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1996]

TAKING TRIPS ON THE INFORMATION SUPERHIGHWAY:
INTERNATIONAL INTELLECTUAL PROPERTY
PROTECTION AND EMERGING
COMPUTER TECHNOLOGY*

CHARLES R. McMANIS**

I. INTRODUCTION

DURING the past decade the global marketplace witnessed a virtual explosion in emerging computer technologies, ranging from new hardware developments, such as CD-ROM and optical scanner technology, to new software and multimedia products, and to rapidly expanding computer networks and digital communications technology. Collectively, these developments promise to produce a new global information infrastructure, or "information superhighway."¹

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1. The emerging national information infrastructure (NII) and its global equivalent, the GII, have been described by more than one author as the product of convergence—of technologies, markets, and law or public policy. See, e.g., Fred H. Cate, *Information Issues: Intellectual Property, Privacy, Integrity, Interoperability, and the Economics of Information*, 48 *FED. COMM. L.J.* 5, 11-14 (1995) (remarks of Brian Kahin) (describing NII as product of technological, market, and legal or policy convergence); Andrew Christie, *Reconceptualising Copyright in the Digital Era*, 17 *EUR. INTELL. PROP. REV.* 522, 522-23 (1995) (discussing convergence of information technologies); Henry H. Perritt, Jr., *Access to the National Information Infrastructure*, 30 *WAKE FOREST L. REV.* 51, 52-53 (1995) (noting that law "emerges from human cultures, and the NII represents a convergence of five different cultures: Telephone systems, broadcast media, textual media, personal computing, and the Internet").

The term "information superhighway" has perhaps correctly been called the "mother of all bad metaphors." John P. Barlow, *Keynote Address, Symposium of Fundamental Rights on the Information Superhighway*, 1994 *ANN. SURV. AM. L.* 355, 360. Barlow, however, (who in another of his articles, *The Economy of Ideas: A Framework for Rethinking Patents and Copyrights in the Digital Age (Everything You Know about Intellectual Property is Wrong)*, *WIRED*, Mar. 1994, at 84, describes himself as a retired cattle rancher, lyricist for the Grateful Dead and co-founder and executive chair of the Electronic Frontier Foundation) would undoubtedly agree that to understand the new, one must inevitably make comparisons with the known and that even a bad metaphor is better than its bureaucratic equivalent—in this case, "information infrastructure." *Id.*

Not surprisingly, during precisely the same decade international intellectual property protection suddenly emerged from the obscurity of an arcane legal subspecialty and gained sufficient notoriety to periodically dominate the headlines. Ten years ago, perhaps even a practicing attorney might have had trouble identifying exactly what was meant by “intellectual property”² or what international legal protection is available for it.³ Today, on the other hand, even a moderately well-informed layperson has likely heard the term “intellectual property” bandied about in the news media and may even understand that international intellectual property protection has been a key topic in both multilateral and bilateral trade negotiations, such as the long stalled but eventually successful

For a discussion of how metaphors can be useful in defining the matrix of rights and responsibilities in networked communities, see Henry H. Perritt, Jr., *Metaphors for Understanding Rights and Responsibilities in Network Communities: Print Shops, Barons, Sheriffs and Bureaucracies*, VILL. INFO. L. CHRON., www.law.vill.edu/chron (discussion paper, Oct. 15, 1992). For a caution against becoming trapped in legal metaphors, see David R. Johnson & Kevin A. Marks, *Mapping Electronic Data Communications into Existing Legal Metaphors: Should We Let Our Conscience (and Our Contract) Be Our Guide?*, 38 VILL. L. REV. 487 (1993).

The most dangerous metaphor in the entire debate over intellectual property protection on the emerging global information superhighway may be one that often goes unrecognized as a metaphor—namely the term “intellectual property.” For a further discussion of the meaning of the term “intellectual property,” see *infra* note 2 and accompanying text. For a critique of the concept of intellectual property, see *infra* notes 13, 312-36 and accompanying text.

The recent literature on the information superhighway is voluminous. For a readable collection of articles discussing the economic, business, legal, political, cultural and social aspects of the information revolution, see *THE INFORMATION REVOLUTION* (Donald Altschiller ed., 1995). For a somewhat more irreverent introduction to the current state of virtual reality, see DINTY W. MOORE, *THE EMPEROR'S VIRTUAL CLOTHES: THE NAKED TRUTH ABOUT THE INTERNET CULTURE 1* (1995).

2. In the United States, intellectual property is now generally understood (by lawyers, at least) to mean anything protected by the federal law of patents and copyrights, the federal and state law of trademarks and tradenames, and the state law of trade secrets and ideas. Intellectual property law could also be said to include two specialized *sui generis* federal statutes protecting semiconductor chip designs and new plant varieties, and a more amorphous body of state common law protecting a variety of commercially valuable intangibles, such as news, ideas, ephemeral performances and the publicity rights of celebrities and others.

Other countries conceptualize intellectual property somewhat differently. For example, several forms of intellectual property common in Europe and other parts of the world—namely, copyright-like industrial design protection, utility model (or petty patent) protection and “neighboring rights” protection for performers, producers of phonograms and broadcasting organizations—have no exact counterpart in U.S. intellectual property law, but are recognized in various international intellectual property conventions. For a detailed further discussion of the Paris and Berne Conventions, see *infra* notes 30-36 and accompanying text. For a discussion of some of the international difficulties that different concepts of intellectual property create, see *infra* notes 293-300 and accompanying text.

3. For a discussion of the various international conventions dealing with intellectual property protection, see *infra* notes 26-36 and accompanying text.

Uruguay Round of multilateral trade negotiations, conducted under the auspices of the General Agreement on Tariffs and Trade (GATT)—now the World Trade Organization (WTO)⁴—and the seemingly endless bilateral trade negotiations that the United States conducts with some of its major trading partners, particularly those in East Asia.⁵

This Article will examine recent developments in the international protection of intellectual property rights and consider what impact these developments will have on emerging computer technologies and the protection of intellectual property rights on the global information superhighway. The Article will also examine the impact that emerging computer technologies and the global information superhighway will likely have on the international intellectual property law of the future.

Part II of this Article will examine the so-called TRIPS agreement—formally known as the Agreement on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods (TRIPS)⁶—which was hammered out during the course of the Uruguay Round of multilateral trade negotiation. The TRIPS agreement represents a milestone in international intellectual property protection. For the first time, a comprehensive set of international minimum standards for the protection of intellectual

4. General Agreement on Tariffs and Trade, *opened for signature* Oct. 30, 1947, T.I.A.S. No. 1700, 55 U.N.T.S. 187, *reprinted in* 4 GENERAL AGREEMENT ON TARIFFS AND TRADE, BASIC INSTRUMENTS AND SELECTED DOCUMENTS (1969). The term GATT is generally used to refer both to the General Agreement on Tariffs and Trade and to the rules, organization and trading system that evolved under the General Agreement. William J. Davey, *The WTO/GATT World Trading System: An Overview*, in 1 PIERRE PESCATORE ET AL., HANDBOOK OF WTO/GATT DISPUTE SETTLEMENT 7 n.1 (1995).

For a description of the origins and organizational structure of GATT and its evolution into the World Trade Organization (WTO), see *infra* notes 7-23 and accompanying text. For an overview of the Uruguay Round of multilateral trade negotiations, see *Symposium: Uruguay Round—GATT/WTO*, 29 INT'L LAW. 335 (1995). For the results of the Uruguay Round, see Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, Apr. 15, 1994, *reprinted in* THE RESULTS OF THE URUGUAY ROUND OF MULTILATERAL TRADE NEGOTIATIONS—THE LEGAL TEXTS (GATT Secretariat ed., 1994) [hereinafter Final Act].

5. For a discussion of the results of recent bilateral trade negotiations between the United States and its East Asian trading partners, see *infra* note 22 and accompanying text.

6. Final Act, *supra* note 4, Annex 1C, Agreement on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods [hereinafter TRIPS agreement].

property rights and a detailed international dispute settlement process was established.⁷

Part III of this Article will examine the potential impact of the TRIPS agreement on the ongoing international debate over computer program "interoperability." Even before the TRIPS agreement was adopted, the European Community Directive on the Legal Protection of Computer Programs⁸ and a number of judicial decisions in the United States came to similar, but not identical, conclusions on the two specific issues that have dominated the debate—namely the scope of copyright protection for a computer program's interface specifications and the legality of reverse engineering which may be necessary to achieve interoperability among computer programs. To the extent that differences exist, both issues could become the subject of WTO dispute resolution.

Finally, Part IV of this Article will examine two recent initiatives designed to enhance intellectual property protection on the emerging global information superhighway—namely, the newly adopted European Directive for the Legal Protection of Databases⁹ and the final report ("White Paper") on Intellectual Property and the National Information Infrastructure, issued by the Clinton administration's Working Group on Intellectual Property Rights.¹⁰ These two initiatives are particularly important because they apparently represent a coordinated effort on the part of the United States and the European Union to fashion a new multilateral agreement for the protection of intellectual property on the global information superhighway; yet both proposals create the potential for conflict with either the TRIPS agreement itself or the associated GATT/WTO agreement.¹¹

7. See generally Jerome H. Reichman, *Universal Minimum Standards of Intellectual Property Protection under the TRIPS Component of the WTO Agreement*, 29 INT'L LAW. 345 (1995) [hereinafter *Universal Minimum Standards*] (conveying comprehensive picture of substantive provisions of TRIPS agreement).

8. Council Directive 91/250 of 14 May 1991 on the Legal Protection of Computer Programs, 1991 O.J. (L122/42) [hereinafter EC Directive].

9. Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the Legal Protection of Databases, 1996 O.J. (L77) [hereinafter Database Directive].

10. BRUCE A. LEHMAN, INFORMATION INFRASTRUCTURE TASK FORCE, INTELLECTUAL PROPERTY AND THE NATIONAL INFORMATION INFRASTRUCTURE: THE REPORT OF THE WORKING GROUP ON INTELLECTUAL PROPERTY RIGHTS (1995) [hereinafter WHITE PAPER].

11. For a discussion of the proposed new multilateral agreement, see *infra* notes 231-34 and accompanying text. For a discussion of the possible conflicts with the TRIPS and/or GATT/WTO agreement, see *infra* notes 308-10 and accompanying text.

In evaluating any proposals for enhanced intellectual property protection, it is important to keep in mind that most intellectual property issues raised by rapidly developing technologies and new media are not themselves new.¹² Technologies and media have been emerging at an exponential rate in the industrialized world for at least two centuries. The perennial challenge for intellectual property law is first to determine whether any new or additional intellectual property protection is warranted for newly emerging technologies and media. If so, the next challenge is to determine what level of intellectual property protection will be sufficient to encourage innovation without being so overbroad as to stifle either competition or public access to and use of the new technologies and media.

This Article concludes that the one genuinely new international intellectual property issue posed by digital technology and the emerging global information superhighway is how to enforce territorially limited intellectual property rights in what is rapidly becoming an integrated global economy. The emergence of digital technology and global computer networks is rapidly undermining the whole concept of territorially limited intellectual property rights, and to a certain extent, the concept of intellectual property itself.¹³

II. THE TRIPS AGREEMENT

The current international debate over intellectual property protection is largely a consequence of a mounting international trade deficit in the United States during the 1980s. Although the United States has long been committed to the principle of free international trade, each succeeding administration over the past decade has faced intense domestic political pressure to protect American businesses against the perceived cause of the deficit: growing foreign competition at home and abroad.¹⁴

12. See, e.g., Trotter Hardy, *The Proper Legal Regime for "Cyberspace,"* 55 U. PITT. L. REV. 993 (1994); Johnson & Marks, *supra* note 1 at 487 (attempting to distinguish old and new legal issues arising in cyberspace).

13. For further discussions of the effect of emerging digital technology and global computer networks on intellectual property, see *infra* notes 312-36 and accompanying text.

14. In 1985, in particular, the U.S. trade deficit is said to have skyrocketed. Judith H. Bello & Mary E. Footer note that as a result:

Over 300 trade bills were introduced in the Congress that year, many of them protectionist. The second Reagan administration confronted strong political pressure to close the U.S. market against imports from

Rather than simply succumbing to demands for higher trade barriers to reduce foreign competition in the United States, Republican and Democratic administrations alike chose to respond instead to the growing barrage of complaints from American companies doing business abroad that their sales in foreign markets were being undermined by a combination of inadequate foreign patent protection, wholesale "piracy" of copyrighted works, massive counterfeiting of brand name goods and systematic theft of American trade secrets.¹⁵ Because exports having significant intellectual property content now account for over twenty-five percent of total American exports, as compared with only ten percent at mid-century, securing more effective intellectual property protection for U.S. goods in foreign markets should have a significant effect in reducing the U.S. trade deficit.¹⁶

Accordingly, the Reagan administration specifically sought to improve intellectual property protection for U.S. goods in foreign markets as a part of its overall strategy to strengthen U.S. competitiveness in world markets.¹⁷ In the Trade and Tariff Act of 1984¹⁸ and again in the Omnibus Trade and Competitiveness Act of 1988,¹⁹ Congress endorsed that strategy. Improved global intellec-

foreign markets that were not reciprocally open to U.S. exports. The hue and cry was to obtain a "level playing field."

Judith H. Bellow & Mary E. Footer, *Preface*, 29 INT'L LAW. 335, 336 (1995).

15. For a detailed discussion of U.S. industry concerns over the problem of "piracy" in overseas markets, and the U.S. government's response to those concerns, see R. MICHAEL GADBAW & TIMOTHY J. RICHARDS, *INTELLECTUAL PROPERTY RIGHTS: GLOBAL CONSENSUS, GLOBAL CONFLICT?* (1988). Unlike piracy on the high-seas, however, such "piracy" is not an international crime.

16. *Id.* at 4, Chart I.1. Revenues lost by U.S. companies as a result of "piracy" have been estimated to be as much as \$25 billion per year—about 15% of the U.S. trade deficit. *Id.* at 3. *But cf.* Frederick M. Abbott, *WTO Dispute Settlement and the Agreement on Trade-Related Aspects of Intellectual Property Rights*, in *INTERNATIONAL TRADE LAW AND THE GATT-WTO DISPUTE SETTLEMENT SYSTEM* (Ernst-Ulrich Petersmann ed., forthcoming 1996) (noting that at least one of major studies used by United States as primary evidence of need for higher levels of intellectual property protection, namely U.S. International Trade Commission, Pub. L. No. 2065, *Foreign Protection of Intellectual Property Rights and the Effect on U.S. Industry and Trade* (1988), was based on highly suspect methodology). According to Abbott, data from this report was collected by means of a questionnaire soliciting information on losses; the information was not verified. The collected information was thereafter extrapolated on the basis of admittedly invalid statistical assumptions.

17. Abbott, *supra* note 16, at 39 (citing President's Commission on Industrial Competitiveness, *Global Competition: The New Reality* (1985)).

18. Trade and Tariff Act of 1984, Pub. L. No. 98-573, § 501, 98 Stat. 2948 (1984) (codified at 19 U.S.C. §§ 2461-2465 (1994)).

19. Omnibus Trade and Competitiveness Act of 1988, Pub. L. No. 100-418, 102 Stat. 1107 (1988) (codified at 19 U.S.C. § 2411 (1994)) [hereinafter OTCA].

tual property protection thus became a bipartisan cornerstone of U.S. international trade policy.

Invoking the enhanced powers conferred by the latter piece of legislation, the United States Trade Representative ("USTR") launched a two-pronged strategy for achieving more effective intellectual property protection for U.S. goods in foreign markets. In bilateral trade negotiations, the USTR utilized a provision of U.S. trade law, called "Special 301,"²⁰ to threaten particularly vulnerable trading partners with trade sanctions if they did not strengthen their domestic intellectual property law and enforcement efforts. At the same time, the USTR seized on the Uruguay Round of multilateral trade negotiations to push for a multilateral agreement establishing international minimum standards for intellectual property protection.²¹

Today, scarcely a decade later, the United States seems to have achieved its initial objectives. Individual trading partners, such as Japan, Korea, Taiwan and the People's Republic of China, have all dutifully taken at least some steps to strengthen their domestic intellectual property law and enforcement efforts.²² At the same time, the Uruguay Round of multilateral trade negotiations came to

20. OTCA § 1303, 19 U.S.C. § 2242 (1994), is commonly called "Special 301," because it is, in effect, a spin-off of § 301 of the Trade Act of 1974, 19 U.S.C. § 2411 (1994), which declares that foreign government acts, policies or practices that violate trade agreements with the United States, or that are unjustifiable, unreasonable or discriminatory, and that burden or restrict U.S. commerce, may be subjected to trade sanctions. The OTCA § 1301 transferred from the President to the U.S. Trade Representative (USTR) the authority to investigate such practices and determine what U.S. action is appropriate in response. Although § 301 itself includes within its definition of unreasonable acts, policies or practices, any that deny adequate and effective protection of intellectual property rights, 19 U.S.C. § 2411(d)(3)(B)(i)(II), "Special 301," specifically directs the USTR to identify countries that deny adequate and effective protection of intellectual property rights or deny fair and equitable market access to U.S. persons that rely upon intellectual property protection.

For a detailed discussion of the impact of "Special 301" on the intellectual property law of East Asia, see *Intellectual Property in East Asia*, 13 UCLA PAC. BAS. L.J. 1 (1994). For some of the individual articles in this special issue, see *infra* note 22.

