE HISTORY OF THE URUGUAY ROUND AGREEMENTS ACT 18 (1995). United States protection for semiconductor chips under the SemiChip Conductor Protection Act is another example of a neighboring right under United States law with a technological relationship. *See* 17 U.S.C. §§ 901-14.

64. 17 U.S.C. §§ 901-14.

rights qualify as intangible "property" over which any one entity has the right of control) that are themselves subject to intense debate.⁶⁵ With no definition as to what comprises a standard bundle of rights, even if countries could agree on a traditional form of protection for a given technological advance, such an agreement would not ensure a uniform standard of protection. These definitional efforts are further complicated by the problems of translation.

The impact of language in developing an international standard bundle of rights for technology owners cannot be minimized. A subject of heated debate in the arena of international copyright protection is the scope of rights granted to an author for the act of creation itself. These rights, premised on the value added to the work by the unique personality of the human creator, differ from the rights granted under a nation's domestic copyright laws. They generally include the rights of patrimony (or attribution), integrity, withdrawal, and disclosure.⁶⁶ In France, the concept is referred to as "droit moral," in Germany, "Urheberpersonlichkeitsrecht," and in the United States, "moral rights or inherent rights."⁶⁷ Similarly, while the United States uses the term "copyright," France uses the phrase "droit d'auteur" (or "droits de l'auteur") and Germany uses the term "urheberrecht" to refer to a creator's right to control the reproduction and dissemination of her works. Although these phrases are rough equivalents to one another, such equivalency does not fully reflect the differing philosophical and legal precepts represented by the original untranslated phrases.⁶⁸ These language barriers only inten-

65. See *infra* note 68 and accompanying text (regarding impact of cultural differences on the decision to protect certain works under copyright).

66. The right of patrimony is the right of the artist to have her name attached to the work. The right of integrity is also known as the right to prevent the alteration or distortion of an artist's work without his permission. The right of withdrawal allows the author to retrieve her work even though it has been sold or published. The right of disclosure gives the artist the right to control the timing of the disclosure (if any) of his unpublished work. See *infra* note 67 and accompanying text for articles discussing the issue further.

67. For discussions regarding differences in moral rights protection, see R. DaSilva, *Droit Moral and the Amoral Copyright*, 28 BULL. COPYRIGHT SOC'Y 1 (1980); Jeffrey M. Dine, *Author's Moral Rights in Non-European Nations*, 16 MICH. J. INT'L L. 545 (1995); Jack A. Cline, *Moral Rights: The Long and Winding Road Toward Recognition*, 14 NOVA L. REV. 435 (1990); Jeff Berg, *Moral Rights: A Legal Historical and Anthropological Reappraisal*, 6 INTELL PROP. J. 341 (1991); Carl H. Settlemeyer III, *Between Thought and Possession: Artists "Moral Rights" and Public Access to Creative Works*, 81 GEO. L.J. 2291 (1993).

68. Some of these differences arise from the differing cultural and philosophical bases for protecting the intangible rights embodied in intellectual property. For example, U.S. copyright law has been largely concerned with providing economic incentives based on property right analogues. See, e.g., Edward J. Damick, *The Right of Personality: A Common Law Basis for the Protection of the Moral Rights of Authors*, 23 GA. L. REV. 1 (1988). For additional articles discussing the property right analogue under United States copyright law, see Paul Durdik, *Ancient Debate, New Technology, The European Community Moves to Protect Computer Databases*, 12 B.U. INT'L L.J. 153 (1994); Stephen L. Carter,

sify the problems of developing a uniform consensus, when the issue before the international community is the "protection of knowledge"—an issue which is largely seen as affecting the balance of power between the developed and developing nations.⁶⁹

IV. A BRIEF HISTORY OF THE DEVELOPMENT OF INTERNATIONAL PROTECTION NORMS FOR INTELLECTUAL PROPERTY

Despite the potential barriers posed by the lack of an international consensus on the nature of rights to be protected under a particular form of intellectual property, the international community has consistently tried to develop international standards for such forms since the late Nineteenth Century. These efforts are instructional in predicting the future course of development for international technology protection norms.

The history of the development of international standards for intellectual property protection largely reflects the history of the growth of trade and technology. As technology advanced in the fields affecting the creation and dissemination of literary and artistic works, the potential subject matter for copyright protection also advanced. The development of patent law similarly reflects the scope of technological advances in the areas of science and the arts.

Concurrently, as technology advanced in the areas of art and science, modes of transportation and communication media evolved from the oxcart to supersonic transports and from smoke signals to digital and satellite communications. These developments provided an increasingly global marketplace for intellectual property-based products. The increasingly international nature of the marketplace for such products in turn gave rise to growing concerns over the differing levels of protection afforded these products. Countries which granted little or no protection to intellectual property became havens for pirated and counterfeit prod-

Does It Matter Whether Intellectual Property Is Property?, 68 CHI.-KENT L. REV. 715 (1993); Wendy J. Gordon, *A Property Right in Self-Expression: Equality and Individualism in the Natural Law of Intellectual Property*, 102 YALE L.J. 1533 (1993); Michael B. Reddy, *The Droit de Suite: Why American Fine Artists Should have the Right to a Resale Royalty*, 15 LOY. L.A. ENT. L.J. 509 (1995). By contrast, German copyright law is based on compensation for the personality rights of the author. See, e.g., Jeff Berg, *Moral Rights: A Legal, Historical and Anthropological Reappraisal*, 6 I.P.J. 341 (1991). See also, Peter Laszi, *Toward a Theory of Copyright: The Metamorphoses of "Authorship,"* 1991 DUKE L.J. 455 (1991); David Hurlbutt, *Fixing the Biodiversity Convention: Toward a Special Protocol for Related Intellectual Property*, 34 NAT. RESOURCES J. 379 (1994). These philosophical differences are reflected in the differing rights granted to authors under each country's respective copyright and moral rights laws. See also *infra* note 106.

69. See *supra* note 15 and accompanying text (discussing the impact of copyright protection in China).

ucts. Such piracy inevitably had an adverse economic impact on the intellectual property owner.⁷⁰

The desire to establish international protection laws to prevent such piracy is not a recent development. In the area of copyright, the Berne Convention for the Protection of Artistic and Literary Works was first established in 1886. In the area of patents and industrial designs, the Paris Convention for the Protection of Industrial Property was established in 1883. Just as national laws concerning intellectual property rights are continuously revised to reflect changes in technology, these multinational treaties and their progeny have undergone numerous revisions reflecting increasingly sophisticated minimum standards of protection.⁷¹

A detailed examination of the Berne Convention is beyond the scope of this article. There are, however, several pertinent provisions which may be utilized in developing international protection standards for technological innovations. Like many early bilateral and multilateral treaties, the Berne Convention required adherents to grant the identical level of protection to domestic and foreign owners of copyrights ("national treatment").⁷² The Berne Convention, however, went beyond simply requiring national treatment and established minimum substantive standards of protection that adherents were required to provide. Among the rights which Berne Convention member countries must grant to do-

70. In the 1970's, the problem of world-wide counterfeiting became so severe, affecting both local sales in the country where the pirated goods were manufactured and foreign sales, that developed countries renewed their efforts to increase international levels of intellectual property protection through the development and adoption of an international anti-counterfeiting code. See *supra* note 17 and accompanying text.