21. See Bello & Footer, *supra* note 14, at 336-37.

22. See, e.g., Paul C. B. Liu, *U.S. Industry's Influence on Intellectual Property Negotiations and Special 301 Actions*, 13 UCLA PAC. BAS. L.J. 87 (1994); Sang-Hyun Song & Seong-Ki Kim, *The Impact of Multilateral Trade Negotiations on Intellectual Property Laws in Korea*, 13 UCLA PAC. BAS. L.J. 118 (1994); Chung-Sen Yang & Judy Y. C. Chang, *Recent Developments in Intellectual Property Law in the Republic of China*, 13 UCLA PAC. BAS. L.J. 70 (1994); Jianyang Yu, *Protection of Intellectual Property in the P.R.C.: Progress, Problems, and Proposals*, 13 UCLA PAC. BAS. L.J. 140 (1994).

a successful conclusion, producing not only the TRIPS agreement, but also a new GATT/WTO dispute settlement process.²³

Although TRIPS gives developing countries a five to ten year grace period in which to bring their intellectual property laws and enforcement efforts into compliance,²⁴ the agreement will eventually require all member countries of the newly-formed WTO (the successor to GATT) to meet: (1) the substantive standards concerning the availability, scope and use of intellectual property rights, enumerated in Part II of TRIPS; (2) the civil and criminal enforcement obligations, including border measures, enumerated in Part III of TRIPS; and (3) the procedural requirements governing the acquisition and maintenance of intellectual property rights, enumerated in Part IV of TRIPS. As a supplement to these detailed minimum standards for the intellectual property laws of individual GATT/WTO member countries, Part V of the TRIPS agreement incorporates by reference a separate Understanding on Dispute Settlement which was also hammered out during the Uruguay Round of multilateral trade negotiations.²⁵ Incorporation of these dispute prevention and settlement provisions may turn out to be the single most important contribution of the TRIPS agreement. To understand why this is so, it is first necessary to examine the substantive intellectual property standards contained in TRIPS.

A. *Substantive Intellectual Property Standards*

The TRIPS agreement is unquestionably a milestone in international intellectual property law. Prior to TRIPS, there simply were no universally acknowledged international minimum standards for intellectual property protection. To be sure, international agreements on intellectual property protection date as far

23. For a detailed discussion of this dispute settlement process, see *infra* notes 92-100 and accompanying text.

24. See TRIPS agreement, *supra* note 6, arts. 65-156. Article 65 of TRIPS gives industrialized countries a period of one year following the date of entry into force of the companion agreement establishing the WTO to apply the provisions of TRIPS and gives developing countries an additional four years. Article 66 gives least-developed countries a period of ten years, subject to further possible extensions, to apply most provisions of TRIPS.

25. Article 64 of the TRIPS agreement states that the "provisions of Articles XXII and XXIII of GATT 1994 as elaborated and applied by the dispute settlement understanding [Understanding on Rules and Procedures Governing the Settlement of Disputes] shall apply to consultations and the settlement of disputes under this Agreement except as otherwise specifically provided herein." TRIPS agreement, *supra* note 6, art. 64. The General Agreement on Tariffs and Trade 1994 is legally distinct from, but incorporates GATT. Final Act, *supra* note 4, art. II(4) and Annex IA. The Understanding on Rules and Procedures Governing the Settlement of Disputes is contained in the Final Act. *Id.* at Annex 2.

back as the two "Great Conventions" of the late nineteenth century—the 1883 Paris Convention for the Protection of Industrial Property (the "Paris Convention")²⁶ and the 1886 Berne Convention for the Protection of Literary and Artistic Works (the "Berne Convention").²⁷ Neither of these two conventions, however, succeeded in establishing universally accepted international minimum standards for intellectual property protection, nor did they contain effective international dispute resolution procedures.²⁸ Indeed, as more newly independent developing countries became members of the two Great Conventions after World War II, even the amendment process, which essentially requires unanimity among the member countries, eventually broke down.²⁹

26. Paris Convention for the Protection of Industrial Property, Mar. 20, 1883, 13 U.S.T. 2, 828 U.N.T.S. 107, *as last revised* at the Stockholm Revision Conference, July 14, 1967, 21 U.S.T. 1538, 828 U.N.T.S. 303 [hereinafter Paris Convention].

27. Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1886, *as last revised* at Paris, July 24, 1971, 25 U.S.T. 1341, 828 U.N.T.S. 221 [hereinafter Berne Convention].

28. Article 28 of the Paris Convention and Article 33 of the Berne Convention provide that any dispute between member countries may be brought before the International Court of Justice. Berne Convention, *supra* note 27, art. 33; Paris Convention, *supra* note 26, art. 28. Each article, however, allows any country acceding to the Convention to declare upon accession that it does not consider itself bound by this provision. *See generally* 1 STEPHEN P. LADAS, PATENTS, TRADEMARKS, AND RELATED RIGHTS: NATIONAL AND INTERNATIONAL PROTECTION § 143, at 237-40 (1975); S. RICKETSON, THE BERNE CONVENTION FOR THE PROTECTION OF LITERARY AND ARTISTIC WORKS: 1886-1986 (1987) (noting that Article 33 of Berne Convention only binds parties concerned in dispute and those parties will be bound by court's jurisdiction only if no reservations are made).

29. Article 27 of the Berne Convention explicitly states that subject to Article 26, which applies to the amendment of Articles 22 to 26 (concerned with the organizational structure of the Berne Union), any revision of the Berne Convention "shall require the unanimity of the votes cast." Berne Convention, *supra* note 27, art. 27. Although the Paris Convention contains no explicit requirement of unanimity, except in Article 13(6) in the 1883 version, which requires unanimity for increases in the budget of its international bureau, it is nevertheless said to be an established rule in conferences of revision of the Paris Union "that all member countries of the Union represented at the Conference must vote affirmatively for the adoption of any amendment of the Convention." *See* 1 LADAS, *supra* note 28, § 86, at 135-38.

Largely as a result of the unanimity rule, the Paris Convention was last revised in 1967, while the Berne Convention was last revised in 1971. Berne Convention, *supra* note 27; Paris Convention, *supra* note 26. The most notable post-World War II international intellectual property law development came in 1967, with the creation of a single international agency, the World Intellectual Property Organization (WIPO), to administer the two Great Conventions, as well as a number of other international intellectual property agreements. 1 LADAS, *supra* note 28, § 92, at 145-47. Gridlock over the amendment of the two Great Conventions led to the decision by the United States to inject intellectual property protection into the Uruguay Round of multilateral trade negotiations.

The Paris Convention merely obliges its member countries to offer "national [i.e., nondiscriminatory] treatment" to the nationals of other member countries with respect to any industrial property protection that the member country chooses to provide for its own citizens.³⁰ It also establishes an international priority system for the registration of industrial property.³¹ The Paris Convention obviously envisions that member countries will offer some form of "industrial property" protection, which Article 1(2) of the Paris Convention defines as the protection of "patents, utility models, industrial designs, trademarks, service marks, trade names, indications of source or appellations of origin, and the repression of unfair competition."³² However, the Paris Convention establishes little in the way of actual international minimum standards for industrial property protection.³³

The Berne Convention goes a step further than the Paris Convention, establishing certain minimum standards for copyright protection, in addition to obliging its members to accord national treatment to the nationals of other member countries.³⁴ Many

30. Paris Convention, *supra* note 26, art. 2.

31. *Id.* art. 4.

32. *Id.* art. 1(2). Article 1(3) goes on to state that "[i]ndustrial property shall be understood in the broadest sense." For the complete text of Article 1(3), see *infra* note 168.

33. Until recently, international minimum standards for intellectual property protection were not necessary. For a further discussion of international minimum standards for intellectual property, see *infra* notes 80, 81, 314 and accompanying text. The principle of national treatment and an international priority system promoted international trade far more effectively than had previously been the case. Prior to the Paris Convention, the intellectual property of foreign nationals was either altogether denied protection or protected only on the basis of material reciprocity. For a discussion of material reciprocity, see *infra* notes 78-79, 209-10, 218-21, 297-302 and accompanying text.

Virtually the only minimum substantive standards spelled out in the Paris Convention are not concerned with industrial property as such, but rather with unfair competition. Article 10^{bis} states that member countries are bound to assure nationals of member countries effective protection against unfair competition. Paris Convention, *supra* note 26, art. 10^{bis}. Article 10^{bis} defines unfair competition as any act contrary to honest practices in industrial or commercial matter, including, but not limited to, acts of passing off, disparagement or deceptive advertising. *Id.* Article 39 of the TRIPS agreement adds the protection of undisclosed information to the list of obligatory forms of protection against unfair competition. TRIPS agreement, *supra* note 6, art. 39. For a further discussion of Article 39 of the TRIPS agreement, see *infra* notes 55, 176-78, 216, 225, 335 and accompanying text.

34. Berne Convention, *supra* note 27, art. 2. In keeping with the European concept of intellectual property, the Berne Convention does not contain any provisions dealing with the "neighboring rights" of performers, producers of phonograms or broadcast organizations. For a discussion of the European concept of intellectual property, see *supra* note 2 and accompanying text. Rather, these "neighboring rights" are dealt with in a separate international agreement, the International Convention for the Protection of Performers, Producers of Phono-

countries, including the United States, objected to some of the minimum standards and refused to join the Berne Convention. Eventually these countries opted to adhere to the more minimal "national treatment" obligations contained in the Universal Copyright Convention of 1952.³⁵ Only in 1988, as a part of its new found interest in "harmonizing" (i.e., strengthening) intellectual property protection around the world, did the United States finally grudgingly enact legislation adhering to the Berne Convention and purporting to bring U.S. copyright law into compliance with Berne Convention standards.³⁶

The TRIPS agreement builds upon the foundation of the two Great Conventions. Article 9 of TRIPS specifically imposes an obligation on all GATT/WTO members to adhere to all but one of the substantive provisions of the Berne Convention in the grant of domestic copyright protection.³⁷ Article 2 of TRIPS imposes a somewhat analogous obligation on GATT/WTO members to comply with the substantive provisions of the Paris Convention.³⁸ In addition, Part II of the TRIPS agreement creates new international minimum standards for the protection of various forms of intellectual property—including copyright and related rights, trademarks, geo-

grams and Broadcast Organizations, Oct. 26, 1961, 496 U.N.T.S. 43 [hereinafter Rome Convention] and are thus not subject to the Berne Convention's national treatment requirement. The Paris and Berne Conventions themselves contain some limited exceptions to the principle of national treatment. Berne Convention, *supra* note 27, art. 3(1); Paris Convention, *supra* note 26, arts. 2, 3. For a discussion of how the new TRIPS agreement deals with these pre-existing exceptions to national treatment, see *infra* notes 40-41 and accompanying text.

35. Universal Copyright Convention, 6 U.S.T. 2731, 216 U.N.T.S. 134 (1952), revised July 24, 1971, 25 U.S.T. 1341, 943 U.N.T.S. 178.

36. Indeed, so grudging was the United States' adherence to the Berne Convention that some doubted whether the Berne Convention Implementation Act of 1988, Pub. L. No. 100-568, 102 Stat. 2853 (1988), did in fact harmonize U.S. copyright law with all of the requirements of the Berne Convention. This suspicion was amply confirmed two years later when Congress further amended the U.S. copyright law, claiming for a second time to have now brought U.S. copyright law into complete harmony with the Berne Convention. Judicial Improvements Act of 1990, Pub. L. No. 101-650, 104 Stat. 5089 (1990); Title VI (Visual Artists Rights Act of 1990, Pub. L. No. 101-650, 104 Stat. 5128 (1990)); Title VII (Architectural Works Copyright Protection Act, Pub. L. No. 101-650, 104 Stat. 5133 (1990)).

37. Specifically, Article 9 of TRIPS states that member countries are to comply with Articles 1-21 (excepting only the Article 6 obligation to protect moral rights) and the Appendix of the 1971 revision of the Berne Convention.

38. TRIPS agreement, *supra* note 6, art. 2 (stating that with respect to Parts II, III and IV of TRIPS, "Members shall comply with Articles 1-12 and 19 of the Paris Convention (1967)"). For a summary of Parts II, III and IV of TRIPS, see *supra* text following note 26. For a discussion of Article 2 of TRIPS, see *infra* notes 166, 222-25 and accompanying text.

graphical indications, industrial designs, patents, lay-out designs of integrated circuits and undisclosed information.³⁹

Article 3 of the TRIPS agreement in effect requires that the general Paris-Berne obligation to accord "national treatment," i.e., "treatment" no less favorable than a member country accords its own nationals, be extended to all forms of intellectual property protection required by Part II of TRIPS.⁴⁰ Article 4, in turn, imposes on member countries granting more than the required minimum protection for such intellectual property a complementary obligation, with but four limited exceptions, to provide "most-favored-nation" treatment—i.e., to immediately and unconditionally accord to the nationals of all member countries any advantage, favor, privilege or immunity granted to the nationals of any one member country.⁴¹

Only two provisions in the TRIPS agreement, however, specifically address the protection of computer programs and databases. Article 10 states that: "Computer programs, whether in source [i.e., human readable] or object [i.e., machine readable] code, shall be protected as literary works under the Berne Convention."⁴² Article 10 goes on to provide that "[c]ompilations of data or other material, whether in machine readable or other form, which by reason of the selection or arrangement of their contents constitute intel-

39. Article 1 states that "the term intellectual property, refers to all categories of intellectual property that are the subject of Sections 1 to 7 of Part II." TRIPS agreement, *supra* note 6, art. 1. The seven categories of intellectual property treated in Part II are: (1) copyright and related rights; (2) trademarks; (3) geographical indications; (4) industrial designs; (5) patents; (6) lay-out designs (topographies) of integrated circuits; and (7) undisclosed information. *Id.*

40. This obligation is expressly made subject to pre-existing exceptions contained in the Paris Convention, the Berne Convention, the Rome Convention and the Treaty on Intellectual Property in Respect of Integrated Circuits, May 26, 1989, 28 I.L.M. 1483 (1989). For a discussion of the Rome Convention, see *supra* note 34 and accompanying text. For a discussion of the Treaty on Intellectual Property in Respect of Integrated Circuits and its de facto supersession by Articles 35-39 of the TRIPS agreement, see *infra* note 78 and accompanying text.

41. Among the four listed exceptions are two that will be of particular relevance in Part IV of this Article—namely those for any advantage, favor, privilege or immunity accorded by a member (1) in accordance with provisions in the Berne or Rome Convention authorizing that the treatment accorded be a function not of national treatment but of the treatment accorded in another country; or (2) in respect of the rights of performers, producers of phonograms and broadcast organizations not provided under TRIPS. For a discussion of what rights are granted to producers of sound recordings, see *infra* notes 269-71 and accompanying text.

42. TRIPS agreement, *supra* note 6, art. 10. For a discussion of the significance of the reference to source code and object code, see *infra* notes 138, 177 and accompanying text. For the significance of the reference to the Berne Convention, see *infra* notes 51-52 and accompanying text.

lectual creations shall be protected as such."⁴³ Finally, Article 10 concludes with a caveat that such protection shall not extend to the data or material itself, just as Article 9 specifies that copyright protection in general is to extend only to expressions and not to ideas, procedures, methods of operation or mathematical concepts as such.⁴⁴ Article 11, a much narrower provision, requires members to provide copyright holders with an exclusive right to prohibit the commercial rental to the public of originals or copies of computer programs.⁴⁵

Not surprisingly, neither of these articles is directly relevant to the ongoing "interoperability" debate over the scope (as opposed merely to the availability) of copyright protection for computer programs or to the emerging debate over the scope of protection for intellectual property on the information superhighway. The primary aim of the TRIPS agreement, after all, is to compel rapidly developing countries to provide certain widely accepted minimum levels of intellectual property protection, not to address the more complex policy questions that currently perplex and divide the industrialized world itself.⁴⁶

The only provision in the TRIPS agreement giving any indication of the scope of copyright protection to be accorded computer programs or compilations of data is the very general statement in Article 13 that members "shall confine limitations or exceptions to exclusive rights to certain special cases which do not conflict with a normal exploitation of the work and do not unreasonably prejudice the legitimate interests of the right holder."⁴⁷ While Article 13 is seemingly broad enough to exclude all but the narrowest limitations or exceptions to the various exclusive rights enumerated in

43. TRIPS agreement, *supra* note 6, art. 10. For a discussion of the constraints this language puts on the protection of databases, see *infra* notes 195-96 and accompanying text.

44. TRIPS agreement, *supra* note 6, art. 10. For a discussion of the significance of these limitations on the protection of computer programs and compilations of data, see *infra* notes 120-35, 214-17 and accompanying text.

45. TRIPS agreement, *supra* note 6, art. 11. This provision, like its analogue in the U.S. copyright law, 17 U.S.C. § 109(b)(1)(A) (1994), in effect places a limitation on the "first sale" doctrine. For a discussion of the first sale doctrine and limitations thereon, see *infra* notes 270, 277-78 and accompanying text.

46. For a discussion of the divisions within the industrialized world on the question of interoperability, see *infra* notes 103-05 and accompanying text and the text following note 151. For a discussion of potential conflicts over the scope of intellectual property protection on the emerging global information superhighway, see *infra* notes 290-92 and accompanying text.

47. TRIPS agreement, *supra* note 6, art. 13. The language of Article 13 is taken from Article 9 of the Berne Convention, which is solely concerned, however, with the reproduction right and not with exclusive rights generally.

the Berne Convention, the language also evokes, in some minds at least, a broad principle of "fair use,"⁴⁸ such as that codified in section 107 of the U.S. Copyright Act.⁴⁹

The Berne Convention itself contains no provisions explicitly addressing the scope of exclusive rights in computer programs or compilations of data. In fact, prior to TRIPS, there was some doubt over whether the Berne Convention applied to either type of work.⁵⁰ A primary objective of Article 10 of the TRIPS agreement was to clarify what had not been clear before—namely that computer programs, whether in source or object-code, are indeed to be protected as literary works under the Berne Convention, and that compilations of data or other material, whether in machine readable or other form, which by reason of the selection or arrangement of their contents constitute intellectual creations and are to be protected as such.