71. For a discussion of the history of the Berne and Paris Conventions, see, for example, R. Carl Moy, *The History of the Patent Harmonization Treaty: Economic Self-Interest as an Influence*, 26 J. MARSHALL L. REV. 457 (1993) and Peter Burger, *The Berne Convention: Its History and its Key Role In The Future*, 3 J.L. & TECH. 1 (1988).

Early multinational treaty regimes relied upon national treatment to assure adequate protection for foreign intellectual property owners. See, e.g., Berne Convention, *supra* note 14, at art. 5; Paris Convention, *supra* note 14, at art. 2; TRIPS, *supra* note 1, at art. 1(3). The continuing viability of relying upon national treatment to protect foreign rights has been challenged by some scholars. See, e.g., Paul Edward Geller, *New Dynamics in International Copyright Law*, 16 COLUM.-VLA J.L. & ARTS, 461 (1992); Robert A. Arena, *A Proposal for The International Intellectual Property Protective of Computer Software*, 14 U. PA. J. INT'L BUS. L. 213 (1993); Jean M. Dettmann, *GATT: An Opportunity for an Intellectual Property Rights Solution*, 4 TRANSNAT'L LAW 347 (1991). Most recently, multinational treaties, such as TRIPS, have focused on establishing minimum procedural standards for the protection of intellectual property rights. See, e.g., TRIPS, *supra* note 1, at arts. 41-50. In addition to establishing minimum procedural enforcement standards for civil actions, TRIPS also establishes minimum standards for criminal actions. TRIPS, *supra* note 1, at art. 61. For customs seizures and related border control activities, see, for example, TRIPS, *supra* note 1, at arts. 51-60.

72. Berne Convention, *supra* note 14, at art. 5.

mestic and foreign copyright owners are: copyright protection for certain defined categories of "literary and artistic works";⁷³ a term of protection of no less than the life of the author plus fifty years for most copyrighted works;⁷⁴ and, the right to control the reproduction of their works,⁷⁵ the creation of translations of such works,⁷⁶ and the public distribution, performance, and display of such works.⁷⁷ The Berne Convention also expressly recognizes a country's right to provide certain exceptions to these granted rights for purposes of news reporting,⁷⁸ education,⁷⁹ and other designated "fair uses."⁸⁰ From the date of first adoption, the Berne Convention served as a driving force in the development of international protection norms.⁸¹ The World Intellectual Property Organization currently administers the Berne Convention.

Despite the Convention's present role as a leading source for inter-

73. See Berne Convention, *supra* note 14, at art. 7.

74. Berne Convention, *supra* note 14, at art. 7.

75. Berne Convention, *supra* note 14, at art. 9.

76. Berne Convention, *supra* note 14, at art. 8. Article 12 also grants authors the exclusive right of "authorizing adaptations, arrangements and other alternations of their works." Berne Convention, *supra* note 14, at art. 12.

77. Berne Convention, *supra* note 14, at arts. 11*bis*-11*ter*.

78. Berne Convention, *supra* note 14, at art. 10*bis*.

79. Berne Convention, *supra* note 14, at art. 10(2).

80. For example, the Berne Convention at Article 2*bis* permits member countries to exclude from copyright protection "political speeches and speeches delivered in the course of legal proceedings." Berne Convention, *supra* note 14, at art. 2*bis* (1). Article 10 allows exemptions for purposes of comment so long as the use of such works "is compatible with fair practice" and does not "exceed that justified by the purpose." Berne Convention, *supra* note 14, at art. 10(1).

81. The perceived importance of the Berne Convention in establishing international substantive norms for the protection of copyrighted works was one of the driving forces behind final accession to the Berne Convention by the United States in 1989. As stated in the House Report:

The Berne Convention for the Protection of Literary and Artistic Works . . . is the highest internationally recognized standard for the protection of works of authorship of all kinds. U.S. membership in the Berne Convention will secure the highest available level of multilateral copyright protection for U.S. artists, authors and other creators. Adherence will also ensure effective U.S. participation in the formulation and management of international copyright policy. Adherence to the Convention is in the national interest because it will ensure a strong, credible U.S. presence in the global marketplace . . . For more than 100 years, the Berne Convention has been the major multilateral agreement governing international copyright relations . . . Accession to Berne assures the highest level of protection in the countries that are the largest users of American copyrighted works.

REPORT ON THE BERNE CONVENTION IMPLEMENTATION ACT OF 1988, H. Rep. No. 352, 100th Cong., 2d Sess 3 (1988). Accession to the Berne Convention by the United States had been delayed largely by United States concerns over the Article 6*bis* and its requirement that adherents grant moral rights protection to artists. Berne Convention, *supra* note 14, at art. 6*bis*.

national copyright protection norms,⁸² it has not yet served as a source for international standards for the protection of computer software, databases, and related technological products. The Convention defines a copyright-protected work as "literary and artistic works [including] every production in the literary, scientific, and artistic domain whatever may be the mode or form of its protection."⁸³ Among the enumerated works included in this definition are:

Books, pamphlets, and other writings; lectures, addresses, sermons, and other works of the same nature; dramatic or dramatic-musical works; choreographic works and entertainments in dumb show; musical compositions with or without words; cinematographic works to which are assimilated works expressed by a process analogous to cinematography; works of drawing, painting, architecture, sculpture, engraving, and lithography; photographic works to which are assimilated works expressed by a process analogous to photography; works of applied art; illustrations, maps, plans, sketches, and three-dimensional works relative to geography, topography, architecture, or science.⁸⁴

The Berne Convention does not include computer programs or databases among its enumerated categories of protected works. Until the conclusion of the Uruguay Round Negotiations,⁸⁵ efforts to expand the express category of protected works to include computer programs and databases remained unsuccessful.⁸⁶

Like the Berne Convention, the Paris Convention has several pertinent provisions that may be used to devise international technology protection norms. Similar to the Berne Convention, adherents to the Paris Convention agree to provide national treatment to foreign patent owners.⁸⁷ The Convention, however, also established certain minimum substantive standards for the protection of patents and industrial designs.

82. The Universal Copyright Convention, Sept. 6, 1952, 6 U.S.T. 2731 [hereinafter "UCC"] is the other multinational copyright treaty of significance. First established in 1971, largely through United States auspices, the UCC, unlike its Berne counterpart, established few substantive norms and relied primarily upon the requirement of national treatment for protection of foreign rights. See UCC at art. 2. With the accession of the United States to the Berne Convention in 1989, the UCC's role as a multinational source for standards has been greatly diminished. The incorporation of Berne standards into the TRIPS agreement has largely confirmed the role of the Berne Convention as a fundamental source for international protection norms for copyrights. See *infra* note 90 (discussing TRIPS' incorporation of Berne standards).

83. Berne Convention, *supra* note 14, at art. 2(1).

84. Berne Convention, *supra* note 14, at art. 2(1).

85. See *infra* note 90 and accompanying text (discussing Berne Convention articles incorporated into TRIPS).

86. Working groups in WIPO are continuing to meet to discuss revisions to the Convention. Included among the topics for discussion are revisions to Article 2 to include protection for certain computer programs and databases.

87. Paris Convention, *supra* note 14, at art. 2.

Among the most important rights granted to a patent owner under the Convention is the member country's obligation to honor an applicant's prior filing of a patent application in a member country—so long as the applicant makes the subsequent filing within six months of the original filing date.⁸⁸

Unlike the Berne Convention, the Paris Convention does *not* establish a minimum patent term. It does *not* specify patent-protected subject matter or the rights conferred by a patent. The Convention does, however, permit adhering countries to place certain restrictions on the practice of a patent within the granting country, including requirements of working and compulsory licensing of inventions in certain circumstances.⁸⁹

Efforts to establish uniform requirements for the international protection of intellectual property continue to the present day. The recent establishment of the Agreement on Trade Related Aspects of Intellectual Property Rights (hereinafter "TRIPS") (as part of the Uruguay Round Negotiations of the GATT) represents a notable advance. For the source of its international protection norms, TRIPS relies on the long established minimum substantive norms contained in the Berne and Paris Conventions.⁹⁰ TRIPS, however, modifies these provisions by explicitly extending Berne protection to certain computer programs and databases. Article 10 of TRIPS includes, as a protected literary work under the Berne Convention, "computer programs, whether in source or object code."⁹¹ TRIPS also extends protection to "compilations of data or other material . . . which by reason of the selection or arrangement of their contents constitute intellectual creations."⁹² Unfortunately, TRIPS does not define a computer program or designate the standards to be applied in determining whether the selection and composition of a database rises to the level of an "intellectual creation." Thus, determination of protection for computer programs and databases remains at least partially subject to the vagaries of the domestic laws of the country in which protection is sought. Nevertheless, TRIPS represents a marked advance

88. Paris Convention, *supra* note 14, at art. 4.

89. Paris Convention, *supra* note 14, at art. 5(3). Article 5(2) permits the imposition of compulsory licenses for failure to work (use) a patent sufficiently in the granting country. Paris Convention, *supra* note 14, at art. 5(2). In addition, Article 5(3) permits forfeiture in those instances where a compulsory license is insufficient to prevent the abuse in question. Paris Convention, *supra* note 14, at art. 5(3).

90. TRIPS incorporates Articles 1-21 of the Berne Convention but expressly excludes Article 6*bis* and its moral rights protection requirement. TRIPS, *supra* note 1, at art. 9. TRIPS also incorporates Articles 1-12 and 19 of the Paris Convention. TRIPS, *supra* note 1, at art. 2.

91. TRIPS, *supra* note 1, at art. 10(1).

92. TRIPS, *supra* note 1, at art. 10(2).

over previous attempts to establish international standards for computer software protection.

TRIPS also clarifies that patent protection must be extended to inventions "in all fields of technology."⁹³ TRIPS further specifies that patents be extended only to those inventions that are "new," which "involve an inventive step," and are "capable of industrial application."⁹⁴ Despite these additions, however, TRIPS does not define the terms "technology," "new," or "inventive step," leaving such issues for future determination.

V. THE IMPACT OF MULTICULTURALISM ON ESTABLISHING INTERNATIONAL STANDARDS

Much of the difficulty in establishing a consensus regarding the scope of protection for technology and other products of the mind derives from the diverse cultural, philosophical, and economic backgrounds of the parties attempting to reach the consensus. To state the obvious, we are not a single-culture world. Given the strong relationship between technology, ideas, and expression, the value placed on the dissemination and use of ideas, as well as the proprietary nature of such ideas, can have a profound effect on whether a country supports, on a practical basis, the protection of the technology of others from unauthorized, uncompensated uses. From the early days of the Berne and Paris Conventions to the present day, efforts to reach international accords regarding protection norms for the products of the mind have been accompanied by divisive debates regarding the scope of protection to be granted.⁹⁵ The positions taken by various nations in these debates reflect their differing (and often unreconcilable) philosophical, cultural, historical, economic, and political points of view regarding the need for strong protection of technology and other products of the mind.

A. CULTURE AND THE DEFINITION OF PROTECTABLE WORKS.

Generally, those countries which historically and culturally perceived the unrestricted dissemination of ideas and written works as a desirable goal also advocated providing less protection for expressions, ideas, and inventions; by contract, countries which placed an economic value on the dissemination of such works generally advocated greater protection.⁹⁶ The degree of protection afforded works of the mind

93. TRIPS, *supra* note 1, at art. 27.

94. TRIPS, *supra* note 1, at art. 27.

95. See generally articles cited *supra* note 18 and *infra* note 96 (regarding historical efforts to establish international standards).

96. See, e.g., Doris Estelle Long, *Copyright and the Uruguay Round Agreements: A New Era of Protection or an Illusory Promise?*, 22 AIPLA Q.J. 531 (1994). See also THE GATT URUGUAY ROUND: A NEGOTIATING HISTORY (1986-1992) 2281-91 (Terence P. Stewart ed.,

(whether ideas, inventions, or literary or artistic expressions) also varies depending on the philosophical foundations supporting the protection of such property. Is the source of protection the desire to protect the creative spark, or the unique contribution of the human personality to literary, artistic, or scientific endeavors? Is it to encourage the costly investment in time and research required to create new works? Is it to protect the public from confusion or harm? The responses to these, and related questions, can strongly affect the scope of protection granted intellectual products. Similarly, the perceived economic impact that protection might have on the technological and industrial development of a particular country and the political pressures that are brought to bear both on the domestic and international level can profoundly impact the scope of protection afforded to intellectual property and technology.⁹⁷

Disputes regarding the scope and nature of protection afforded works of the mind, including technology, generally arise between developed (industrialized) and less-developed (less-industrialized) nations. However, negotiations during the Uruguay Round of GATT also demonstrated a lack of accord between developed nations. Although, debates during the Uruguay Round regarding the scope of limitations to be placed upon a developing country's access to technology generally occurred between developing and already developed nations, (often referred to as the "North-South" Debates),⁹⁸ debates regarding the scope of acceptable substantive norms under TRIPS (once agreement was reached that some substantive norm should be established under GATT⁹⁹) generally occurred among the developed countries. These so-called "North-North" debates¹⁰⁰ were often as hotly contested as the North-South debates and represented an effort by various developed countries, or groups of countries, such as the United States, Japan and the European Community, to establish GATT norms that closely resembled their own internal intellectual property systems.

Thus, although developed countries did not generally challenge the broad principle of including computer programs within the scope of protected "literary and artistic works" under Berne, they hotly contested the scope of such inclusion and whether computer databases should be in-

1993) (discussing the debates surrounding the establishment of TRIPS) [hereinafter "NEGOTIATING HISTORY"].

97. See discussion *infra* Part V (discussing the impact of economics on the development of international protection norms).

98. *Negotiating History*, *supra* note 96, at 2287.

99. For a brief review of the debate regarding the propriety of treating intellectual property issues as a trade matter under GATT, as opposed to a pure intellectual property matter before WIPO, see, for example, EDWARD S. YAMBRUSIC, *TRADE-BASED APPROACHES TO THE PROTECTION OF INTELLECTUAL PROPERTY* (1992) and Monique Cordray, *GATT v. WIPO*, 76 J. PAT. & TRADEMARK OFF. SOC'Y 121 (1994).