The Berne Convention enumerates a variety of exclusive rights that are to vest in literary and artistic works,⁵¹ but the actual scope of those exclusive rights varies considerably among member countries of the Berne Convention. For example, the Berne Convention establishes no international norms for distinguishing between comprehensive "nonliteral" copying of protected expression and the permissible use of the unprotected facts or ideas being expressed, or between fragmentary literal copying and the fair use of quotations from copyrighted works, or for determining the scope of protection to be given functional or factual works, such as computer programs and databases. Indeed, the absence of any such international norms, particularly where computer programs and compilations of data are concerned, was precisely what stimulated the European Community Directive on the Legal Protection of Com-

48. Paul E. Geller, *Intellectual Property in the Global Marketplace: Impact of TRIPS Dispute Settlements?*, 29 INT'L LAW. 99, 112 (1995).

49. 17 U.S.C. § 107 (1994). For a discussion of reverse engineering of computer programs as a fair use, see *infra* notes 138-40 and accompanying text.

50. See, e.g., Jerome H. 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, 774 (1995) [hereinafter Reichman, *Know-How Gap*] (discussing broad language of Berne Convention in defining "artistic works").

51. See, e.g., Berne Convention, *supra* note 27, art. 8 (right of translation), art. 9 (right of reproduction), art. 11 (right of public performance), art. 12 (right of adaptation, arrangement and other alteration). For a comparison with the exclusive rights enumerated in U.S. copyright law, see *infra* note 246 and accompanying text. Notably absent from the Berne Convention is any explicit reference to an exclusive distribution right. For the significance of this omission and current efforts to add an exclusive right to distribute works by transmission, see *infra* notes 233, 268-78 and accompanying text.

puter Programs and the more recent Directive on the Legal Protection of Databases.⁵²

While the TRIPS agreement makes it clear that computer programs and databases are to be protected as literary works under the Berne Convention, TRIPS is far less explicit about the availability and scope of patent or trade secret protection for software-related technology.⁵³ Arguably, the requirement in Article 27 that patents be made available "for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application" is broad enough to require at least some degree of patent protection for at least some types of software-related inventions.⁵⁴ Likewise, Article 39, governing the protection of undisclosed information, appears to be broad enough to require a certain degree of trade secret protection for at least some computer programs and databases.⁵⁵ However, the precise scope of the patent or trade secret protection that must be afforded software technology under TRIPS remains unclear.

A more fundamental weakness in the TRIPS agreement is that it implicitly recognizes, but deals only imperfectly with what has been described as a growing crisis in—or Balkanization of—the classic bipolar structure of the Paris-Berne regime.⁵⁶ The two Great Conventions, as we have seen, divide the intellectual property universe into two conceptually distinct categories, namely "industrial property" and "literary and artistic works."⁵⁷ This bipolar structure, however, is beginning to collapse under the pressure of both centripetal and centrifugal forces.⁵⁸

52. For a discussion of these two Directives, see *infra* notes 145-50, 189-209 and accompanying text.

53. See, e.g., Reichman, *Know-How Gap*, *supra* note 50, at 767-73, 784-85 (noting that TRIPS effectively ignores software patents and program related inventions).

54. For a discussion of Article 27, see *infra* notes 164-71 and accompanying text.

55. The text of Article 39(1) provides that: "In the course of ensuring effective protection against unfair competition as provided in Article 10^{bis} of the Paris Convention (1967), Members shall protect undisclosed information in accordance with paragraph 2 and data submitted to governments or governmental agencies in accordance with paragraph 3." For the text of Article 39(2), see *infra* text accompanying note 177. For a discussion of Article 39, see *infra* notes 176-80, 216, 225 and accompanying text.

56. Geller, *supra* note 48, at 103.

57. For a discussion of the Paris and Berne Conventions, see *supra* notes 26-27 and accompanying text.

58. See generally Jerome H. Reichman, *Charting the Collapse of the Patent-Copyright Dichotomy: Premises for a Restructured International Intellectual Property System*, 13 *CAR*

A growing number of hybrid intellectual products, such as computer programs, have been absorbed into the Paris-Berne regime and consequently threaten to collapse its bipolar structure from within.⁵⁹ Because computer programs function both as literary works and as machine parts, they inevitably blur the historic line of demarcation between patent and copyright protection, and more importantly create a series of dilemmas for the Paris-Berne regime. Treating computer programs as mere machine parts and requiring the level of inventiveness historically demanded for patent protection, would leave most publicly distributed computer programs completely unprotected. Treating computer programs as functional literary works, entitled only to "thin" copyright protection against wholesale slavish copying of nonfunctional code, would leave unprotected the most valuable aspect of computer programs, namely the data structures that determine the functional behavior of the program.⁶⁰ On the other hand, treating computer programs as full-blown cultural products, entitled to the entire panoply of protection against comprehensive nonliteral or fragmentary literal copying, as well as unauthorized adaptation, public distribution, performance or display, would transform copyright into a system that "grotesquely provides patent-like protection on the softest possible conditions for the longest possible time."⁶¹ Such overprotection would stifle the very incremental innovation that copyright law is designed to encourage.⁶²

DOZO ARTS & ENT. L.J. 475, 480-85 (1995) [hereinafter Reichman, *Charting the Collapse*] (questioning capability of inherited institutional frameworks to meet needs of innovator in information age). For a discussion of the crisis in the Paris-Berne regime, see *infra* note 66 and accompanying text.

59. Reichman, *Charting the Collapse*, *supra* note 58, at 480-85; see also Jerome H. Reichman, *Legal Hybrids Between the Patent and Copyright Paradigms*, 94 COLUM. L. REV. 2432, 2435-36 (1994) [hereinafter Reichman, *Legal Hybrids*] (questioning whether objects of contemporary intellectual property still conform to classic models of bipolar patent and copyright protection).

60. Reichman, *Legal Hybrids*, *supra* note 59, at 2486.

61. *Id.* Reichman notes the particular inappropriateness of stretching copyright law to create an exclusive adaptation right in computer programs and compilations of data. He further notes that:

[B]y persuading courts to overextend the exclusive right to prepare derivative works, copyright owners can assert proprietary claims to any subsequent innovations that exploit recognizable aggregates of the original data and instruction sets, even though the matter claimed to have been infringed contains . . . no personal expression and fulfills purely functional objectives.

Jerome H. Reichman, *Electronic Information Tools—The Outer Edge of World Intellectual Property Law*, 17 U. DAYTON L. REV. 797, 815 (1992) [hereinafter Reichman, *Electronic Information*].

62. Reichman, *Legal Hybrids*, *supra* note 59, at 2486.

Meanwhile, outside the bipolar structure of the Paris-Berne regime are to be found a proliferating number of hybrid, or *sui generis*, forms of intellectual property protection—such as that provided in the United States and elsewhere for semiconductor chip designs,⁶³ and that just established in Europe for the noncopyrightable contents of electronic databases⁶⁴—that deviate not only from the classic patent and the copyright paradigms, but also from the more attenuated forms of industrial property protection that have historically been accorded to trademarks and trade secrets.⁶⁵ A recent series of studies examining the evolution of legal hybrids concludes that such ad hoc legislative schemes often simply install chronic states or recurring cycles of under- and over-protection.⁶⁶

This same series of studies traces the roots of the two-fold crisis in the Paris-Berne regime, not so much to a failure of the dominant patent and copyright paradigms, as to a failure of a third, generally neglected, intellectual property paradigm to be found in classic trade secret law.⁶⁷ Historically, trade secret law has not created any exclusive intellectual property rights as such in know-how, but merely protects industrial and commercial privacy by prohibiting others from acquiring know-how prematurely through such improper means as bribery, industrial espionage and breach, or inducing breach, of contracts of confidentiality.⁶⁸ The grant of trade secret protection, however, normally has the effect of protecting a company's natural lead time advantage. Would-be competitors must either develop their own know-how independently, reverse en-

63. For a discussion of semiconductor chip protection in the United States, see Semiconductor Chip Protection Act of 1984, 17 U.S.C. §§ 901-914 (1994). For a discussion of semiconductor chip design protection, both in the United States and internationally, see *infra* notes 76, 78 and accompanying text.

64. For a discussion of electronic database protection in Europe, see *infra* notes 79, 194-213 and accompanying text.

65. The law of trademarks merely protects trademarks against the likelihood of confusion or dilution but not against copying as such. The interest protected is thus the commercial reputation of the trademark owner. Similarly, the law of trade secrets merely protects commercial privacy. See generally 1 J. THOMAS MCCARTHY, MCCARTHY ON TRADEMARKS AND UNFAIR COMPETITION ch. 2, at 2-2 to 2-38 (3d ed. 1992) (explaining basic principles of trademark protection); ROGER M. MILGRIM, 1 MILGRIM ON TRADE SECRETS, § 1.03, at 1-89 (1996) (explaining that any nonpublic information affording demonstrable competitive advantage may be properly considered trade secrets).

66. For a discussion of under- and overprotection, see Reichman, *supra* note 58, at 504-12. See also Pamela Samuelson et. al., *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2308 (1994) (discussing problems in protecting computer programs of various legal regimes).

67. Reichman, *Legal Hybrids*, *supra* note 59, at 2444-45.

68. For a discussion of the law of trade secrets, see *infra* notes 177-80 and accompanying text.

gineer any publicly distributed products that might reveal the know-how, or acquire the know-how by license or assignment from a third party, thereby contributing in one way or another to the overall cost of innovation.⁶⁹

Reverse engineering of publicly distributed products is permitted because it normally acts as a spur to innovation, encourages innovators to rely on available patent or copyright protection, sets limits on the amount of lead time that trade secret law will protect and provides a means for second-comers to circumvent harsh or abusive licensing practices.⁷⁰ When reverse engineering of publicly distributed products becomes either too difficult or too easy, however, trade secret protection can generate negative effects. When reverse engineering proves too difficult, trade secret protection becomes more attractive to the innovator than either patent or copyright protection, and thus tends to supplant both.⁷¹ When reverse engineering is too easy, the absence of effective lead-time protection tends to stifle any innovation that does not qualify for patent or copyright protection. This in turn generates political pressure for precisely the kind of ad hoc tinkering with the dominant patent and copyright paradigms or cobbling together of hybrid variants of them that is said to be contributing to the current crisis in the Paris-Berne regime.⁷²

Both the absence of natural lead time protection and ad hoc legislative responses to it are said to be far from new, having spawned over a century of recurring cycles of under- and over-protection for various types of applied art and industrial design.⁷³ At the end of the nineteenth century, the occasional lack of natural lead-time protection was a problem only for the few design-dependent technologies that then existed but has become a far more general condition today. Indeed, a dominant characteristic of key information-based technologies evolving at the end of the twentieth century is said to be that they are all composed of "incremental innovation bearing know-how on its face."⁷⁴

69. Reichman, *Legal Hybrids*, *supra* note 59, at 2439, 2506-10.

70. *Id.* at 2520-25.

71. For various references to the tendency of overbroad trade secret protection for computer programs and digital information, see *infra* notes 179-84, 324 and accompanying text.

72. For a discussion of the shortcomings of existing protection for legal hybrids, see Reichman, *Legal Hybrids*, *supra* note 59, at 2445.

73. Reichman, *supra* note 59, at 2464.

74. *Id.* at 2444.

Fashioning hybrid forms of intellectual property protection for such technologies may well be an appropriate legal response, but it not only undermines the bipolar structure of the Paris-Berne regime, but could undermine the Paris-Berne principle of national treatment. Because such hybrid forms of protection arguably fall outside the obligation imposed by the Paris and Berne Conventions to provide national treatment in the grant of copyright and industrial property protection, countries creating hybrid forms of protection will be tempted to condition the protection of foreign works solely on the basis of "material reciprocity"—i.e., protecting works originating in a foreign country only if, and to the extent that, the foreign country protects works originating in the host country.⁷⁵

In the hands of countries with sufficient dominance in a particular technology or a sufficiently important market for the technology, inclusion of reciprocity provisions in domestic intellectual property legislation can function as a potent tool for pressuring other countries to adopt similar legislation. This is precisely what the United States succeeded in doing when it enacted *sui generis* protection for semiconductor chip designs and conditioned protection of foreign chip designs on the grant of equivalent protection for U.S. originated semiconductor chips.⁷⁶ Now, the European Union is apparently adopting the same strategy in an effort to develop a new *sui generis* form of database protection.⁷⁷

The TRIPS agreement makes a number of specific substantive attempts to "reglobalize" the fragmenting Paris-Berne regime. For example, it codifies the minimum standards for the protection of semiconductor chip designs that the United States effectively imposed on the industrialized world by means of the material reciprocity provision contained in its *sui generis* chip design statute.⁷⁸ However, the TRIPS agreement, particularly its provisions dealing

75. For a discussion of material reciprocity and the principle of national treatment, see Geller, *supra* note 48, at 100-01 and Reichman, *Universal Minimum Standards*, *supra* note 7, at 347-51.

76. Charles R. McManis, *International Protection for Semiconductor Chip Designs and the Standard of Judicial Review of Presidential Proclamations Issued Pursuant to the Semiconductor Chip Protection Act of 1984*, 22 GEO. WASH. J. INT'L L. & ECON. 331, 331-32 (1988).

77. For a further discussion of a new *sui generis* form of database protection, see *infra* notes 190-221 and accompanying text.

78. TRIPS agreement, *supra* note 6, art. 35-38. Article 35 obliges GATT/WTO member countries to comply with most, but not all provisions of the earlier, WIPO-sponsored Treaty on Intellectual Property in Respect of Integrated Circuits. *Id.* art. 35. In addition, Article 35 requires GATT/WTO to comply with the provisions contained in Articles 36-38 of TRIPS with respect to the scope of protection, acts not requiring the authorization of the right holder and the term of protection. *Id.*

with the protection of computer programs and compilations of data, failed to address the underlying problem of the absence of natural lead time protection for incremental innovation bearing know-how on its face. Thus, it essentially institutionalizes, at an international level, the same "know-how gap" that is said to have long plagued domestic intellectual property systems and brought about the crisis in the Paris-Berne regime in the first place.⁷⁹ For that reason, the TRIPS agreement is unlikely to halt the Balkanizing pressures being exerted on international intellectual property law. Indeed, the European Union's recent adoption of its Directive for the Legal Protection of Databases, which creates a new *sui generis* form of protection for the uncopyrightable contents of databases and couples with it a requirement of material reciprocity for the protection of works originating outside the European Union, suggests that the crisis in the Paris-Berne regime will continue.

A final criticism of the TRIPS agreement is that, by building on the foundation of the two Great Conventions, it essentially looks to the past, rather than to the future, thereby ignoring perhaps the most fundamental threat of all to the Paris-Berne regime. Differences among intellectual property systems around the world have been manageable up until now under the national treatment provisions of the Paris and Berne Conventions because domestic intellectual property systems have primarily regulated commerce in physical objects or activities that had to be located in a particular jurisdiction in order for a dispute over them to arise.⁸⁰ Digital technology and global computer networks, on the other hand, are rapidly undermining the whole concept of territorially-limited intellectual property rights.⁸¹

B. *Dispute Resolution Provisions*

Given the uncertain scope of the substantive protection required for computer programs and databases under the TRIPS agreement and the mounting crisis in the underlying Paris-Berne

79. For a general discussion of the "know-how gap," see Reichman, *Know-How Gap*, *supra* note 50, at 786-94.

80. Geller, *supra* note 48, at 106-07; Pamela Samuelson, *Intellectual Property Rights and the Global Information Economy*, 39 COMM. OF THE ACM 26, (Jan. 1996) [hereinafter *Intellectual Property*] (discussing differences between nations' approaches to intellectual property rights and need for harmony among them).

81. See Jane C. Ginsburg, *Global Use/Territorial Rights: Private International Law Questions of the Global Information Infrastructure*, 42 J. COPYRIGHT SOC'Y U.S.A. 318, 320 (1995) (observing that: "for works on the GII, there will be no physical territoriality; no way to stop works at the border, because there will be no borders. Without physical territoriality, can legal territoriality persist?").

regime on which TRIPS is based, the most important contribution of TRIPS may ultimately turn out to be the international dispute resolution provisions contained in Part V of the agreement. Whereas the earlier Paris and Berne Conventions (together with the implementing legislation of individual member countries) merely established a system of private international law, whose substantive provisions are enforced (if at all) by the domestic courts of member countries in disputes between private parties, the TRIPS agreement establishes both mandatory minimum civil and criminal enforcement standards that are to be adhered to by individual WTO member countries and a system of public international dispute settlement for any intellectual property disputes that arise between member countries of the WTO.⁸²

Article 64 of the TRIPS agreement specifies that the provisions of Articles XXII and XXIII of GATT, as elaborated and applied by the 1994 Understanding on Dispute Settlement (the "1994 Understanding") contained in the Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, are to apply to consultations and the settlement of disputes under the TRIPS agreement.⁸³ The 1994 Understanding has been described by one commentator as a triumph of lawyers over diplomats.⁸⁴ It is said to constitute a decisive step in the direction of a more legalistic, adjudicatory process advocated by the United States and away from the flexible, diplomatic approach to dispute resolution long favored by Japan and members of the European Union,⁸⁵ and reflected in the original GATT dispute resolution provisions contained in Articles XXII and XXIII of the original 1947 General Agreement on Tariffs and Trade.⁸⁶

Article XXII, for example, merely obliges GATT member countries to "afford adequate opportunity for consultation" and to "accord sympathetic consideration" regarding any matter affecting the operation of the agreement.⁸⁷ Article XXIII, in turn, provides only slightly more in the way of international enforcement teeth where any member country believes that any benefit under GATT is being

82. Geller, *supra* note 48, at 104-14.

83. For a discussion of the 1994 Understanding on Dispute Settlement (the "1994 Understanding"), see *supra* note 25 and accompanying text.