100. *Id.*

cluded as a protected category. The United States, for example, included in the category of protected software "databases of protected or unprotected material or data whether in print, machine readable, or any other medium which shall be protected as collections or compilations if [such databases] constitute intellectual creation by reason of the selection, coordination or arrangement of their contents."¹⁰¹ By contrast, the European Community sought to exclude "interfaces"¹⁰² and did not expressly include computer databases among the works to be protected.¹⁰³ The Japanese proposal, while recognizing the general protectability of computer software, expressly excluded "any programming language, rule, or algorithm used for making such works."¹⁰⁴

The ultimate resolution of these issues represented a compromise between divergent views. Protection was extended to certain computer databases, but only where the "selection or arrangement" qualified as "intellectual creations."¹⁰⁵ The role of coordination and the degree of originality required, however, remain subject to individualized treatment.

Many forms of intellectual property may include products that impact on the health, welfare, or safety of the public, including medical and agricultural products and processes. As a result, issues arise over the *right* of others to use such products without the permission of the intellectual property owner. The right to impose compulsory licenses, the scope of "fair use" exceptions to an intellectual property owner's exclusive rights, and other forms of government sanctioned "takings" are hotly debated.

In an interesting examination of the impact of culture on current efforts to enforce intellectual property rights in China, William Alford, in his work *To Steal a Book Is An Elegant Offense*, makes a strong case for the view that part of the problem is the attempt to enforce *technology* rights in China. He explains that the problem stems from the Confucian view that information should be shared without concern for compensa-

101. GATT Doc. No. MTN.GNG/NG11/W/70 at art. 2(1). See also *Negotiating History* at 2290-91. The language seems to reflect the United States requirement of originality evinced in *Rural Tel. Serv. Co. v. Feist Publications, Inc.*, 499 U.S. 340 (1991), which requires the creation of a factual compilation that demonstrates "originality" before copyright protection attaches.

102. Interfaces provide compatibility between software and hardware, thus arguably permitting competitors to provide software which can be used on different computer systems.

103. *NEGOTIATING HISTORY*, *supra* note 96, at 2290-91.

104. *NEGOTIATING HISTORY*, *supra* note 96, at 2290-91.

105. *TRIPS*, *supra* note 1, at art. 10.

tion.¹⁰⁶ Similarly, certain tribal cultures, such as, for example, the Maori in New Zealand, have a community view of property and information that does not readily translate to the individual proprietorship view of technology that underlies much of the Western European and United States approach to the protection of technology.¹⁰⁷

Cultural diversity in the protection of technology rights is not limited to North-South divisions—between developed “Western” and underdeveloped “Third World” nations. Even between developed countries, differences in the philosophical basis for the protection of intellectual property and technology rights can result in markedly different treatment. For example, most common law countries, including the United States and Great Britain, follow an economic property view of intellectual property law. Emphasis is placed on economic return and incentives.¹⁰⁸

By contrast, continental Western European nations—even some Eastern European and newly emerging CIS countries—follow a Hegelian view which places authorship at the center of protection.¹⁰⁹ The creative “spark” represented by an author’s personality is protected by theories such as “moral rights”—which can have a strong impact on a third party’s ability to modify protected software or firmware.¹¹⁰

Even when international standards are established under TRIPS, or the Berne and Paris Conventions, the ability to enforce those standards depends strongly on the legal institutions and the role of the rule of law in a given nation. Countries with a strong common law heritage and a relatively well developed civil litigation system such as Great Britain and the U.S. rely heavily upon civil enforcement procedures in protecting intellectual property and technology rights. For example, although in the United States criminal penalties exist for the unauthorized reproduc-

106. WILLIAM ALFORD, *TO STEAL A BOOK IS AN ELEGANT OFFENSE* 19-29 (1992). See also Liwei Wang, *The Chinese Traditions Inimical to the Patent Law*, 14 *Nw. J. INT'L. L. & BUS.* 15 (1993).

107. Philip McCabe & Brent Porter, *Of Lore, Law & Intellectual Property*, 27 *IP WORLD* 23 (1995).

108. See *supra* note 68 (discussing differences arising from differing cultural and philosophical bases for protecting intangible rights).

109. See *supra* note 68 (listing articles which discuss, *inter alia*, the philosophical role of authorship in copyright protection systems).

110. Moral rights generally include the right of an author to protect the integrity and patrimony of his or her creative work. These rights are generally inalienable and exist independently of any economic rights in the work. Because a recognition of moral rights precludes the adaptation of a work without the author’s permission, such rights could conceivably preclude unauthorized modifications of software, including translations into other computer and foreign languages and modifications to support additional platforms. See also *supra* notes 66 and 67 (discussing moral rights protection).

tion and commercial distribution of computer software,¹¹¹ most enforcement of software rights occurs in the context of civil enforcement actions. By contrast, those countries with a less highly developed civil law system may use criminal sanctions more frequently to enforce technology rights under existing intellectual property laws.¹¹²

B. CULTURE AND ENFORCEMENT

Perhaps the area of greatest concern for the international community today is *not* the establishment of minimum substantive standards for the *protection* of intellectual property rights and technology, but the actual *application* and *enforcement* of those standards by various underdeveloped and newly industrialized countries. The current debate over the protection of computer software is exemplified in the People's Republic of China. The People's Republic of China has recently enacted intellectual property laws which, on their face, appear to meet the minimum substantive requirements of the Berne Convention.¹¹³ Indeed, these laws expressly include computer software among the category of copyright-protected works.¹¹⁴ However, despite the existence of such laws, United States copyright owners have alleged losses in the billions of dollars as a result of the perceived failure to *enforce* such laws.¹¹⁵

111. See 18 U.S.C. §§ 2318-2319A (1994).

112. See, e.g., *IPR Fight is Judged Success*, CHINA DAILY NEWS, May 27, 1995 (enforcement efforts through imposition of criminal penalties deemed successful).

113. A detailed analysis of the similarities and differences between present U.S. and Chinese copyright laws is beyond the scope of this article. However, current Chinese copyright law provides for national treatment for foreign authors whose country is a signatory to bilateral agreements with China or an international treaty acceded to by both. Chinese Copyright Law, *supra* note 25, at art. 2. Chinese copyright law also provides protection for a variety of literary and artistic works, including "literary works, oral works, musical works, operatic and dramatic works, works of quyi and choreographic works, works of fine art and photographic works, cinematographic, television and video works, computer programs and drawings of engineering designs and drawings of product design and their explanation." *Id.* at art. 3. Protection lasts for a term of the life of the author plus fifty years. *Id.* at art. 21. Chinese law also provides for civil penalties, including confiscation of infringing items and fines. *Id.* at art. 45-46.

114. *Id.* at art. 3.

115. According to the Intellectual Property Alliance, in 1995 the United States lost an estimated \$6.9 billion in exports due to foreign counterfeiting of movies, records, books, and software. Bruce Stokes, *The Diminishing Return of Slapping China for Piracy of U.S. Copyrights*, L.A. TIMES, May 26, 1996, at M2, available in 1996 WL 10488895. The Pharmaceutical Manufacturers' Association estimates lost revenue due to pirating of patented drugs exceeds \$3 billion. *Id.* The Software Business Alliance estimates that nearly 95% of computer software used in China is illegally copied, resulting in losses in 1994 of roughly \$351 million in lost software sales. James Gerstenzang, *China Piracy of the U.S. Products Surges Despite Accord*, L.A. TIMES, Oct. 10, 1995, at A1. See also Eric Smith, *Worldwide Copyright Protection Under the TRIPS Agreement*, 29 VAND. J. TRANSNAT'L L. 559 (1996).

It is impossible to point to one specific reason for the lack of enforcement. Culture and heritage, however, cannot be ignored. The lack of an economic philosophical basis for protecting copyrighted works; the absence of legal protection for such works until recently; the existence of a society whose concept of the rule of law is based on non-Western values; and the role of a newly emerging consumer class, all impact the degree to which intellectual property laws are enforced. One of the critical lessons learned by the international community since the 1970's and the rise of world wide counterfeiting is that the existence of substantive standards have little impact if such standards are not enforced.

Efforts to resolve the problem of inadequate enforcement frequently are resolved through bilateral efforts.¹¹⁶ The establishment of TRIPS¹¹⁷ underscored a major shift in the focus of multinational treaty regimes. Instead of focusing solely on establishing multinational protection norms for intellectual property, TRIPS contains *both* substantive protection norms *and* procedural enforcement norms that adherents must include in their domestic laws.¹¹⁸

Included among the procedural norms which TRIPS establishes are the requirement that enforcement procedures available under a member's national laws "permit effective action against any act of infringement of intellectual property rights covered by this Agreement, including expeditious remedies to prevent infringements and remedies which constitute a deterrent to further infringement."¹¹⁹ All such procedures must be "fair and equitable"¹²⁰ and cannot be "unnecessarily compli-

116. One of the primary bilateral mechanisms used by the United States to resolve enforcement problems with other nations has been Special 301. Briefly, under Special 301 the United States Trade Representative has the authority to establish a priority watch list for those countries which fail to adequately enforce United States intellectual property rights. Failure to meet United States concerns may result in the imposition of trade tariffs. See 19 U.S.C. § 2411. See also Theodore H. Davis, *Combating Piracy of Intellectual Property in International Markets: A Proposed Modification of the Special 301 Action*, 24 VAND. J. TRANSNAT'L L. 505 (1991) (discussing the effect of Special 301 on trade relations and intellectual property rights enforcement). See also *supra* note 15 (use of Special 301 to enforce intellectual property rights in China).

117. As noted earlier, *supra* note 90 and accompanying text, TRIPS, *supra* note 1, derived from the Uruguay Round Negotiations of the General Agreement on Trade and Tariffs, opened for signature, October 30, 1947, 55 U.N.T.S. 262 [hereinafter GATT]. The Agreement represents the first time that intellectual property rights, beyond the importation of pirated goods, was officially recognized as a trade matter under GATT. It was finalized on April 15, 1994, and was signed by over 85 countries, including the United States.

118. Another multinational treaty regime which establishes enforcement norms for intellectual property rights is the North American Free Trade Agreement. NAFTA, *supra* note 53, at arts. 1714-18.

119. TRIPS, *supra* note 1, at art. 41(1).

120. TRIPS, *supra* note 1, at art. 41(2).

cated or costly"¹²¹ or "entail unreasonable time limits or unwarranted delays."¹²² Decisions on the merits must be made available to the parties "without undue delay"¹²³ and must be based only on evidence "in respect of which parties were offered the opportunity to be heard."¹²⁴

TRIPS does not require members to establish a separate judicial system for the enforcement of intellectual property rights.¹²⁵ TRIPS does, however, require that defendants be given "timely" written notice of claims against them and that such notice "contain sufficient detail, including the basis of the claims."¹²⁶ Representation by independent legal counsel,¹²⁷ the right to "substantiate . . . claims and to present all relevant evidence,"¹²⁸ and protection of confidential information (so long as protection does not contravene "existing constitutional requirements") are mandated.¹²⁹ Moreover, among the procedures and remedies that countries must make available to litigants under TRIPS are: the right to injunctive relief;¹³⁰ the right to provisional measures that prevent infringements from occurring, including the prevention of entry into commerce of infringing imported goods "immediately after customs clearance,"¹³¹ the right to "prompt and effective provisional" measures to preserve "relevant evidence,"¹³² the right to money damages "adequate to compensate for the injury the right holder has suffered because of an infringement of his intellectual property right by an infringer who knew or had reasonable grounds to know that he was engaged in an infringing activity,"¹³³ and, the right to obtain, in appropriate circumstances, the seizure and destruction of infringing goods, as well as "materials and implements the predominant use of which has been in the creation of the infringing goods."¹³⁴

As a further encouragement to enforcement, TRIPS requires adherents to sanction parties who abuse the enforcement process. Among the types of abuse for which adherents are to impose sanctions under TRIPS are refusals "without good reason" to provide "necessary information

121. TRIPS, *supra* note 1, at art. 41(2).

122. TRIPS, *supra* note 1, at art. 41(2).

123. TRIPS, *supra* note 1, at art. 41(3).

124. TRIPS, *supra* note 1, at art. 41(3).

125. TRIPS, *supra* note 1, at art. 41(g).

126. TRIPS, *supra* note 1, at art. 42.

127. TRIPS, *supra* note 1, at art. 42.

128. TRIPS, *supra* note 1, at art. 42.

129. TRIPS, *supra* note 1, at art. 42.

130. TRIPS, *supra* note 1, at art. 44.

131. TRIPS, *supra* note 1, at art. 44.

132. TRIPS, *supra* note 1, at art. 50(1)(b).

133. TRIPS, *supra* note 1, at art. 45(1).

134. TRIPS, *supra* note 1, at art. 46.

within a reasonable period¹³⁵ and injunctions or restraining orders wrongfully issued in abuse of enforcement procedures.¹³⁶ Moreover, any exemptions from liability for public authorities and officials for failure to provide appropriate remedial measures are limited to actions "taken or intended in good faith in the course of the administration of such laws."¹³⁷ Finally, in connection with pirated copyright goods, TRIPS requires members to provide for criminal procedures and penalties "including imprisonment and/or monetary fines . . . sufficient to provide a deterrent, consistently with the level of penalties applied for crimes of corresponding gravity."¹³⁸

Given the relative newness of TRIPS, it is impossible to predict what impact these international procedural norms will have upon the problem of inadequate enforcement of existing domestic laws. At a minimum, they provide an open-ended structure that could readily be applied to require the enforcement of technological protection norms. The relatively broad and vague language of Article 10, however, allows for a wide diversity in the nature of the procedures utilized. On the positive side, such diversity allows for flexible treatment based on cultural and political differences.¹³⁹ On the negative side, this flexibility may degenerate into a failure of enforcement. The ultimate determination of whether the diversity permitted under Article 10 is beneficial remains an open question.

VI. ECONOMICS AND THE DEVELOPMENT OF INTERNATIONAL PROTECTION STANDARDS

Given the breadth of issues surrounding the question of international protection of technology and other intellectual products, the establishment of international protection norms remains a slow process.