84. Michael K. Young, *Dispute Resolution in the Uruguay Round: Lawyers Triumph over Diplomats*, 29 INT'L LAW. 389, 389-91 (1995).

85. *Id.*; Davey, *supra* note 4, at 75.

86. For a further discussion of Articles XXII and XXIII, see *supra* note 25. The text of the 1994 GATT agreement, including the 1994 Understanding, is reprinted in Part III of PESCATORE ET AL., *supra* note 4.

87. Art. XXII, GATT 1947, *supra* note 4, at GATT 41.

"nullified or impaired" or that the attainment of any objective of GATT is being impeded as a result of either (a) the failure of a member country to carry out its obligations under GATT, (b) the application by a member country of any measure, whether or not it conflicts with a provision of GATT or (c) any other situation.⁸⁸ According to Article XXIII, a complaint of nullification or impairment can be made to the GATT membership as a whole, which is to investigate the matter and make appropriate recommendations and rulings. If the nullification or impairment is serious enough, the GATT membership may authorize the suspension of concessions.⁸⁹

Although most complaints brought under Article XXIII have alleged specific violations of GATT,⁹⁰ Article XXIII(b) permits complaints for nullification or impairment of benefits even where there is no explicit violation of a relevant agreement. Article XXIII(b) is likely to play a crucial role in the resolution of international intellectual property disputes. Nonviolation nullification or impairment complaints could well become the vehicle for raising and resolving international intellectual property controversies that the TRIPS agreement itself does not explicitly address.⁹¹

Article 2 of the 1994 Understanding states that the Dispute Settlement Body ("DSB"), established pursuant to the agreement creating the WTO, is to administer the rules and procedures of the 1994 Understanding and the consultation and dispute settlement provisions of a covered agreement (such as TRIPS), except as otherwise provided.⁹² The DSB is to have authority to (1) establish dispute resolution panels, (2) adopt the reports of these panels, as well as reports of the Appellate Body that the DSB is to establish to hear appeals from panel determinations, (3) maintain surveillance of implementation of rulings and recommendations and (4) authorize suspension of concessions and other obligations under the covered agreements.

88. *Id.* at GATT 42.

89. Only one complaint is said to have ever resulted in a threat of suspension of concessions; the reason for this is that GATT panel decisions have invariably been implemented, albeit with varying degrees of footdragging. Young, *supra* note 84, at 392; see generally Ted L. McDorman, *Unilateralism (Section 301) to Multilateralism (GATT): Settlement of International Intellectual Property Disputes After the Uruguay Round*, in *INTERNATIONAL TRADE AND INTELLECTUAL PROPERTY: THE SEARCH FOR A BALANCED SYSTEM* 119 (George R. Stewart et al. eds., 1994) (discussing move from section 301 to GATT agreement in settlement of international intellectual property disputes).

90. Davey, *supra* note 4, at 71.

91. For a further discussion of nullification or impairment, see *infra* text accompanying note 160.

92. 1994 Understanding, art. 2 in PESCATORE ET AL., *supra* note 4, at Part III.

Although Article 3 of the 1994 Understanding specifies that the recommendations and rulings of the DSB cannot add to or diminish the rights and obligations provided in the covered agreements, it also states that the dispute settlement system of the WTO is "to clarify the existing provisions of those agreements in accordance with customary rules of interpretation of public international law."⁹³ The reference to "customary rules of interpretation" is said to be particularly important in the context of TRIPS dispute settlement.⁹⁴ Because TRIPS is unique among the covered GATT/WTO agreements in its incorporation of a variety of existing multilateral conventions, which are themselves the subject of extensive national and regional implementing legislation and judicial interpretation, WTO dispute panels may find it necessary to refer to existing national and regional law and practice under the Paris-Berne regime in order to interpret a number of provisions in the TRIPS agreement. If state practice has become "sufficiently widespread, and is accompanied by the necessary *opinio juris*, that practice will ripen into an independent customary rule of law that a tribunal, including a [WTO dispute] panel, must apply as a rule supplementary to the treaty text, provided that it is not inconsistent with that text."⁹⁵ Reference to customary state practice should be particularly helpful to a WTO dispute panel confronting disputes growing out of the interoperability debate.⁹⁶

Following twenty articles detailing the rules and procedures that the DSB is to follow in exercising its authority at each stage of the dispute resolution process, Article 23 of the 1994 Understanding specifies that when members seek the redress of a violation of obligations or other nullification or impairment of benefits under the covered agreements or an impediment to the attainment of any objective of the covered agreement, they are to have recourse to, and abide by, the rules and procedures of the 1994 Understanding. To make the meaning of this provision unmistakably clear, Article 23 goes on to state that members are not to make a determination to the effect that a violation has occurred, that benefits have been nullified or impaired, or that the attainment of any objective or the covered agreements has been impeded, except through recourse to dispute settlement in accordance with the rules and procedures of

93. *Id.* art. 3.

94. For a further discussion of disparity in interpretation, see Abbott, *supra* note 16 (discussing phrase "customary rules of interpretation").

95. Abbott, *supra* note 16.

96. For a further discussion of customary state practice and its relevance to the interoperability debate, see *infra* note 161 and accompanying text.

the 1994 Understanding. Article 23 leaves “no doubt that free-lance, unilateral, or even unauthorized bilateral dispute resolution is not acceptable.”⁹⁷

This is not to say that the 1994 Understanding altogether prohibits members from resolving disputes by means other than panel decisions. The 1994 Understanding does contain various provisions designed to encourage consultations and resort to the voluntary procedures of good offices, conciliation and mediation. In addition, Article 25 of the 1994 Understanding permits parties, by mutual agreement, to submit to binding arbitration any issues that are clearly defined by both parties. Article 25 requires that members be notified of all arbitration agreements and subjects any arbitration awards to the requirements of Articles 21 and 22. These two articles, in turn, govern surveillance of recommendations and rulings of dispute panels and the award of compensation or suspension of concessions. The purpose of the Article 25 restrictions on arbitration is to “limit the distortions of procedure and, more importantly, substance that might occur when countries of vastly different economic and political power are in disagreement.”⁹⁸

Article 64 of TRIPS does contain one significant, if temporary, limitation on the use of the WTO dispute resolution process. According to Article 64, complaints of nullification or impairment of benefits not amounting to a violation of the TRIPS agreement are not to be subject to the dispute settlement process for a period of five years from the entry into force of the agreement establishing the WTO. During the intervening five-year period, the TRIPS Council, established pursuant to Article IV of the WTO Agreement, is to examine and make recommendations to the WTO Ministerial Conference regarding the “scope and modalities” for making nonviolation complaints pursuant to the TRIPS agreement.

This five-year delay in nonviolation dispute settlement parallels the five-year transition period that Article 65 provides for developing countries in implementing the TRIPS agreement.⁹⁹ Taken together, these two provisions seem to imply that while developing countries may have five years to come into compliance with TRIPS, industrialized countries such as the United States likewise have five years in which to continue employing threats of trade sanctions in bilateral trade negotiations in order to prevent what they consider to be a nullification or impairment of benefits accruing under

97. Young, *supra* note 84, at 400.

98. *Id.* at 401.

99. For a discussion of Article 65, see *supra* note 24 and accompanying text.

TRIPS. For its part, the United States has made it abundantly clear that it intends to continue using such pressure tactics on vulnerable developing countries in order to “accelerate” implementation of the TRIPS agreement and to achieve even higher levels of intellectual property protection in those countries than are required by the TRIPS agreement.¹⁰⁰

For the industrialized world, on the other hand, the time for compliance with the TRIPS agreement, including utilization of its dispute resolution provisions—at least with respect to any violation complaints—has already arrived. Thus, any complaint that an industrialized country is failing to carry out its obligations under the TRIPS agreement must currently be dealt with in accordance with the GATT/WTO dispute settlement process.¹⁰¹ In the year 2000, complaints of nonviolation nullification or impairment of benefits accruing under the TRIPS agreement will likewise be subject to GATT/WTO dispute settlement, whether brought against an industrialized or a developing country.

To illustrate how international controversies over intellectual property rights for emerging computer technologies might (or might not) be amenable to WTO dispute settlement, either now or in the year 2000, it will be useful to examine how that dispute settlement process might be utilized in two relevant international debates involving emerging computer technologies—namely, the current international debate over the interoperability of computer

100. See Uruguay Round Agreements Act, 19 U.S.C. § 3581 (1994). The Uruguay Round Agreements Act states, *inter alia*, that:

It is the objective of the United States—

(1) to accelerate the implementation of the Agreement on Trade-Related Aspects of Intellectual Property Rights referred to in section 3511 (d)(15) of this title, (2) to seek enactment and effective implementation by foreign countries of laws to protect and enforce intellectual property rights that supplement and strengthen the standards of the Agreement on Trade-Related Aspects of Intellectual Property Rights . . . and, in particular—

(A) to conclude bilateral and multilateral agreements that create obligations to protect and enforce intellectual property rights that cover new and emerging technologies and new methods of transmission and distribution.

Id. For a discussion of a possible conflict between this U.S. objective and various U.S. obligations under the TRIPS agreement and GATT, see *infra* notes 306-08 and accompanying text.

101. In fact, the WTO dispute settlement process has already been invoked. The United States and the European Union recently brought complaints against Japan to bring its copyright law into compliance with TRIPS by amending it to protect sound recordings made as far back as 1946. Bhushan Bahree, *U.S., European Union Turn to WTO to Make Japan Extend Music Protection*, WALL ST. J., Feb. 12, 1996, at A10.

programs and the emerging international debate over intellectual property protection on the global information superhighway.

III. THE INTEROPERABILITY DEBATE

Prior to being engulfed in the larger debate over global computer networks and digital technology, the most hotly contested intellectual property issue in the industrialized world concerned computer program interoperability. The interoperability debate remains crucial to any discussion of the information superhighway, because the whole concept of an information superhighway presupposes the interoperability of software as well as hardware. Indeed, one of the stated goals in the Clinton administration's agenda for developing a National Information Infrastructure (NII) was to "[p]romote seamless, interactive, user-driven operation of the NII."¹⁰² The administration recognized that to achieve its goal, interoperability of computer programs, systems and networks is a necessity. In its White Paper on Intellectual Property and the NII, the administration stated that "[i]nteroperability and interconnectivity of networks, systems, services and products operating within the NII will enhance its development and success."¹⁰³

At the core of the interoperability debate are the intellectual property rights of various highway "builders." Specifically, the debate has been concerned with how to balance the intellectual property rights of the "prime contractors" (i.e., computer industry leaders who set de facto hardware and software standards for the industry) against the needs of various "subcontractors" (i.e., second-comers) who seek to create subsidiary parts of the system.

In both domestic and international forums, various U.S. officials in the Executive Branch have taken positions strongly favoring the intellectual property rights of the "prime contractors" over the need of "subcontractors" to achieve interoperability.¹⁰⁴ On the other hand, court decisions in the United States, as well as the EC Directive on the Legal Protection of Computer Programs,¹⁰⁵ take a more balanced approach to the question.

The interoperability debate has focused on two specific issues—namely, whether, and to what extent, copyright law (or for

102. The National Information Infrastructure: Agenda for Action, Administration Policy Statement, 58 Fed. Reg. 49,025 (1993).

103. WHITE PAPER, *supra* note 10, at 199.

104. For a discussion of the United States' position on intellectual property right of prime contractors over subcontractors, see *infra* notes 152-55 and accompanying text.

105. EC Directive, *supra* note 8.

that matter any other form of intellectual property protection) that might be available for computer software technology (1) protects a program's interface specifications or other functional elements and/or (2) precludes reverse engineering which may be necessary to achieve interoperability among computer programs. Court decisions in the United States have provided a more comprehensive discussion of the first question, while the EC Directive has fashioned a more detailed rule with respect to the second.¹⁰⁶

A. *Protection of Interface Specifications*

Courts in the United States have only recently dealt in any coherent fashion with the appropriate scope of copyright protection for computer programs, or the more specific questions like the protectibility of interface specifications and the legality of reverse engineering of computer programs. The courts first had to determine whether computer programs in machine-readable (or object-code) form, as well as those written in human-readable (or source-code) form, constituted copyrightable subject matter under section 102 of the Copyright Act.¹⁰⁷

During the course of what has come to be called the first generation of computer program copyright cases, commentators ar-

106. For two highly readable, albeit highly partisan, accounts of the interoperability debate, see JONATHAN BAND & MASANOBU KATOH, *INTERFACES ON TRIAL: INTELLECTUAL PROPERTY AND INTEROPERABILITY IN THE GLOBAL SOFTWARE INDUSTRY* (1995) (generally opposing copyright protection for interface specifications and favoring reverse engineering) and ANTHONY L. CLAPES, *SOFTWARES: THE LEGAL BATTLES FOR CONTROL OF THE GLOBAL SOFTWARE INDUSTRY* (1993) (generally favoring copyright protection for interface specifications and opposing reverse engineering). See also Charles R. McManis, *Intellectual Property Protection and Reverse Engineering of Computer Programs in the United States and European Community*, 8 *HIGH TECH. L.J.* 25 (1993) (concluding that reverse engineering of computer programs where necessary to gain access to unprotected ideas is fair use under U.S. copyright law and that contracts—or at least shrink-wrap licenses—prohibiting reverse engineering are probably preempted by federal copyright and patent law). For a more recent comparison of U.S. and EC law, see Pamela Samuelson, *Comparing U.S. and EC Copyright Protection for Computer Programs: Are They More Different Than They Seem?*, 13 *J.L. & COM.* 279 (1994) [hereinafter Samuelson, *Comparing U.S. and EC Copyright Protection*].

107. 17 U.S.C. § 102 (1994). Section 102(a) states that: "Copyright protection subsists . . . in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device." *Id.* § 102(a). The precise legal question raised by machine-readable computer programs is whether it is sufficient under section 102(a) that a program can be "perceived, reproduced, or otherwise communicated" in the sense that its operation of a machine or device can be perceived, or the program can be reproduced by, or communicated to a machine or device, or whether it is necessary for the program to be perceived or reproduced by, or communicated to, a human being.

gued for and against granting copyright protection to publicly distributed machine-readable versions of a computer program.¹⁰⁸ Some of those opposed argued that to provide such protection without requiring publication of the source-code (which software developers generally protect as a closely guarded trade secret), would subvert what is said to be one of the traditional, constitutionally-based norms of federal copyright law—namely “that bringing new ideas into the public domain was the *quid pro quo* the public received in exchange for the limited monopoly right the author received to protect his or her expression of the ideas.”¹⁰⁹ Computer programs were said to pose two unique problems for copyright law. Before the advent of computer programs, publicly distributed copyrighted works necessarily communicated the ideas the works contained. In the case of computer programs, however, “it is possible both to publish a work and keep it secret, and keeping it secret is part of the way the commercial value of the work is maintained.”¹¹⁰

A further problem was said to be that the object-code version of a computer program functions in a far more utilitarian way than virtually any previous work of authorship. Unlike a factual work, a

108. Compare Anthony L. Clapes et al., *Silicon Epics and Binary Bards: Determining the Proper Scope of Copyright Protection for Computer Programs*, 34 UCLA L. REV. 1493 (1987) (describing two generations of copyright cases and opposing views of commentators over both generations and coming down on side of those favoring broad copyright protection for computer programs) with Peter S. Menell, *An Analysis of the Scope of Copyright Protection for Application Programs*, 41 STAN. L. REV. 1045 (1989) (discussing two generations of cases and opposing broad protection); and Dennis S. Karjala, *Copyright, Computer Software, and the New Protectionism*, 28 JURIMETRICS J. 33 (1987) (discussing two generations of cases and opposing broad copyright protection for computer programs). See generally McManis, *supra* note 106, at 41-44 (discussing two generations of cases).

109. Pamela Samuelson, *CONTU Revisited: The Case Against Copyright Protection for Computer Programs in Machine-Readable Form*, 1984 DUKE L.J. 663, 705-06 [hereinafter Samuelson, *Case Against Copyright Protection*]. The Final Report of the Committee on New Technological Uses of Copyrighted Works (CONTU) recommended that the 1976 Copyright Act (the “1976 Act”) be amended to expressly grant copyright protection for computer programs. The amendments proposed by CONTU were enacted in Pub. L. No. 96-517, 94 Stat. 3007 (1980), codified at 17 U.S.C. §§ 101, 117 (1995).

The constitutionally-based norm invoked by Samuelson was reaffirmed and reiterated in *Feist Publications, Inc. v. Rural Telephone Service Co.*, 499 U.S. 340 (1991). In that case, holding that the alphabetical listings in the white pages of a telephone directory did not constitute an original work of authorship, the Supreme Court noted that:

The primary objective of copyright is not to reward the labor of authors, but “[t]o promote the Progress of Science and useful Arts.” To this end, copyright assures authors the right to their original expression, but encourages others to build freely upon the ideas and information conveyed by a work.