135. TRIPS, *supra* note 1, at art. 43(2).

136. TRIPS, *supra* note 1, at art. 48(1).

137. TRIPS, *supra* note 1, at art. 48(2).

138. TRIPS, *supra* note 1, at art. 61. Members also have the right to grant judicial authorities the power to order infringers to identify third persons involved in the production and distribution of infringing goods and their channels of distribution. TRIPS, *supra* note 1, at art. 47. TRIPS also provides for special procedures to permit a right holder, through written application, to seek retention by Customs of copyrighted goods which the right holder validly believes are pirated. TRIPS, *supra* note 1, at art. 51-60. TRIPS defines "pirated copyright goods" as

Any goods which are copies made without the consent of the right holder or person duly authorized by him in the country of production and which are made directly or indirectly from an article where the making of that copy would have constituted an infringement of a copyright of a related right under the law of the country of importation.

TRIPS, *supra* note 1, at art. 52, fn. 14.

139. Whether such diversity will adequately resolve problematic enforcement issues remains to be seen.

However, as each country begins to understand the rationale behind other countries' different treatment, some basis for an accommodation between admittedly conflicting interests becomes possible. This accommodation occurred in the 1880's when the Berne and Paris Conventions were established. Today, that accommodation continues with the signing of the TRIPS Agreement and with the continuing efforts to establish harmonized standards for registration and enforcement procedures, and for substantive protection requirements.¹⁴⁰ None of these multinational treaties contains the ultimate solution. They do, however, represent a steady evolution from national treatment to substantive standards, and from substantive standards to procedural norms.

Few countries, if any, act for reasons of their own self-interest where economic or trade issues are concerned. The protection or failure to protect technology is perceived as having a profound impact on a country's ability to compete in the global marketplace. During the Uruguay Round negotiations, the issue of the scope of protection to be afforded copyrighted works—including, for example, computer programs and databases—was hotly contested.¹⁴¹ Developing countries generally do not possess a large body of copyrighted technological works created by their own authors which they can distribute internationally. In the absence of sufficient nationally-created technology, such nations often use the intellectual property-protected products of other nations to aid in their internal economic growth.¹⁴² Even the United States, in its early days, used the works of foreign authors to feed the voracious needs of this country's publishing industry—works which United States copy-

140. Patent registration procedures have been eased through the Patent Cooperation Treaty. Patent Cooperation Treaty, June 9, 1970, 28 U.S.T. 7813. Additional efforts are currently underway to harmonize application procedures under the auspices of WIPO. The Madrid Protocol and the Trademark Registration Treaty represent similar efforts to harmonize standards for trademark registrations on a multinational basis. See Madrid Protocol Relating to the Madrid Agreement Concerning the International Registration of Marks, June 27, 1989, WIPO Pub. No. 204(E) and Trademark Registration Treaty, October 28, 1994, 49 Pat. Trademark and Copyright J. 29 (BNA) (Nov. 10, 1994). The European Union, because of its supranational character, has been in the forefront in harmonization efforts directed toward establishing uniform substantive domestic law requirements. Perhaps the most noteworthy examples are its Directive on the Protection of Computer Software and its Harmonization Directive for Trademarks. See Council Directive 911250/EEC of May 14, 1991 on the Legal Protection of Computer Programs and Council Directive 89/104 of Dec. 21, 1988 to Approximate the Laws of the Member States relating to Trademarks, 1989 O.J. L40 (Feb. 11, 1989).

141. See discussion *supra* Part II (examining the copyright debates during the Uruguay Round).

142. See, e.g., DONALD E. SAUNDERS, *AUTHORSHIP AND COPYRIGHT* 154-61 (1992); Robert W. Kastenmeier and David Beiser, *International Trade and Intellectual Property: Promise, Risks and Reality*, 22 VAND. J. TRANSNAT'L 285, 301-02 (1989); *Piracy of the High C's*, THE ECONOMIST, Feb. 17, 1996.

right laws did not protect.¹⁴³

Attempts to restrict a nation's internal access to technology through the enactment of international protection norms are seen by many developing countries as a direct threat to their ability to play a significant role in the world economy. Since intellectual property, by its nature as protection for "works of the mind," serves a unique role in protecting products of culture and technology, phrases such as "public good," "common heritage of mankind" and "moral rights" are often interjected into the debate over protection norms.¹⁴⁴ These phrases are used to reflect the perceived economic desirability of unfettered use of another's technology.¹⁴⁵

By contrast, countries which own and/or export technology are challenged by the direct economic impact that unlicensed and uncompensated use of such technology has on what those countries perceive as legitimate markets for their products.¹⁴⁶

This is a growing perception that the failure to protect intellectual property rights serves as a strong disincentive to foreign investment. Quite simply, foreign companies have little interest in developing markets where their products will be pirated with impunity. As nations develop their own exportable intellectual property (derived from native culture and local research and development), however, their interest in protection increases.¹⁴⁷

The often rancorous debates between developed and developing countries during the TRIPS negotiations, regarding the desirability of protection for computer programs and databases, reflects the continuing role that economics will play in the development of acceptable standards for international protection.¹⁴⁸ One of the problems for the future of in-

143. *Id.*

144. See, e.g., Doris Estelle Long, *Copyright and the Uruguay Round Agreements: A New Era of Protection or an Illusory Promise?* 22 *AIPLA Q.J.* 531(1994) (examining the interjection of *res communis* ideals into the debate over protection norms). See also *supra* Part II (discussing the debates over protection norms between developed and developing countries).

145. See William A. Stabeck, *International Intellectual Property Protection: An Integrated Solution to the Inadequate Protection Problem*, 29 *VA. J. INT'L L.* 517 (1989); J.H. Reichman, *The TRIPS Component of the GATT's Uruguay Round: Competitive Prospects for Intellectual Property Owners in an Integrated World Market*, 4 *FORDHAM INTELL. PROP. MEDIA & ENT. L. J.* 171 (1993).

146. See *supra* note 115 (delineating the adverse impact of piracy activity in China).

147. See, e.g., Carlos Alberto Primo Braga, *The Economics of Intellectual Property Rights and the GATT: View from the South*, 22 *VAND. J. TRANSNAT'L L.* 243 (1989); Tara Kalagher Giunta, Lily H. Shang, *Ownership of Information in a Global Economy*, 27 *GEO. WASH. J. INT'L L. & ECON.* 327 (1994); Kirsten Peterson, *Recent Intellectual Property Trends in Developing Countries*, 33 *HARV. INT'L L.J.* 277 (1992).

148. See *supra* notes 90-92 and accompanying text (discussing the debates over computer software protection under TRIPS).

ternational protection of technology will be to balance the economic needs of the developing (technology importing) nations with those of the developed (technology exporting) nations.

In TRIPS the members reached this balance by delaying the application of the substantive and procedural norms to certain developing countries. Under Article 65, "developing country Members" are entitled to a four year delay.¹⁴⁹ Members in the process of transforming from a centrally-planned economy into a market, free-enterprise economy who are "undertaking [a] structural reform of [their] intellectual property system" may also qualify for a four year delay.¹⁵⁰ Least developed countries may obtain a ten year delay "in view of their special needs and requirements, their economic, financial and administrative constraints and their need for flexibility to create a viable technological base."¹⁵¹

Similar to the problems posed by the broad enforcement language of Article 10, whether these provisions strike the appropriate balance between competing concerns remains unclear. If the provisions offer too much protection, then the developing countries will either decline to accede to TRIPS, or they will fail to meet their obligations under TRIPS. However, if the provisions offer too little protection, then the developed countries will lose the economic benefits presumably obtained from the protection offered under TRIPS. It is too soon to determine whether or not TRIPS has established an acceptable equilibrium between these competing concerns, which can be used as a model for future technology protection norms.

VII. THE PROBLEMS POSED BY THE TRANSITORY NATURE OF TECHNOLOGY

A final factor which deserves consideration in developing international technology protection standards is the unique nature of technology. The perceived close relationship between technology and the development of an internal industrial base that will allow underdeveloped and developing countries to compete in the global marketplace makes agreement on protection standards difficult. Claims of the potential public policy impact of perceived restrictions on the ability to utilize

149. TRIPS, *supra* note 1, at art. 65(2). The term "developing country Member" is not defined in the treaty. See TRIPS, *supra* note 1.

150. *Id.* at art. 65(3). In addition, where a developing country member is required to extend patent protection "to areas of technology not so protectable in its territory" application of the treaty's obligations may be delayed for an additional four years. *Id.* at art. 65(4).

151. *Id.* at art. 66(1). In addition, Article 66(2) requires developed country members to "provide incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging technology transfers to least developed country members in order to enable them to create a sound and viable technological base." *Id.* at art. 66(2).

such technology are not without a degree of merit and cannot be underestimated.

Moreover, much of technology is international in nature. In instances such as the Global Information Superhighway and direct satellite broadcasts of programs, acts in one country may have a direct impact on the rights of foreign intellectual property owners. The United States is even now struggling with the issue of the application of its own intellectual property laws to works transmitted on the Global Information Superhighway. Whether referred to as the Internet, the National Information Infrastructure, or the Global Information Superhighway, the development of a worldwide network of linked personal computers has had, and will continue to have, an enormous effect on the way information is exchanged.¹⁵²

Many works transmitted by means of the Internet fall within the scope of protection that copyright laws grant to expressive works.¹⁵³ The United States government has established a task force which is considering the interplay between the potentialities for worldwide communication, the protection of an author's legitimate rights under copyright of works which might be communicated through the Internet, and the free exchange of ideas (fair use issues) underlying such exchanges.¹⁵⁴ With a worldwide reach, the Internet poses a significant challenge to international enforcement. A user could upload (copy) onto the Internet an unauthorized copy of copyrighted software. This pirated software could be transmitted to China, downloaded there, copied, and eventually sold in Eastern Europe. In each step of this parade of horrors, issues arise regarding what rights the original proprietor of the software (the copyright owner) has.¹⁵⁵ Without international protection standards, an

152. Figures on the number of users of electronic bulletin board services change daily. There is no question, however, that the Global Information Superhighway has had, and will continue to have, a profound impact on communications and media delivery techniques. For histories of the development of the Internet, see Howard Rheingold, *The Virtual Community* (New York: Harper Perennial 1994); Nicholas Negroponte, *Being Digital* (New York: Alfred Knopf 1995); Peter H. Salers, *Casting the Net* (Addison Wesley 1995).

153. Among the types of works communicated routinely over the Internet are photographs, text works, and graphic designs, all of which are potentially protectable under United States copyright laws. See 17 U.S.C. § 102 (listing protectable categories including literary, graphic, and photographic works). Increasingly, the unauthorized use of these works on the Internet has been the subject of legal challenge. See, e.g., *Playboy Enterprises, Inc. v. Frena*, 839 F. Supp. 1552 (M.D. Fla. 1993) (photographs); *Sega Enterprises, Ltd. v. Maphia*, 857 F. Supp. 679 (N.D. Cal. 1994) (videogames); *Religious Technology Center v. Netcom On-Line Communication Services, Inc.*, 907 F. Supp. 1361 (N.D. Cal. 1995) (textual materials).

154. See *Intellectual Property and the National Information Infrastructure: The Report of the Working Group on Intellectual Property Rights* (Sept. 1995).

155. There are strong similarities between the problems of the transborder violations posed by Internet transmissions and by satellite and digital broadcasts. For an interesting

owner will be at the mercy of vague and ever-changing domestic laws.

Finally, technology is transitory. Today's technological breakthrough is tomorrow's obsolescence. Because of the potentially limited time span in which technology will be marketable (and, therefore, valuable), any errors in striking the balance between unfettered use and strictly enforced restrictions can have catastrophic consequences. TRIPS elected to grant up to a ten year delay in enforcement as an accommodation to the competing concerns between developed and developing nations. Given the short span of viability of most technology, by the time protection attaches under TRIPS, much of today's technology will have lost market value. Whether future technology will find sufficient enforcement once all signatories are required to meet their treaty obligations will continue to depend on the economic and cultural climate of the countries in question.

VIII. A SUGGESTION FOR REDUCING MULTICULTURAL AND ECONOMIC CONFLICTS

Despite the (admittedly incomplete but somewhat daunting) list of factors set forth in this article, which affect efforts to develop international standards for the protection of technology rights, the development of an acceptable international protection standard is a difficult, but not impossible, task.

To establish a truly international standard for the protection of technology rights, participants in the process must do more than pay lip service to the economic, philosophical, and cultural diversity of the world. Agreed-upon standards *can* be achieved, but only where such standards coincide with the culture and history of the countries in question. The problem with enforcement of intellectual property rights in many Third World and underdeveloped countries arises in large part from the disalignment of western views of intellectual property rights with the culture, history and, legal traditions of developing and emerging marketplace countries. This disalignment can only be overcome if cultural differences are absorbed into international standards.

While many scholars focus on the issue of multiculturalism from the position of the failure of developing nations to protect intellectual property rights, developed nations face many of the same issues when their laws are not in accord with agreed-upon international standards. The problem that the U.S. faced in harmonizing its laws regarding moral rights with those of other countries is instructional in this regard. Article 6*bis* of the Berne Convention requires protection of an author's non-

discussion of transborder problems posed by satellite broadcasts, see, Iris C. Gerk, *Direct Broadcast Satellites and the Determination of Authors' Rights Under the Berne Convention: Lucy in the Sky Without Rights?*, 15 SUFFOLK TRANSNAT'L L. REV. 563 (1992).

economic rights.¹⁵⁶ Briefly, these rights reside in the author as a result of the act of creation and include the right to control any adaptations of the work, including the rights of patrimony and integrity.¹⁵⁷ Continental European countries grant moral rights protection primarily as a result of their philosophical founding of copyright law in the Hegelian personality rights school of philosophy.¹⁵⁸ The United States, as noted earlier, is firmly based on Lockean economic rights.¹⁵⁹ Efforts to impose moral rights on the U.S. copyright system (via accession to the Berne Convention) were largely unsuccessful and resulted in a 100 year delay in accession.¹⁶⁰ Despite the fact that during this period United States *copyright* law did not recognize moral rights, a type of moral right did exist under U.S. trademark and unfair competition law.

Section 43(a) of the Lanham (Federal Trademark) Act prohibits the unauthorized use in interstate commerce of any

false designation of origin, false or misleading description of fact or false or misleading representation of fact which is likely to cause confusion, or to cause mistake, or to deceive as to the affiliation, connection or association of such person with another, or as to the origin of his or her goods.¹⁶¹

In a seminal case, *Gilliam v. American Broadcasting Companies, Inc.*,¹⁶²

156. Berne Convention, *supra*, note 14, at art. 6bis.

157. See *supra* note 68 (discussing differences arising from differing cultural and philosophical bases for protecting intangible rights).