Id. at 349-50 (citations omitted).

110. Samuelson, *supra* note 109, at 710.

book of instructions or even a human-readable source-code version of a computer program, the object-code version of a program does not instruct a human being at all about how a task might be performed. Rather, in conjunction with computer hardware, it performs the task itself.¹¹¹ The economic value of a machine-readable version of a computer program comes, not from the information it conveys to human beings, but rather from the information it conveys to a machine. Historically, the only intellectual property protection available for publicly distributed utilitarian works of this sort has been patent protection.¹¹²

For the foregoing reasons, these commentators argued in favor of creating a separate, *sui generis* form of protection for machine-readable versions of computer programs.¹¹³ In a similar vein, the World Intellectual Property Organization (WIPO), an international agency created to administer the Paris and Berne Conventions,¹¹⁴ developed a model *sui generis* law for the protection of computer programs. A number of countries, including France and Korea, actually enacted *sui generis* computer program legislation.¹¹⁵

The first generation of computer copyright decisions in the United States, however, ultimately rejected the argument that copyright law should not protect computer programs that convey information to a machine rather than to a human being and extended copyright protection to computer programs in all forms.¹¹⁶ That same approach was taken in the EC Directive on Computer Programs¹¹⁷ and eventually in Article 10 of TRIPS as well.¹¹⁸

In a second generation of software copyright cases, the courts in the United States have been more divided over the appropriate scope of copyright protection for computer programs. The specific question raised in this second generation of cases has been whether and how far copyright protection should extend beyond the literal

111. *Id.* at 727.

112. *Id.* at 735.

113. *Id.* at 762-69.

114. For a further discussion of the WIPO, see *supra* note 29.

115. For a discussion of the WIPO model law and the *sui generis* legislation enacted in France, see Reichman, *Legal Hybrids*, *supra* note 59, at 2481-83. For a discussion of the Korean legislation, see Byoung Kock Min & Gary Sullivan, *Recognition of Proprietary Interests in Software in Korea: Programming for Comprehensive Reform*, 8 MICH. Y.B. OF INT'L LEGAL STUD. 49 (1987) (discussing intellectual property rights in Korea).

116. See generally McManis, *supra* note 106, at 41-44 (citing cases therein).

117. For a discussion of the EC Directive's approach to protection of computer programs in all forms, see *infra* notes 133-34 and accompanying text.

118. For a discussion of TRIPS's approach to protection of computer programs in all forms, see *infra* note 121 and accompanying text.

code of a computer program to the structure, sequence and organization, or to other nonliteral or functional elements of the program.¹¹⁹

Historically, copyright protection has extended only to a work's expression and not to the ideas being expressed.¹²⁰ That principle is codified in Article 9 of TRIPS, which states that copyright is to extend to expressions and not to ideas, procedures, methods of operation or mathematical concepts as such.¹²¹ Although U.S. copyright protection has been held to extend beyond a work's literal expression to reasonably detailed patterns contained in the work, the cases first enunciating this expansive prohibition against nonliteral copying were concerned with the scope of protection for more traditional literary and artistic works, as opposed to factual or functional works.¹²² It is equally well established in U.S. copyright decisions that where a work's ideas can only be expressed in a limited number of ways, the ideas and expression contained in the work are to be treated as having merged and thus wholly unprotectible.¹²³ Even where copyright protection for a factual or functional work is not altogether withheld, the courts have made it clear that the scope of copyright protection for factual and functional works is to be "thin."¹²⁴

119. *Compare* Whelan Assoc., Inc. v. Jaslow Dental Lab., Inc., 797 F.2d 1222, 1236 (3d Cir. 1986) (holding that "the purpose or function of a utilitarian work would be the work's idea, and everything that is not necessary to that purpose or function would be part of the expression of the idea"), *cert. denied*, 479 U.S. 1031 (1987), *with* Computer Assocs. Int'l v. Altai, Inc., 982 F.2d 693, 705-12 (rejecting Whelan's general formulation that program's overall purpose equates with program's idea as descriptively inadequate and adopting three step, "abstraction-filtration-comparison" test for deciding cases that deal with nonliteral copying).

The secondary literature on this issue is voluminous. *See generally* 3 MELVILLE B. NIMMER, NIMMER ON COPYRIGHT § 13.03(F), at 13-114 to 13-148 (1995) (explaining filtering method used to determine similarity between computer programs); McManis, *supra* note 106, at 43, n.73, (citing five articles relied on in *Altai* case).

120. McManis, *supra* note 106, at 36.

121. TRIPS, *supra* note 6, art. 9.

122. *See, e.g.*, Nichols v. Universal Pictures Corp., 45 F.2d 119 (2d Cir. 1930) (holding that ideas are not protected by copyright laws, but that reasonably detailed patterns contained in work can be protected as expression), *cert. denied*, 282 U.S. 902 (1931). *See generally* McManis, *supra* note 106, at 43-44 (explaining difference between protected expression and unprotected ideas).

123. *See, e.g.*, Morrissey v. Proctor & Gamble Co., 379 F.2d 675, 678-79 (1st Cir. 1967) (holding subject matter uncopyrightable when there are limited number of ways of expressing idea conveyed); *see generally* McManis, *supra* note 106, at 40-41 (discussing idea/expression dichotomy).

124. *Feist Publications v. Rural Tel. Serv. Co.*, 499 U.S. 340, 349 (1991); *see generally* McManis, *supra* note 106, at 69 (distinguishing factual works from creative works).

In a seminal copyright infringement case alleging nonliteral copying of a computer program, *Computer Associates International, Inc. v. Altai, Inc.*,¹²⁵ the Court of Appeals for the Second Circuit recognized that a computer's ultimate function or purpose is the composite result of interacting subroutines, each of which may be said to have its own (unprotectible) idea. The court also noted the earlier suggestion by the Court of Appeals for the Third Circuit in *Whelan Associates, Inc. v. Jaslow Dental Laboratory, Inc.*,¹²⁶ that the only unprotectible idea contained in a computer program is the overall idea or function of the program as a whole, is simply descriptively inadequate. In order to distinguish copyrightable expression from the unprotectible ideas, when a claimed infringement is the result of nonliteral copying of a computer program, the *Altai* court formulated a sophisticated three-part test, which has come to be called the abstraction-filtration-comparison test, for determining whether two programs contain substantially similar expression.

Perhaps the most important aspect of the *Altai* opinion for the interoperability debate is its discussion of the second-filtration-step in this test. Filtration, the court said, involves the examination of the structural components at each level of abstraction to discover whether "their inclusion at that level was 'idea' or was dictated by considerations of efficiency, so as to be necessarily incidental to that idea; required by factors external to the program itself; or taken from the public domain, and hence is nonprotectible expression."¹²⁷ The court went on to hold that copyright protection should not extend to those program elements where:

[A] programmer's freedom of design choice is often circumscribed by extrinsic considerations such as (1) the mechanical specifications of the computer on which a particular program is intended to run; (2) compatibility requirements of other programs with which a program is designed to operate in conjunction; (3) computer manufacturers' design standards; (4) demands of the industry being serviced; and (5) widely accepted programming practices within the computer industry.¹²⁸

In effect, the *Altai* court seems to have held (or at least to have suggested) that copyright protection simply does not extend to in-

125. 982 F.2d 693 (2d Cir. 1992).

126. 979 F.2d 1222 (3d Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987).

127. *Altai*, 982 F.2d at 706.

128. *Id.* at 709-10.

terface specifications or other program elements dictated by interoperability requirements.

In a more recent case, *Lotus Development Corp. v. Borland International, Inc.*,¹²⁹ the Court of Appeals for the First Circuit explicitly ruled that a computer menu command hierarchy is an uncopyrightable "method of operation" within the meaning of section 102(b) of the Copyright Act, and thus cannot be protected even against literal copying. In so holding, the court noted that:

The fact that there may be many different ways to operate a computer program, or even many different ways to operate a computer program using a set of hierarchically arranged command terms, does not make the actual method of operation chosen copyrightable; it still functions as a method for operating the computer and as such is uncopyrightable.¹³⁰

Consequently, "[o]riginal developers are not the only people entitled to build on the methods of operation they create; anyone can."¹³¹

If *Altai* and *Lotus*, rather than *Whelan*, turn out to be the culmination of the second generation of computer program copyright cases in the United States, as courts and commentators are increasingly asserting,¹³² these two cases will have firmly re-established the line of demarcation between copyright and industrial property protection for computer programs, by reaffirming that copyright protection extends only to a program's nonfunctional expression. To protect functional aspects of a program, one must resort to federal patent or state trade secret protection.

The EC Directive on Legal Protection for Computer Programs (the "EC Directive") is not as explicit about the absence of copyright protection for interface specifications and other functional elements of computer programs as *Altai* and *Lotus* are. Article 1(2) does state, however, that "[i]deas and principles which underlie any element of a computer program, including those which underlie its interfaces, are not protected by copyright under this Directive."¹³³ While this language does not state unequivocally that interface

129. 49 F.3d 807 (1st Cir. 1995), *cert. denied*, 64 U.S.L.W. 4059 (1996) (by equally divided Court).

130. *Id.* at 818.

131. *Id.*

132. See generally Mark A. Lemley, *Convergence in the Law of Software Copyright?*, 10 HIGH TECH L. REV. 1 (1995) (discussing development of software protection).

133. EC Directive, *supra* note 8, art. 1(2).

specifications are unprotectible, the legislative history of the article, as well as the later language in Article 6, explicitly permitting reverse engineering "to obtain the information necessary to achieve the interoperability of an independently created computer program with other programs,"¹³⁴ both strongly suggest that Article 1(2) should be interpreted in a manner compatible with the *Altai* and *Lotus* decisions.¹³⁵

B. Reverse Engineering of Computer Programs

In the same year that the U.S. Court of Appeals for the Second Circuit decided the *Altai* case, two other U.S. courts of appeals addressed the legality of reverse engineering another's computer program. In *Atari Games Corp. v. Nintendo of America Inc.*¹³⁶ and *Sega Enterprises Ltd. v. Accolade, Inc.*,¹³⁷ the Courts of Appeals for the Federal Circuit and the Ninth Circuit concluded that, at least where the computer program involved is designed to prevent unauthorized electronic game cartridges from operating on a game console, reverse engineering of a publicly distributed copy of the program by means of decompilation or disassembly,¹³⁸ can constitute a fair use under section 107 of the Copyright Act of 1976.¹³⁹ The court in

134. *Id.*, art. 6. For the text of Article 6 of the EC Directive, see *infra* note 149 and accompanying text.

135. BAND & KATOH, *supra* note 106, at 242-44.

136. 975 F.2d 832 (Fed. Cir. 1992).

137. 977 F.2d 1510 (9th Cir. 1992). For a detailed discussion of the *Atari* and *Sega* cases, see Julie E. Cohen, *Reverse Engineering and the Rise of Electronic Vigilantism: Intellectual Property Implications of "Lock-Out" Programs*, 68 S. CAL. L. REV. 1091 (1995) and McManis, *supra* note 106, at 45-48.

138. For a detailed discussion of the various ways to reverse engineer a computer program and the distinction between decompilation, or disassembly, and other forms of reverse engineering, see McManis, *supra* note 106, at 28-31. In brief, decompilation requires actual translation of object-code into human-readable source-code, while other means of reverse engineering do not. *Id.*

139. 17 U.S.C. § 107 (1994). The full text of § 107 is as follows:

Notwithstanding the provisions of sections 106 and 106A, the fair use of a copyrighted work, including such use by reproduction in copies or phonorecords or by any other means specified by that section, for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright. In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include—

- (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
- (2) the nature of the copyrighted work;
- (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
- (4) the effect of the use upon the potential market for or value of the copyrighted work.

Sega, went on to state explicitly that a party in rightful possession of a computer program may undertake necessary efforts, including disassembly or decompilation, to gain an understanding of the unprotected functional elements of the program, at least where there is a legitimate reason for doing so and no other means of access to the unprotected elements exist.¹⁴⁰

The one previous U.S. appellate ruling on the legality of reverse engineering was a poorly reasoned court of appeals decision in *Vault Corp. v. Quaid Software, Ltd.*,¹⁴¹ which may have erred as much in the direction of underprotecting computer programs as the *Whelan* court had erred in overprotecting them.¹⁴² Specifically, the court held that reverse engineering that could be accomplished merely by loading the program into a computer and analyzing its functions, without resort to decompilation or disassembly, was permissible under section 117 of the Copyright Act of 1976. The *Vault* court held this even though (contrary to the express language of section 117) the reverse engineer in this case was merely a lawful possessor, and not the "owner" of the particular copy of the program reverse engineered¹⁴³ and even though the explicit purpose of the reverse engineering was to defeat a copy-protection (rather than a lock-out) device.¹⁴⁴ Reaching a more defensible result (albeit by way of equally indefensible reasoning), the *Vault* court held that any "shrink-wrap" contractual restriction on the ownership or reverse engineering of a computer program, as well as a state law purporting to uphold such restrictions, was preempted by federal copyright law.¹⁴⁵

The fact that a work is unpublished shall not itself bar a finding of fair use if such finding is made upon consideration of all the above factors.

Id.

140. *Sega Enterprises*, 977 F.2d at 1518.

141. 847 F.2d 255 (5th Cir. 1988).

142. For a critique of the *Vault* decision, see McManis, *supra* note 106, at 81-87.

143. McManis, *supra* note 106, at 83-84.

144. *Id.* at 86.

145. *Id.* at 88-99. For the reasons the court should have given for preempting shrink-wrap licenses and state shrink-wrap license legislation, *see id.* at 88-96. *But cf.* *ProCD, Inc. v. Zeidenberg*, 86 F.3d 1447, 1455 (7th Cir. 1996) (holding (1) that shrink-wrap license accompanying mass-distributed CD-ROM containing computer program and associated database is enforceable contract, even though notice on packaging merely declares that software comes with restrictions contained inside box; and (2) that federal copyright law does not preempt enforcement of provision in license, which is encoded on CD-ROM and appears on user's computer screen every time software runs, as well as being printed in accompanying manual, prohibiting purchaser from making any commercial use of CD-ROM). In dictum, the *ProCD* court implied that shrink-wrap license provisions prohibiting disassembly of computer programs would also be enforceable. *Id.*

Collectively, the decisions in *Atari*, *Sega* and *Vault*, permitting various forms of reverse engineering, appear to have brought U.S. copyright law into harmony with two separate reverse engineering provisions contained in the EC Directive.¹⁴⁶ The contractual pre-emption holding in the *Vault* decision, on the other hand, does not yet appear to represent a judicial consensus on that point, and may or may not be equivalent to a third provision in the EC Directive declaring that any contractual restriction contrary to the reverse engineering provisions of the EC Directive are null and void.¹⁴⁷

Article 5(3) of the EC Directive specifies that:

The person having a right to use a copy of a computer program shall be entitled, without the authorization of the [copy]rightholder, to observe, study or test the functioning of the program in order to determine the ideas and principles which underlie any element of the program if he does so while performing any of the acts of loading, displaying, running, transmitting or storing the program which he is entitled to do.¹⁴⁸

146. For the full text and a discussion of the two reverse engineering provisions contained in the EC Directive, see *infra* notes 148-49 and accompanying text. For a discussion of areas of potential disharmony between U.S. copyright law and the EC Directive, see Samuelson, *Comparing U.S. and EC Copyright Protection*, *supra* note 106, at 279. Among the sources of potential disharmony are said to be (1) the rules regulating license contract terms restricting reverse engineering and (2) the rules governing reverse engineering for purposes other than achieving interoperability—for example, reverse engineering to obtain access to an unpatented algorithm. For a discussion of both points, see *infra* notes 149-55 and accompanying text. While the potential for conflict over the validity of contracts purporting to restrict reverse engineering is real, the likelihood of conflict over reverse engineering to discover unpatented algorithms is more remote—if only because the reverse engineering and any subsequent use of the algorithm discovered will undoubtedly be shrouded in secrecy and will thus be discoverable only through similar acts of reverse engineering for purposes other than to achieve interoperability. For a further discussion of reverse engineering to discover unpatented algorithms, see *infra* text following note 151.

147. For a recent appellate court decision taking a different view on the validity of shrink-wrap licenses, see *supra* note 145 and accompanying text. For a discussion of the provision in the EC Directive declaring that any contractual restrictions contrary to the reverse engineering provisions of the EC Directive are null and void, see *infra* note 181 and accompanying text.

148. EC Directive, *supra* note 8, art. 5(3). Article 5 must be read in conjunction with Article 4, which enumerates the “restricted acts” of the right holder, to which Articles 5 and 6 state exceptions. The text of Article 4 is as follows:

Restricted Acts

Subject to the provisions of Articles 5 and 6, the exclusive rights of the rightholder within the meaning of Article 2, shall include the right to do or to authorize:

- (a) the permanent or temporary reproduction of a computer program by any means and in any form, in part or in whole. Insofar as

This provision, by allowing the reverse analysis of a computer program while using it in conjunction with a computer, appears to create a right equivalent to the one recognized in *Vault* as emanating from section 117 of the 1976 Copyright Act.

In addition, the EC Directive contains a separate provision specifically addressing decompilation and disassembly. Article 6 of the Directive states that:

The authorization of the [copy]rightholder shall not be required where reproduction of the code and translation of its form . . . are indispensable to obtain the information necessary to achieve the interoperability of an independently created computer program with other programs, provided that the following conditions have been met:

loading, displaying, running, transmission or storage of the computer program necessitate such reproduction, such acts shall be subject to authorization by the rightholder;

(b) the translation, adaptation, arrangement and any other alteration of a computer program and the reproduction of the results thereof, without prejudice to the rights of the person who alters the program;

(c) any form of distribution to the public, including the rental, of the original computer program or of copies thereof. The first sale in the Community of a copy of a program by the rightholder or with his consent shall exhaust the distribution right within the Community of that copy, with the exception of the right to control further rental of the program or a copy thereof.