158. See *supra* note 68 (discussing differences arising from differing cultural and philosophical bases for protecting intangible rights).

159. See *supra* note 68 (discussing differences arising from differing cultural and philosophical bases for protecting intangible rights).

160. Although U.S. copyright laws did not recognize moral rights, at the time of U.S. accession to the Berne Convention, Congress did not revise the law to include such a right. Instead, Congress found that such non-economic rights were already provided under various non-copyright laws. Congress stated:

[V]arious decisions of state and federal courts have rejected claims that were denominated specifically as 'moral rights' or that sought relief under the 'moral rights' doctrine.

However, protection is provided under existing U.S. law for the rights of authors listed in Article 6bis: (1) to claim authorship of their works ('the right of paternity'); and (2) to object to distortion, mutilation or other modification of their works, or other derogatory action with respect thereto, that would prejudice their honor or reputation (the 'right of integrity'). This existing U.S. law includes various provisions of the Copyright Act and Lanham Act, various state statutes, and common law principles such as libel, defamation, misrepresentation, and unfair competition, which have been applied by courts to redress authors' invocation of the right to claim authorship or the right to object to distortion.

REPORT ON THE BERNE CONVENTION IMPLEMENTATION ACT OF 1988, *supra*, note 12, at 10.

161. 15 U.S.C. § 1125(a). Although *Gilliam v. American Broadcasting Companies, Inc.*, 538 F.2d 14 (2d Cir. 1976), was decided under the Lanham Act, prior to the 1988 Trademark Law Revision Act, Pub. L. No. 100-667, 102 Stat. 3935, the pertinent language of section 43(a) remained fundamentally unchanged.

162. 538 F.2d 14 (2d Cir. 1976).

the plaintiff sought relief against the defendant's unauthorized alteration and broadcast of various comedy skits written and performed by Monty Python. The Second Circuit Court of Appeals recognized that the plaintiff's claim for relief for the "deformation of the artist's work"¹⁶³ "finds its roots in the continental concept of *droit moral*, or moral right."¹⁶⁴ The court further recognized that at that time "American copyright law, as presently written, does not recognize moral rights or provide a cause of action for their violation, since the law seeks to vindicate the economic, rather than the personal, rights of authors."¹⁶⁵ Despite the absence of a copyright basis for granting relief, the court acknowledged that similar relief was available under unfair competition and state contract claims. The court, consequently, granted relief under Section 43(a) because the mutilation of the plaintiff's work (from the unauthorized editing) rose to the level of a false designation of origin under the federal trademark act.

The recognition of a moral right under United States trademark (as opposed to copyright) law is fully in keeping with the culture and heritage of the United States. As a market economy, the United States has long recognized the role of trademarks in brand differentiation, and has supported that role through both state and federal legislation.¹⁶⁶ Although philosophically the United States was unable to accept an author's *personality* as a value to be protected (apart from the economic value represented by copyright), the United States had long valued the need to protect consumers from the harm caused by the false branding of products. Philosophically, the United States could accept the rights of patrimony and integrity as those rights impacted on the "brand differentiation" value of a given source designator. This author contends that the underlying philosophical acceptability of brand differentiation helps explain why the Lanham Act was viewed as the more acceptable candidate for repository of a moral rights interest. Over time the United States has begun to accept the concept of moral rights to such an extent that Congress has made revisions to United States copyright law in order to reflect this new acceptance. The adoption of the Visual Artists Rights Act,¹⁶⁷ which grants certain rights of integrity and patrimony to sculptures and other works of visual art under United States copyright

163. *Id.* at 20.

164. *Id.*

165. *Id.*

166. See, e.g., NORMAN HESSELTINE, A DIGEST OF THE LAW OF TRADEMARKS AND UNFAIR TRADE (Little, Brown & Co. 1906); FRANK SCHECHTER, THE HISTORICAL FOUNDATION OF THE LAW RELATING TO TRADEMARKS (Columbia University Press 1925); EDWARD C. VANDENBURGH III, TRADEMARK LAW AND PROCEDURE (Bobbs-Merrill 1959).

167. Pub. L. No. 101-650, 104 Stat. 5128-33 (1990) (codified in 17 U.S.C. §§ 101 and 106A).

law, is an example of this change.¹⁶⁸ Although the fit is by no means perfect (authors of literary works have no such moral rights founded on copyright law) and has been sharply criticized by some scholars,¹⁶⁹ at least this represents a first step in an important accommodation between competing philosophies of protection. This same approach of finding ways to make facially foreign concepts fit within culturally diverse systems can be used to help develop and strengthen international standards for technology in the future. The goal is to find areas of possible convergence as a jumping-off place. Thus, for example, while the United States has a highly developed civil law system for enforcing technology rights, other nations with a more highly developed criminal (as opposed to civil) law system may have greater success in utilizing criminal penalties to secure protection of technology rights. It is the end result of protection, and *not* the method, with which the members of the international community should be concerned.

IX. CONCLUSION

The technological advances which are driving the push toward the development of agreed-upon standards for the international protection of technology will only continue. The challenge is for the international community to continue to develop consensus-based approaches which acknowledge and accept the cultural diversity of the international community. Identity of protection is virtually impossible. Uniformity, however, may be possible where nations work toward standards which balance the legitimate concerns of both owners and users. Those standards must also provide sufficient flexibility so that countries can select the philosophical foundations and procedures in keeping with their own culture and heritage, while still achieving the goal of uniform protection of tech-

168. The Visual Artists Rights Act (hereinafter "VARA") grants the rights of attribution and paternity to authors of works of visual art. 17 U.S.C. § 106A(a). Section 101 of the Act defines a "work of visual art" as:

a painting, drawing, print or sculpture, existing in a single copy, in a limited edition of 200 copies or fewer that are signed and consecutively numbered by the author, or, in the case of sculpture, in a multiple cast, carved, or fabricated sculptures of 200 or fewer that are consecutively numbered by the author and bear the signature or other identifying mark of the author; or a still photographic image produced for exhibition purposes only, existing in a single copy that is signed by the author, or in a limited edition of 200 copies or fewer that are signed and consecutively numbered by the author.

17 U.S.C. § 101. Thus, authors of literary works, including software programs, are not granted moral rights protection under U.S. copyright laws. An author's moral rights under VARA may not be transferred but they may be waived in a written instrument signed by the author. 17 U.S.C. § 106A(e).

169. See, e.g., Robert J. Sherman, *The Visual Artists Rights Act of 1990: American Artists Burned Again*, 17 CARDOZO L. REV. 373 (1995); Dana L. Burton, *Artists' Moral Rights: Controversy and the Visual Artists Rights Act*, 48 SMU L. REV. 639 (1995).

nology. Such standards must be based on a realistic appraisal of the fundamental economic impact which any protection scheme has on both developed and developing nations. Using existing treaty regimes regarding intellectual property rights may prove a useful starting point. The ultimate success of these efforts, however, will depend on the self-interest and accommodations that each side is willing to make.