Id. art. 4.

The full text of Article 5 is as follows:

Exceptions to the restricted acts

1. In the absence of specific contractual provisions, the acts referred to in Article 4(a) and (b) shall not require authorization by the rightholder where they are necessary for the use of the computer program by the lawful acquirer in accordance with its intended purpose, including for error correction.

2. The making of a back-up copy by a person having a right to use the computer program may not be prevented by contract insofar as it is necessary for that use.

3. The person having a right to use a copy of a computer program shall be entitled, without the authorization of the rightholder, to observe, study or test the functioning of the program in order to determine the ideas and principles which underlie any element of the program if he does so while performing any of the acts of loading, displaying, running, transmitting or storing the program which he is entitled to do.

Id. art. 5.

For the full text of the entire EC Directive, see Thomas Dreier, *The Council Directive of 14 May 1991 on the Legal Protection of Computer Programs*, 9 EUR. INTELL. PROP. REP. 319, 327-40 (1991). For a discussion of the EC Directive, see Dreier, *supra*, at 329 and Thomas C. Vinje, *The Development of Interoperable Products Under the EC Software Directive*, 8 COMPUTER LAW., 1, 3 (Nov. 1991).

- (a) these acts are performed by the licensee or by another person having a right to use a copy of a program, or on their behalf by a person authorized to do so;
- (b) the information necessary to achieve interoperability has not previously been readily available to the persons referred to in subparagraph (a);
- (c) these acts are confined to the parts of the original program which are necessary to achieve interoperability.¹⁴⁹

Article 6 thus creates a right to decompile or disassemble a computer program where it is necessary to achieve interoperability with another program. This provision appears to create a right equivalent to the one recognized in *Atari* and *Sega* as emanating from section 107's fair use privilege to reverse engineer a computer program in order to defeat a lock-out device.

149. EC Directive, *supra* note 8, art. 6. Article 6 must be read in conjunction with Article 4, which enumerates the "restricted acts" (*i.e.*, the exclusive rights) of the copyright holder of a computer program. For the text of Article 4, see *supra* note 148. The full text of Article 6 is as follows:

Decompilation

1. The authorization of the rightholder shall not be required where reproduction of the code and translation of its form within the meaning of Article 4(a) and (b) are indispensable to obtain the information necessary to achieve the interoperability of an independently created computer program with other programs, provided that the following conditions are met:
 - (a) these acts are performed by the licensee or by another person having a right to use a copy of a program, or on their behalf by a person authorized to do so;
 - (b) the information necessary to achieve interoperability has not previously been readily available to the persons referred to in subparagraph (a); and
 - (c) these acts are confined to the parts of the original program which are necessary to achieve interoperability.
2. The provisions of paragraph 1 shall not permit the information obtained through its application:
 - (a) to be used for goals other than to achieve the interoperability of the independently created computer program;
 - (b) to be given to others, except when necessary for the interoperability of the independently created computer program; or
 - (c) to be used for the development, production or marketing of a computer program substantially similar in its expression, or for any other act which infringes copyright.
3. In accordance with the provisions of the Berne Convention for the protection of Literary and Artistic Works, the provisions of this Article may not be interpreted in such a way as to allow its application to be used in a manner which unreasonably prejudices the rightholder's legitimate interests or conflicts with a normal exploitation of the computer program.

EC Directive, *supra* note 8, art. 6.

Finally, Article 9(1) of the EC Directive declares that any contractual provisions contrary to Article 5(3) and Article 6 are null and void.¹⁵⁰ This provision formulates a rule that would encompass, but is nevertheless far broader than the *Vault* holding that “shrink-wrap” contracts attempting to restrict reverse engineering are preempted by U.S. copyright law.¹⁵¹

On the other hand, the fair use privilege recognized in *Atari* and *Sega* to disassemble or decompile another’s copyrighted computer program whenever necessary to get access to unprotected ideas may be broader (at least in theory) than Article 6 of the EC Directive, which merely permits decompilation or disassembly where indispensable to achieve the interoperability of an independently created program with other programs. The actual likelihood of such a conflict, however, is remote. Any reverse engineering for purposes other than achieving interoperability, for example, reverse engineering to gain access to an unpatented algorithm which is subsequently used in another program, is likely to be shrouded in secrecy and only discoverable by means of similar reverse engineering for a purpose other than achieving interoperability.

Various U.S. government officials claim that *Atari* and *Sega* should actually be read much more narrowly than the EC Directive. Even though both *Atari* and *Sega* had involved unsuccessful claims by Japanese companies that U.S. companies had illegally reverse engineered lock-out devices on the two leading brands of home entertainment game consoles, the United States Trade Representative and the Secretary of Commerce did not hesitate to lodge a strong protest with the Japanese Minister of International Trade and Industry, upon learning that the Japanese Agency for Cultural Affairs had organized a Consultative Committee on Copyright Issues Relating to Computer Programs (“Consultative Committee”), to study, among other issues, whether Japan’s copyright law should be amended to permit reverse engineering of computer programs.¹⁵² The USTR expressed grave concern over the “clear implication that

150. EC Directive, *supra* note 8, art. 9(1).

151. For a discussion of the potential for conflict between the United States and the European Union on this point, see *infra* notes 181-84 and accompanying text.

152. Letter of Ronald H. Brown, Secretary of Commerce, and Michael Kantor, United States Trade Representative, to the Honorable Hiroshi Kumagai, Minister of International Trade and Industry, dated November 2, 1993. See generally BAND & KATO, *supra* note 106, at 299-303 (discussing United States’s reaction to Japan’s actions).

the purpose of the study is to determine ways to weaken Japan's protection of computer programs under its copyright law."¹⁵³

In a subsequent statement submitted to the Consultative Committee, a representative of the United States Patent and Trademark Office (USPTO) insisted that the *Atari* and *Sega* decisions must be viewed as exceptional cases. Even though the courts in *Atari* and *Sega* had explicitly stated their holdings in broad fair use terms, while dismissing the assertions of Atari and Accolade that Nintendo and Sega had engaged in copyright misuse, the USPTO nevertheless took the position that the cases should be interpreted as having merely held that reverse engineering of a computer program is a fair use when the copyright owner is engaging in an anticompetitive misuse of the copyrighted work.¹⁵⁴ Earlier, the USTR, acting under "Special 301" had listed not only Japan, but also Australia, on a "priority watch" list, primarily out of concern that both countries were considering copyright amendments permitting reverse engineering of computer software.¹⁵⁵

Given the position of the USTR and the USPTO, it seems entirely possible that, notwithstanding the *Atari* and *Sega* cases and the EC Directive, the legality of reverse engineering to achieve interoperability or for other purposes could become a subject for resolution by a WTO dispute settlement panel. The United States, for example, could conceivably complain that any proposed copyright amendment, such as the one that Japan was considering in 1993, would violate Article 13 of TRIPS, which obliges members to "confine limitations or exceptions to exclusive rights to certain special cases which do not conflict with the normal exploitation of the work and do not unreasonably prejudice the legitimate interests of the right holder."¹⁵⁶ Although Article 13 does not itself answer the question whether the enactment of a broad reverse engineering privilege would or would not conflict with the normal exploitation of a computer program or unreasonably prejudice the legitimate

153. For a further discussion of the USTR's concerns regarding Japan's copyright protection of computer programs, see Letter of November 2, 1993, *supra* note 152.

154. Statement of Christopher A. Meyer, Senior Copyright Attorney, Office of Legislative & International Affairs, USPTO, before the Consultative Committee on Copyright Issues Relating to Computer Programs, Tokyo, Dec. 13, 1993.

155. See COMMONWEALTH OF AUSTRALIA COPYRIGHT LAW REVIEW COMMITTEE, COMPUTER SOFTWARE PROTECTION 30-31 (1995) (debating two approaches to copyright protection for computer programs). See generally BAND & KATO, *supra* note 106, at 275-316 (discussing reverse engineering in Australia, Japan and United States). For a discussion of "Special 301," see *supra* note 20 and accompanying text.

156. TRIPS agreement, *supra* note 6, art. 13.

rights of the copyright owner, the article clearly seems to provide a sufficient legal basis for making such a claim, and thus invoking the WTO dispute settlement process to decide the question.¹⁵⁷

Even if the United States did not file such a complaint, but merely chose to threaten the use of "Special 301" procedures to pressure a country such as Japan not to amend its domestic copyright law to include an explicit privilege to reverse engineer computer programs,¹⁵⁸ Japan could conceivably lodge a complaint with the WTO, claiming that such pressure tactics on the part of the United States violate its current obligation under Article 23 of the 1994 Understanding and Article 64 of TRIPS to utilize the WTO dispute settlement process in any intellectual property disputes involving alleged TRIPS violations.¹⁵⁹ As a part of that complaint, Japan could insist that the underlying reverse engineering question be submitted to a dispute panel for resolution. The United States would then be in the uncomfortable position of having to concede either that permitting reverse engineering is not an actual violation of Article 13, or that the dispute is one that must be submitted to a WTO dispute panel for resolution. After the year 2000, even a claim that permitting reverse engineering amounts to a nullification or impairment of benefits accruing under TRIPS would be subject to WTO dispute resolution.¹⁶⁰

Were such a dispute panel convened, it would undoubtedly be asked to determine whether the *Atari* and *Sega* decisions in the United States and Article 6 of the EC Directive in fact enunciate equivalent rules with respect to reverse engineering, and if so, whether they comprise sufficient evidence of a widespread state practice to be used as a customary source of international law in interpreting Article 23 of TRIPS.¹⁶¹ Such a panel would be highly unlikely to embrace the USPTO's narrow reading of the *Atari* and *Sega* decisions, particularly given that the actual holdings enunciated in these two cases, together with the rule stated in Article 6 of the EC Directive, seem far more consistent with the needs of developing countries as collective "second-comers" in the field of com-

157. For a discussion of the procedure for bringing a complaint of a GATT/WTO violation or a nonviolation nullification or impairment of benefits, see *supra* notes 83-98 and accompanying text.

158. For a discussion of "Special 301," see *supra* note 20 and accompanying text.

159. For a discussion of Article 23, see *supra* note 97 and accompanying text.

160. For a further discussion of GATT/WTO dispute resolution, see *supra* text following note 101.

161. For a further discussion of the reference in TRIPS to customary state practice, see *supra* notes 94-96 and accompanying text.

puter technology, than is the U.S. Government's idiosyncratic reading of its own domestic case law.

The United States might fare better in the WTO dispute process were another country to refuse to grant any form of patent protection for software technology.¹⁶² The United States could plausibly argue that such a flat ban violates Article 27 of TRIPS, which states that "patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application."¹⁶³

The phrase "capable of industrial application," of course, creates an element of uncertainty as to the applicability of Article 27 to "pure software" patents.¹⁶⁴ This uncertainty is only deepened by an accompanying footnote in the TRIPS agreement stating that the phrase "'capable of industrial application,' may be deemed by a Member [which also seems to suggest that it need not be deemed

162. In theory, at least, patent protection for software technology would simultaneously eliminate the need and the right to reverse engineer patented software. The disclosure of the invention required for the patent to be valid would presumably disclose sufficient information to ensure that a person of ordinary skill in the art could practice the invention without undue experimentation and routinely write a program embodying the "best mode" of the invention. McManis, *supra* note 106, at 98 and authorities cited therein. In the absence of express or implied permission, any residual reverse engineering that might be necessary to practice the invention or routinely write a program embodying the invention would presumably constitute an infringing use under U.S. patent law, unless it happened to fall within the narrow limits of "experimental use." *Id.* at 37 n.51. Other countries, however, may define the experimental use exception more broadly, as long as the exception does not violate Article 30 of TRIPS, which states that:

Members may provide limited exceptions to the exclusive rights conferred by a patent, provided that such exceptions do not unreasonably conflict with a normal exploitation of the patent and do not unreasonably prejudice the legitimate interests of the patent owner, taking account of the legitimate interests of third parties.

TRIPS agreement, *supra* note 6, art. 27.

163. TRIPS agreement, *supra* note 6, at art. 27.

164. For a discussion of "pure software" patents, see McManis, *supra* note 106, at 35, 97 and authorities cited therein. One of these authorities defines pure software patents as "patents which specifically disclose and claim software technology without referring to hardware, other than a computer and typical peripheral devices." *Id.* at 97 (citing Proprietary Rights Committee, Computer Law Section, State Bar of Michigan, *Survey of United States Software Patents Issued From July, 1987 Through December 1987*, reprinted in 1 DAVID BENDER, COMPUTER LAW App. 3A-102 (1996)). The problem with pure software patents is that any patent granted on a software invention entirely detached from any physical embodiment runs the risk of extending patent protection to an abstract idea, or "law of nature," a class of subject matter traditionally excluded from patent protection. For statements of continuing concern over the danger posed by pure software patents, see *infra* note 316 and accompanying text.

by a member] to be synonymous with the term . . . 'useful.'¹⁶⁵ A GATT/WTO member country could plausibly argue that it is entirely consistent with Article 27 of TRIPS to limit computer program patents to those software inventions that have a direct industrial application.¹⁶⁶

On the other hand, the United States might argue that Article 1 of the Paris Convention, which is incorporated by reference in Article 2 of TRIPS,¹⁶⁷ specifies that industrial property, including patents, is to be understood "in the broadest sense."¹⁶⁸ This language, together with the language of Article 27 of TRIPS, which is clearly designed to eliminate all but specifically enumerated subject-matter exclusions from the field of patent law,¹⁶⁹ may eventually enable the United States to convince a dispute panel that software inventions cannot be excluded from patent protection solely on the ground that software is not patentable subject-matter.¹⁷⁰ Because Article 27, in any event, creates a new international obligation, a dispute settlement panel faced with interpreting Article 27 is said to be less likely to refer to practice under pre-existing conventions and will tend to rely more strictly on the TRIPS text.¹⁷¹

If such an argument ultimately prevails, the United States will have managed to turn the focus of international debate over

165. TRIPS agreement, *supra* note 6, art. 27 n.5.

166. There is at least some support for this position in U.S. case law. Whereas the lower federal courts have held that the application of mathematical formulae either to physical elements (in apparatus claims) or to process steps (in process claims) is sufficient to establish the validity of a software patent claim, the Supreme Court, in *Diamond v. Diehr*, 450 U.S. 175, 191-92 (1981), held only that a patent claim containing a mathematical formula will be upheld if the overall function of the formula is "transforming or reducing an article to a different state or thing." *Id.*; see generally McManis, *supra* note 106, at 96 (discussing *Diamond v. Diehr* and other relevant precedent); Reichman, *Know-How Gap*, *supra* note 50, at 767-73 (discussing TRIPS's impact on computer programs).

167. For a discussion of Article 2 of TRIPS, see *infra* notes 222-25 and accompanying text.

168. Paris Convention, *supra* note 26, art. 1(3). The complete text of which is as follows:

(3) Industrial property shall be understood in the broadest sense and shall apply not only to industry and commerce proper, but likewise to agricultural and extractive industries and to all manufactured or natural products, for example, wines, grain, tobacco, leaf, fruit, cattle, minerals, mineral waters, beer, flowers, and flour.

Id. art. 1(3).

169. *Id.*; see, e.g., Reichman, *Know-How Gap*, *supra* note 50, at 769 (discussing few exclusions permitted which do not include computer programs).

170. For expressions of continuing concern over the tendency of software patent applications to claim abstract formulae or laws of nature, see *infra* note 316 and accompanying text.

171. For a further discussion of Article 27, see Abbott, *supra* note 16.

software patent protection to a second (and more difficult) generation of patent issues arising out of the requirement that an invention be new, useful and involve an inventive step. Because the source-code version of publicly distributed software is so often protected as a trade secret,¹⁷² the paucity of publicly accessible prior art is likely to lead to inevitable misjudgments in the patent examining process as to the novelty and nonobviousness of software-related inventions and the appropriate scope of claims to such inventions.¹⁷³

On the other hand, the United States is finally on the verge of adhering to the customary practice of most patent systems throughout the world, by amending its patent law to automatically lay open patent applications eighteen months after they are filed.¹⁷⁴ This amendment should go a long way toward assuring that patents will issue only on software technology that meets the U.S. statutory standards of novelty and nonobviousness. Thus, it will give patent decisions of the USPTO a new credibility as the GATT/WTO dispute resolution process struggles to develop an international minimum standard for determining what constitutes an inventive step in computer program technology.¹⁷⁵

A final software issue that might be raised before a WTO dispute panel is the extent to which WTO member countries are required to protect computer programs as trade secrets under Article 39 of TRIPS. As we have seen, Article 39 obliges members to pro-

172. For a further discussion of trade secrets, see generally McManis, *supra* note 106, at 32.

173. See 1 BENDER, *supra* note 164, § 3A.09A, at 3A-88 to 3A-88.4(5) (discussing software prior art problem and in particular, controversy over patent initially granted to Encyclopedia Britannica and assigned to Compton's New Media, which "claimed the most popular methods for searching multimedia databases, yet was anticipated by much earlier art"); Brian Kahin, *The Software Patent Crisis*, *TECH. REV.*, Apr. 1990, at 52, 53, 58 (discussing the general problem of overbroad software patents). For statements of continuing concern over the risk that pure software patents will extend patent protection to abstract ideas or "laws of nature," see *infra* note 316 and accompanying text.

174. See Patent Application Act of 1995, H.R. 1733, 104th Cong. (1995) (revising U.S. patent laws to require publication of most patent applications 18 months after earliest filing date).

175. To some extent, of course, differences in the standards employed in different national patent systems may simply have to be tolerated. See, e.g., Henri H. Hanneman, *Patentability of Computer Programs in Europe*, in *THE LAW OF INFORMATION TECHNOLOGY IN EUROPE 1992—A COMPARISON WITH THE USA* 78, 85 (noting that U.S. and Japanese patent offices are less restrictive in allowing computer-program related inventions than European Patent Office); see generally Reichman, *Know-How Gap*, *supra* note 50, at 767-73 (discussing TRIPS's impact on computer programs).

tect "undisclosed information."¹⁷⁶ The conceptual difficulty posed by computer programs, of course, is that they can simultaneously be publicly distributed (in object-code form) and maintained as a trade secret (in source-code form).¹⁷⁷ Thus, it is not entirely clear whether, or under what circumstances, information contained in a widely distributed object-code version of a program will or will not be held to have been "disclosed."

According to Article 39(2) of TRIPS, information is to be protected from acquisition, disclosure or use contrary to "honest commercial practices" where the information:

- (a) is 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 circles that normally deal with the kind of information in question;
- (b) has commercial value because it is secret; and
- (c) has been subject to reasonable steps under the circumstances, by the person lawfully in control of the information, to keep it secret.¹⁷⁸

This provision, which closely parallels both the Uniform Trade Secrets Act¹⁷⁹ and the recently issued Restatement (Third) of Unfair Competition,¹⁸⁰ imposes two interrelated conditions for the protection of commercially valuable trade secret information. First, the commercially valuable information must not be "generally known" or "readily accessible" to others. Second, the person seeking trade secret protection must have taken "reasonable steps" to maintain the secrecy of the information.

In an effort to take "reasonable steps" to maintain the secrecy of the source-code version of publicly distributed programs, U.S. software developers routinely employ contracts, including "shrink-wrap" licenses, purporting to prohibit the reverse engineering of

176. For the text of Article 39(1), see *supra* note 55 and accompanying text.

177. For a discussion of legal issues raised by computer programs, see *supra* note 106 and accompanying text. See also McManis, *supra* note 106, at 31 (discussing "unique[ness] [of computers] in the field of intellectual property law. Computer programs function both as part of a machine, in their object-code form, and as a means of communicating with other human beings, in their source-code form . . .").

178. TRIPS agreement, *supra* note 6, art. 39(2). For the text of Article 39(1), see *supra* note 55.

179. 1979 Uniform Trade Secrets Act; 1985 Amendment to Uniform Trade Secrets Act, reprinted in 2 MELVIN F. JAGER, TRADE SECRETS LAW App. A1 (1996).

180. RESTATEMENT (THIRD) OF UNFAIR COMPETITION §§ 39-40 (1995).

publicly distributed object-code versions of the program.¹⁸¹ According to Article 9 of the EC Directive, of course, any contractual provision—whether a shrink-wrap license or not—that is contrary to the reverse engineering privileges enumerated in Article 6 and Article 5(2) and (3) of the EC Directive is null and void, apparently even for programs that have not been publicly distributed.¹⁸² Under U.S. law, shrink-wrap licenses purporting to prohibit the reverse engineering of otherwise publicly distributed programs may or may not be preempted by federal copyright and/or patent law.¹⁸³ Thus, an international conflict may well arise over the enforceability of contracts purporting to restrict reverse engineering of computer programs.

The United States could conceivably argue before a WTO dispute panel that, to the extent Article 9 of the EC Directive voids bilateral contracts prohibiting reverse engineering of programs that have not been publicly distributed, it violates Article 39 of TRIPS. The European Union would undoubtedly respond that Article 40 of TRIPS specifically provides that nothing in the TRIPS agreement “shall prevent Members from specifying in their [national] legislation licensing practices or conditions that may in particular cases constitute an abuse of intellectual property rights having an adverse effect on competition in the relevant market.”¹⁸⁴ A TRIPS panel would thus be called on to reconcile the obligation of members to protect undisclosed information under Article 39 of TRIPS with the right of members under Article 40 to prevent abusive licensing practices.

While it is impossible to predict exactly how WTO dispute panels might resolve this or any other international dispute over

181. See McManis, *supra* note 106, at 79-80 (discussing software developers' reliance on shrink-wrap licenses, although enforceability is questionable).

182. For a discussion of Article 9(1), see *supra* note 150 and accompanying text.

183. For a discussion of U.S. law and shrink-wrap licenses, see *supra* notes 145, 151 and accompanying text. See generally Mark A. Lemley, *Intellectual Property and Shrink Wrap Licenses*, 68 SO. CAL. L. REV. 1239 (1995) (discussing software vendors' attempts to use contract law to protect their products rather than copyright law and enforceability of those contracts); David P. Rice, *Public Goods, Private Contract and Public Policy: Federal Preemption of Software License Prohibitions Against Reverse Engineering*, 53 U. PITT. L. REV. 543, 594, 630 (1992) (arguing that shrink-wrap licenses are preempted by federal copyright and/or patent law); see also McManis, *supra* note 106, at 90 (suggesting that U.S. copyright might preempt reverse engineering restrictions in contracts other than shrink-wrap licenses). But see *ProCD, Inc. v. Zeidenberg*, 86 F.3d 1447, 1447 (7th Cir. 1996) (holding that shrink-wrap licenses are enforceable contracts and are not preempted by federal copyright law). For a further discussion of *ProCD*, see *supra* note 145 and accompanying text.

184. TRIPS agreement, *supra* note 6, art. 40.

the scope of copyright, patent or trade secret protection for computer programs, it should be clear from this brief discussion that most disputes over the scope of intellectual property protection for computer programs are at least amenable to resolution through the WTO dispute settlement process. Nor should the potential for such disputes obscure the larger international consensus that seems to be emerging on the need to promote interoperability of computer programs.

In addition to the dispute of the interoperability of computer programs, the new TRIPS agreement and its associated dispute settlement process face a more complicated series of disputes over the protection of intellectual property on the global information superhighway.

IV. THE EMERGING GLOBAL INFORMATION SUPERHIGHWAY

The protection of intellectual property on the emerging global information superhighway poses several difficult challenges for the new TRIPS agreement and the associated WTO dispute settlement process. Here, the concern is not so much with the intellectual property rights of the various "builders" of the information superhighway as with the intellectual property rights of the various "builders" of the digital information (i.e., the "vehicles") which will traverse the information superhighway.¹⁸⁵ The core substantive issue is how to protect the intellectual property rights of digital content providers without unduly burdening the ability of either online access and service providers—i.e., "commercial distributors"—or the end-using "consumers" of digital information to make efficient and perhaps even innovative use of digital information.

Already the prospect of an emerging global information superhighway has sparked two separate, but interrelated, intellectual property debates in the industrialized world. The first debate concerns the European Union's Directive on the Legal Protection of Databases ("Database Directive"),¹⁸⁶ which seeks to create a new, *sui generis* form of protection for the noncopyrightable contents of databases and to condition the protection of works originating in

185. Digital information has been described both as the "cars" and as the "cargo" traversing the information superhighway. See Jane C. Ginsburg, *Putting Cars on the "Information Superhighway": Authors, Exploiters, and Copyright in Cyberspace*, 95 COLUM. L. REV. 1466, 1467 (1995) (referring to "car" paradigm); Christopher Millard & Robert Carolina, *Commercial Transactions on the Global Information Infrastructure: A European Perspective*, 14 J. MARSHALL J. COMPUTER & INFO. L. 269, 271 (1996) (referring to "cargo" paradigm).

186. Database Directive, *supra* note 9.

other countries on a reciprocal grant of protection for European databases in those countries. The second debate concerns the proposals contained in the U.S. White Paper on Intellectual Property and the National Information Infrastructure (the "White Paper"),¹⁸⁷ for ensuring adequate intellectual property protection on the global information superhighway for digital versions of more traditional literary and artistic works.

These two initiatives are particularly important because they apparently represent a coordinated effort on the part of the United States and the European Union to fashion a new international agreement, in the form of a protocol to the Berne Convention, for the protection of intellectual property on the global information superhighway.¹⁸⁸ Yet both initiatives also create the potential for conflict with the TRIPS agreement or the associated GATT/WTO framework.¹⁸⁹

A. *Sui Generis Database Protection*

On March 11, 1996, the European Parliament and the Council of Ministers for European Union finally adopted a long proposed and much amended Directive on the Legal Protection of Databases.¹⁹⁰ The Database Directive basically takes a two-tiered approach to database protection: Chapter II of the Database Directive (Articles 3 through 6) essentially harmonizes European law with respect to the grant of copyright protection for expressive elements of a compilation of data, while Chapter III (Articles 7 through 11) creates a new *sui generis* form of protection for the noncopyrightable data itself.¹⁹¹

A primary goal of the Database Directive, as originally proposed in 1992, prior to the completion of the Uruguay Round, was

187. WHITE PAPER, *supra* note 10 at 211-37.

188. For a discussion of the efforts to draft a new protocol to the Berne Convention, see *infra* notes 231-33 and accompanying text.

189. For a discussion of potential conflicts between TRIPS or the Berne and Paris Conventions and the Database Directive, see *infra* notes 218-20 and accompanying text. For a discussion of the potential conflicts between the White Paper proposals and the GATT/WTO framework, see *infra* notes 305-10 and accompanying text.

190. Database Directive, *supra* note 9. For a summary of the provision contained in the proposed Database Directive at various points during the three-year drafting and deliberation process, compare Reichman, *Legal Hybrids*, *supra* note 59, at 2493-97 with Laurence M. Kaye, *The Proposed EU Directive for the Legal Protection of Databases: A Cornerstone of the Information Society?*, 17 EUR. INTEL. PROP. REV. 583 (1995).

191. See generally Kaye, *supra* note 190 (discussing new rights created by Directive).

to harmonize European law governing copyright protection for databases. At the time, the domestic law of member states varied widely. The copyright law of most member states protected only the original expressive elements of a database, just as the United States Supreme Court had recently reaffirmed in its decision in *Feist Publications, Inc. v. Rural Telephone Service Co.*,¹⁹² holding that a mere alphabetical listing of data did not constitute an original work of authorship under U.S. copyright law.¹⁹³ A handful of countries, however, granted *sui generis* protection for noncopyrightable data itself, while Great Britain, the main supplier of information services in Europe, granted full copyright protection for databases, so long as “mere skill, judgement and labor” was used in the development of the database.¹⁹⁴

By the time of the Database Directive’s final adoption, however, the goal of harmonizing copyright protection for databases had, to some extent, already been accomplished in Article 10 of the TRIPS agreement. As we have seen, according to Article 10 “[c]ompilations of data or other material whether in machine readable or other form, which by reason of the selection or arrangement of their contents constitute intellectual creations shall be protected as such.”¹⁹⁵ Article 10 explicitly adds that, such protection “shall not extend to the data or material itself.”¹⁹⁶

Thus, the most important—and controversial—aspect of the final Database Directive is its creation of a new, *sui generis* form of protection for the contents of databases. According to Article 7 of the Database Directive, the maker of a database (electronic or otherwise) “which shows that there has been qualitatively and/or quantitatively a substantial investment in either the obtaining, verification or presentation of the contents to prevent extraction and/or re-utilization of the whole or of a substantial part, evaluated quantitatively, and/or qualitatively, of the contents of that database. . . . [This] right . . . shall apply irrespective of the eligibility of that database for [copyright protection].”¹⁹⁷

192. 499 U.S. 340 (1991).

193. *Id.* at 362; see Debra B. Rosler, *The European Union’s Proposed Directive for the Legal Protection of Databases: A New Threat to the Free Flow of Information*, 10 HIGH TECH. L.J. 105, 110 (1995) (discussing various approaches of European Union members to database protection and effect Database Directive would have).

194. Rosler, *supra* note 193, at 110, 113, 134-36.

195. TRIPS agreement, *supra* note 6, art. 10. For a further discussion of Article 10, see *supra* notes 42-44 and accompanying text.

196. TRIPS agreement, *supra* note 6, art. 10. For a further discussion of Article 10, see *supra* notes 42-44 and accompanying text.

197. See Database Directive, *supra* note 9, art. 7(1), (4).

Extraction is defined as “the permanent or temporary transfer of all or a substantial part of the contents of a database to another medium by any means or in any form,” and re-utilization is defined as “any form of making available to the public all or a substantial part of the contents of a database by distribution of copies, by renting, by on-line or other forms of transmission.”¹⁹⁸

Article 8 provides that “[t]he maker of a database which is made available to the public in whatever manner may not prevent a lawful user of the database from extracting and/or re-utilizing insubstantial parts of its contents, evaluated qualitatively and/or quantitatively, for any purpose whatsoever.”¹⁹⁹ Article 15 adds that any contractual provision contrary to Article 8 is null and void.²⁰⁰ Article 7(5), however, qualifies the user’s right to extract and reutilize insubstantial parts of a database, stating that “[t]he repeated and systematic extraction and/or re-utilization of insubstantial parts of the contents of the database implying acts which conflict with [the] normal exploitation of that database or which unreasonably prejudice the legitimate interests of the maker of the database [is] not to be permitted.”²⁰¹

Article 9 permits (but does not require) member states to “stipulate that users of a database which is made available to the public . . . may, without the authorization of its maker, extract or re-utilize a substantial part of its contents” in three limited circumstances somewhat analogous to fair use in copyright law—namely: (a) “extraction for private purposes of the contents of a non-electronic database;” (b) “extraction for the purposes of illustration for teaching or scientific research, as long as the source is indicated and to the extent justified by the non-commercial purpose to be achieved;” and (c) “extraction and/or re-utilization for the purposes of public security or an administrative or judicial procedure.”²⁰² It should be noted, however, that the first exception, extraction for “private purposes,” does not apply to extractions from electronic databases. Additionally, the third exception does not apply to extractions for other than essentially “public” (i.e., governmental) purposes.

Thus, the extraction of a qualitatively or quantitatively substantial part of the contents of an electronic database for other than a governmental purpose will be justifiable only if it is for the purpose

198. *Id.* art. 7(2).

199. *Id.* art. 8(1).

200. *Id.* art. 15.

201. *Id.* art. 7(5).

202. *Id.* art. 9. For a discussion of the fair use doctrine in copyright law, see *supra* notes 48-49, 139-40 and accompanying text.

of illustration for teaching or scientific research. Any other substantial extraction from an electronic database will be infringing, irrespective of whether the extraction is for a commercial purpose, such as market research or private investment decisions, or for a wholly noncommercial purpose, such as religious canvassing, political polling, genealogical research or pursuit of any other hobby or avocation.²⁰³

Article 10 specifies that the term of protection is to be for a period of fifteen years, measured either from the year the database is completed or the year that the database is made available to the public, provided that it is made public no later than fifteen years after the year it was completed.²⁰⁴ Article 10 goes on to state that any substantial change to the contents of the database, including those "resulting from the accumulation of successive additions, deletions or alterations, which would result in the database being considered to be a substantial new investment . . . [will] qualify the database resulting from that investment for its own term of protection."²⁰⁵ As the maker or rightholder of an electronic database is under no obligation to distinguish the original contents of the database from those additions or alterations constituting a substantial new investment, this article appears to give an electronic database maker or rightholder potentially perpetual exclusive rights in the entire database, so long as substantial updating can be shown to occur every fifteen years.²⁰⁶

Article 11 states that the beneficiaries of this new *sui generis* right are to include: (1) database "makers or rightholders [who] are nationals of a Member State or who have their habitual residence in the territory of the [European] Community" and (2) "companies and firms formed in accordance with the law of a Member State and having their registered office, central administration or principal place of business within the [European] Community."²⁰⁷ Where "a company or firm has only its registered office in

203. For a critical comparison of this limited fair use privilege and the exceptions and limitations that safeguard the public interest in copyright law, see *infra* note 213.

204. Database Directive, *supra* note 9, art. 10(1), (2).

205. *Id.* art. 10(3).

206. See Kaye, *supra* note 190, at 586 (comparing publication in CD-ROM or other fixed format with electronic database publication noting that contents of first edition of fixed-format database will fall out of protection and into public domain at end of first 15 years and thereafter can be freely copied, and concluding that this "is one of the reasons why databases in on-line form, which will be subject to a more regular update, will obtain stronger protection under the [Database] Directive").

207. Database Directive, *supra* note 9, art. 11(1), (2).

the territory of the [European] Community, [however,] its operations must be genuinely linked on an ongoing basis with the economy of a Member State."²⁰⁸

Article 11 concludes by stating that international agreements extending the *sui generis* right to all other databases made in third countries are to be concluded by the European Council acting on proposals from the European Commission.²⁰⁹ Recital 56 of the preamble to the Database Directive makes it clear that such agreements are to be concluded only if such third countries offer comparable protection to databases produced by nationals or habitual residents of a member state of the European Community.²¹⁰

The question whether the grant of such *sui generis* protection is desirable, and if so, whether the Database Directive appropriately defines the scope of that protection, has been much debated elsewhere²¹¹ and need not be detailed here. It is sufficient to say that commentators have called the Database Directive everything from a potential "cornerstone of the information society" (for having rescued database publishers from the perils of under-protection),²¹² to a "legal monstrosity" (for having endowed electronic database publishers with potentially perpetual exclusive rights in disembodied information and data structures, without analogous exceptions and limitations that typically safeguard the public interest under existing copyright laws).²¹³

208. *Id.* art. 11(2).

209. *Id.* art. 11(3).

210. Recital 56 of the Database Directive states that:

[T]he right to prevent unauthorized extraction and/or re-utilization in respect of a database should apply to databases whose makers are nationals or habitual residents of third countries or to those produced by legal persons not established in a Member State, within the meaning of the Treaty, only if such third countries offer comparable protection to databases produced by nationals of a Member State or persons who have their habitual residence in the territory of the Community.

Id. para. 56.

211. For a flavor of this debate, see *infra* notes 212-13 and accompanying text.

212. Kaye, *supra* note 190 at 588.

213. Reichman, *Legal Hybrids*, *supra* note 59, at 2496, contends that: In attempting to rescue database publishers ineligible for copyright protection from the perils of "parasitic" competition, the drafters endow them with perpetual exclusive rights to disembodied information and database structures but neglect to recreate analogues to the many exceptions and limitations that otherwise safeguard the public interest under copyright laws.

Id. For a critique of the economic consequences of such protection, see *infra* note 289 and accompanying text. It should be noted that Reichman was actually commenting on an early version of the Database Directive, which, as it turned out, had only begun to mutate as the "monstrosity" that Reichman deplored. For example, Reichman noted with relief that "to avoid erecting inadvertent barriers to entry,

Some commentators have argued that the grant of any protection for database contents is inconsistent with a basic premise of copyright law that “upholds the free dissemination of information by precluding protection of facts and news.”²¹⁴ That premise, as we have seen, finds expression in Article 10 of the TRIPS agreement, which states that copyright protection for compilations of data or other material shall not extend to the data or material itself.²¹⁵ The problem with this argument is that Article 10 of TRIPS merely prohibits extending copyright protection to the contents of a database, but falls considerably short of explicitly prohibiting any form of protection for database contents. Article 39 of TRIPS, for example, clearly permits, and indeed requires, member countries to provide trade secret protection for nonpublicly disclosed databases.²¹⁶ Article 1 of TRIPS, in turn, specifically permits member countries to implement in their domestic law more extensive protection than is required by the TRIPS agreement, provided that such protection does not contravene any provision of the TRIPS agreement.²¹⁷

A more debatable question under TRIPS, however, is whether granting such *sui generis* protection to databases made by nationals or habitual residents of Europe, coupled with a material reciprocity provision conditioning the protection of databases originating in other countries on the reciprocal grant of protection in those countries for databases of European nationals or habitual residents, is compatible with the national treatment provisions of the new TRIPS agreement itself or the apparently incorporated national treatment provisions contained in the Paris and Berne Conventions.²¹⁸ The Database Directive was obviously drafted with the aim of keeping database protection outside the reach of the national treatment obligations of either the TRIPS agreement or the Berne Convention.²¹⁹ It has been suggested, however, that the new “data right” might nevertheless fall within the meaning of “industrial

the [proposed] Directive provides compulsory licenses whenever the database makers become the sole sources of the contents in publicly available, electronic databases or when the contents of such databases emanate from public bodies that benefit from a natural monopoly.” *Id.* By 1995, however, much to the reported relief of most database producers, the compulsory licensing provision had been dropped. Kaye, *supra* note 190, at 587.

214. Rosler, *supra* note 193, at 136.

215. For a discussion of Article 10, see *supra* note 44 and accompanying text.

216. For a discussion of Article 39, see *supra* notes 176-79 and accompanying text.

217. TRIPS agreement, *supra* note 6, art. 1.

218. For a discussion of the Paris and Berne Conventions and the TRIPS agreement, see *supra* notes 30-51 and accompanying text.

219. Rosler, *supra* note 193, at 137.

property . . . in the broadest sense," as set out in Article 1(3) of the Paris Convention and might even be characterized as a right to prevent a new species of "unfair competition," within the meaning of Article 10^{bis} of that Convention. Thus, it might be subject to the national treatment obligations imposed by the Paris Convention.²²⁰

Even prior to the TRIPS agreement—when the United States created *sui generis* protection for semiconductor chip designs and attached a reciprocity provision, requiring other countries wishing to receive chip design protection in the United States to protect designs from the United States on substantially the same basis—other countries adhering to the Paris Convention could have argued plausibly that chip design protection was simply a new species of industrial property protection (namely, a new type of utility model protection) and was thus subject to the national treatment requirements of the Paris Convention.²²¹ Because of the absence of any effective dispute resolution process under the Paris Convention, however, no such argument was ever made.

Today, by contrast, such an argument could be raised in the context of the WTO dispute settlement process. A WTO member country objecting to the Database Directive's reciprocity requirement could plausibly claim that, even if the Database Directive manages to escape the reach of the national treatment provisions of the TRIPS agreement and the Berne Convention, the "data right" that it creates is nevertheless a kind of industrial property, in the broadest sense, as envisioned in the Paris Convention.²²² Thus, the reciprocity provision in the Database Directive arguably violates the national treatment provisions of the Paris Convention, and consequently violates Article 2 of TRIPS, which seemingly obliges WTO members to comply with Articles 1 to 12 and 19 of the Paris Convention.²²³

This argument, however, raises a fundamental interpretive question as to the meaning of Article 2 of the TRIPS agreement and the relationship between TRIPS and the Paris Convention. In actuality, Article 2 of TRIPS states only that "[i]n respect of Parts II,

220. Geller, *supra* note 48, at 110. For the full text of Article 1(3) of the Paris Convention, see *supra* note 168.

221. Geller, *supra* note 48, at 100. Cf. McManis, *supra* note 76, at 354 (suggesting that semiconductor chip design protection could be characterized as species of utility model protection).

222. For a discussion of the Database Directive's compatibility with TRIPS and the Berne Convention, see *supra* notes 218-20 and accompanying text.

223. For a discussion of the Paris Convention and TRIPS, see *supra* notes 30-33, 37-41 and accompanying text.

III, and IV of this Agreement, Members shall comply with Articles 1-12 and 19 of the Paris Convention.” Parts II, III and IV of TRIPS are entirely concerned with the availability, scope, use, enforcement, acquisition and maintenance of rights in “intellectual property,” which is defined in Article 1 as all (and presumably only) those categories of intellectual property that are the subject of sections 1 to 7 of Part II.²²⁴ Because Part II of TRIPS does not include—and in fact in one article (Article 10) specifically excludes the possibility of—a data right as such, it could be argued that WTO members are obligated to comply with the Paris Convention, including its national treatment provision, only insofar as “intellectual property,” as defined in TRIPS, happens to be involved.

On the other hand, Part II, section 7 of TRIPS, which consists of but a single article (namely Article 39, which is specifically concerned with the protection of undisclosed information), begins with the statement that “[i]n the course of ensuring effective protection against unfair competition as provided in Article 10^{bis} of the Paris Convention (1967), Members shall protect undisclosed information in accordance with paragraph 2 [below].”²²⁵ This statement suggests that WTO Member countries have an independent obligation under Article 2 of TRIPS to provide effective protection against unfair competition as provided in Article 10^{bis} of the Paris Convention, whether or not any undisclosed information or other forms of “intellectual property” specifically enumerated in Part II of TRIPS happen to be involved.²²⁶ If this is indeed held to be the case, it would seem to follow that WTO member countries also have an obligation under Article 2 of TRIPS to accord national treatment under the Paris Convention both with respect to the protection of industrial property, understood in the broadest sense, and with respect to the prevention of unfair competition, whether or not the unfair competition happens to involve a form of intellectual property enumerated in Part II of TRIPS.

224. For a summary of the contents of Parts II to IV of TRIPS, see *supra* text following note 24. For a summary of the contents of sections 1-7 of Part II and text of Article 1, see *supra* note 39. For the text of Articles 10 and 39, see *supra* notes 42-44, 55, 178 and accompanying text.

225. TRIPS agreement, *supra* note 6, art. 39(1).

226. For the text of Articles 2 and 39 of TRIPS, see *supra* notes 38, 55. It seems unlikely that either the European Union or the United States would concede, for example, that developing countries, such as India, which are members of WTO, but are not currently members of the Paris Convention, have no independent obligation under TRIPS to prevent passing off, trade disparagement or other forms of deceptive marketing that do not happen to involve infringement of intellectual property rights.

In resolving this seemingly technical interpretive question, a WTO dispute panel would in effect be determining whether or not the TRIPS agreement is capable of halting the Balkanization of international intellectual property law.²²⁷ For Article 2 of TRIPS to succeed in stabilizing the bipolar structure of the Paris-Berne regime, it would need to be interpreted so as to require WTO member countries to accord national treatment in the grant of any form of *sui generis* protection that could be characterized either as protecting industrial property, understood in the broadest sense, or preventing unfair competition. Any other interpretation of Article 2 would in effect allow the proliferation of *sui generis* forms of intellectual property protection to continue and would encourage countries with sufficient economic power to continue utilizing reciprocity provisions as a means of foisting these new forms of protection off on the rest of the world.

This seems to be exactly the purpose of the reciprocity provision in the Database Directive. Some critics of the Database Directive argue that a preferable course for the European Union would have been to follow the advice of the World Intellectual Property Organization (WIPO) and the European Union's own High-Level Group on the Information Society and submit a proposal to amend the Berne Convention.²²⁸ The problem, of course, is that by the express terms of Article 27 of the Berne Convention and by longstanding practice under the Paris Convention, the two Great Conventions can be amended only by unanimous consent of their members.²²⁹ It was the very inability of the industrialized world to obtain such unanimous consent that initially injected the issue of intellectual property protection into international trade negotiations and eventually led to the TRIPS agreement.²³⁰

Evidence is mounting, however, that the European Union and the United States intend to use Article 20 of the Berne Convention, which permits members to enter into special agreements among themselves to grant authors more extensive rights than those granted by the Berne Convention, to accomplish the functional equivalent of an amendment to the Berne Convention, in the form of a possible Berne protocol and "new instrument." One purpose of the protocol will likely be to enhance database protection and

227. For a discussion of TRIPS's ability to deal with this Balkanization, see *supra* notes 56, 79-80 and accompanying text.

228. Rosler, *supra* note 193, at 136-37.

229. For a discussion of the process of amending the Berne and Paris Conventions, see *supra* note 29 and accompanying text.

230. *Id.*

the protection of intellectual property on the global information superhighway.²³¹ Thus, the Database Directive may simply be a preliminary device for unifying the European Union on database protection and improving its bargaining position *viz a viz* the United States, which apparently hopes to convince the European Union that the protocol should also enhance the scope of copyright protection for digital versions of what currently represents a substantial percentage of U.S. exports—namely audiovisual and musical works, sound recordings and computer programs.

At the recent urging of the United States and the European Union, the WIPO reportedly moved a step closer to convening a “‘diplomatic conference’ to draft a protocol to the Berne Convention that would include new digital technologies and a possible ‘new instrument’ to protect copyrights in phonograms.”²³² Commenting on a recent meeting of a WIPO appointed Committee of Experts, the chairman of the committee (a European) stated that “there was practically unanimous agreement that questions related to transmission, communication to the public, and public performance—as well as digital transmission—should be addressed in the proposed protocol.”²³³

On behalf of the United States, an official of the USPTO urged that the WIPO address this issue at the upcoming diplomatic conference, scheduled in principle to take place in December 1996 and stated in passing that “the United States supports an EU proposal on the table for possible international harmonization of a *sui generis* form of protection for databases.”²³⁴

In order to understand what the United States hopes to gain from this apparent bilateral bargain in the making, it is necessary to turn to the recently issued White Paper.

231. The possibility of a new Berne Convention protocol has been looming for quite some time. See, e.g., Ralph Oman, *Berne Revision: The Continuing Drama*, 4 *FORDHAM INTELL. PROP. MEDIA & ENT. L.J.* 139, 146 (1993) (noting that WIPO first formally tabled new subjects for possible inclusion in protocol in November 1991). The successful conclusion of the Uruguay Round in 1993, however, apparently served to change the focus of these ongoing deliberations. See generally Ralph Oman, *Intellectual Property After the Uruguay Round*, 42 *J. COPYRIGHT SOC'Y U.S.A.* 18, 37-38 (1994) (discussing WIPO agenda coming out of GATT).

232. *WIPO Moves on Berne Conference to Draft New Technology Protection*, 13 *Int'l Trade Rep. (BNA)* 250 (Feb. 14, 1996).

233. *Id.*

234. *Id.*

B. *Digital Copyright Protection*

In September 1995, the Clinton administration's Working Group on Intellectual Property Rights issued its White Paper (*i.e.*, final report), entitled Intellectual Property and the National Information Infrastructure.²³⁵ Significantly, the White Paper was released simultaneously in Washington, D.C. and at a meeting of the WIPO, in Geneva, Switzerland.²³⁶ The White Paper makes clear that its proposals for amending U.S. copyright law to enhance domestic protection for digital works are also intended as a model for a possible Berne Convention protocol currently being considered by the Committee of Experts that WIPO has convened.²³⁷

The White Paper's proposed amendments to existing U.S. copyright law have already sparked considerable critical comment in the United States. Although the White Paper characterizes its proposed amendments as no more than "the fine tuning that technological advances necessitate, in order to maintain the balance of the law in the face of onrushing technology,"²³⁸ critics have characterized the proposed amendments as a "copyright grab," that will radically change the balance in copyright law, maximizing copyright protection for digital works, with little consideration given to the right of the public to access and use those works.²³⁹ These critics argue that the proposed amendments, which were introduced into both houses of Congress at the end of September 1995,²⁴⁰ will in effect "transform the emerging information superhighway into a publisher-dominated toll road."²⁴¹

235. WHITE PAPER, *supra* note 10.

236. Leslie A. Kurtz, *Copyright and the National Information Infrastructure in the United States*, 18 EUR. INTELL. PROP. REV. 120, 125 (1996).

237. WHITE PAPER, *supra* note 10, at 149-55. See generally Samuelson, *supra* note 80, at 26 (discussing efforts to achieve international harmonization).

238. WHITE PAPER, *supra* note 10, at 17.

239. Pamela Samuelson, *The Copyright Grab*, WIRED, Jan. 1996, at 135 [hereinafter Samuelson *Copyright Grab*]; see also Pamela Samuelson, *The NII Intellectual Property Report*, 37 COMM. OF THE ACM 21, 22 (Dec. 1994) [hereinafter Samuelson, *NII Intellectual Property Report*]. Regarding the initial draft of the NII Report, Samuelson concludes:

To put the point plainly, let me say that not since the King of England in the 16th century gave a group of printers exclusive rights to print books in exchange for the printers' agreement not to print heretical or seditious material has a government copyright policy been so skewed in favor of publisher interests and so detrimental to the public interest.

Id.

240. See National Information Infrastructure Copyright Protection Act of 1995, S. 1284, 104th Cong. (1995) and H.R. 2441, 104th Cong. (1995) (proposing amendment of copyright laws to adopt to NII).

241. Samuelson, *Copyright Grab*, *supra* note 239, at 135.

The controversy over the White Paper is not limited to the effect of the amendments it proposes to U.S. copyright law; it extends as well to its view of the scope of existing copyright protection in the United States. Far from being an objective statement, the White Paper's review of existing law is said to take on the qualities of a partisan brief, adopting the position of the copyright industry on virtually every controversial issue of the day, without even acknowledging that contrary arguments or authority exists.²⁴²

The particular points of controversy can best be understood by reference to the exclusive rights that U.S. copyright law confers on copyright owners. Section 106 of the 1976 Copyright Act²⁴³ provides that, subject to a variety of limitations, including the fair use privilege contained in section 107, owners of a copyright are to have five exclusive rights, consisting of the right "(1) to reproduce the copyrighted work . . . ; (2) to prepare derivative works based upon the copyrighted work; (3) to distribute copies . . . of the copyrighted work to the public . . . ; [and (in the case of some but not all categories of works)] (4) . . . to perform . . . publicly; and (5) . . . to display the copyrighted work publicly."²⁴⁴

The first point of controversy concerns the current scope of the reproduction right, as it applies to (1) computer network users and (2) electronic bulletin board operators and on-line service or access providers. The White Paper takes the position that under existing U.S. copyright law, a potentially infringing reproduction occurs whenever "a work is placed in a computer, whether on a disk, diskette, [read-only memory (ROM)] or other storage device," or even in a computer's random access memory (RAM) if the work remains in RAM for more than a "very brief period."²⁴⁵

If the latter part of this reading of U.S. copyright law is indeed correct, it will severely restrict the ability of computer network users to lawfully "browse" copyrighted digital works. Because a work cannot be accessed on a computer without a copy being made in RAM, it has been suggested that the White Paper's approach to fixation and copying will in effect confer on copyright owners an "exclusive right to read," enabling them to charge royalties for virtually all electronic browsing of copyrighted works.²⁴⁶ Of course, electronic

242. Kurtz, *supra* note 236, at 120.

243. 17 U.S.C. § 106 (1994).

244. *Id.*

245. WHITE PAPER, *supra* note 10, at 65.

246. See Samuelson, *Copyright Grab*, *supra* note 239, at 137; see also Jessica Litman, *The Exclusive Right to Read*, 13 CARDOZO ARTS & ENT. L.J. 29, 31-32 (1994) (describing draft of White Paper as "enhanc[ing] the exclusive rights in the copy-

“browsing” is not exactly the same as browsing a hard copy of a work in a library or a bookstore. A closer analogy would be to browsing a copyrighted slide collection or a microfilm using a projector that is also capable, either automatically or with a single keystroke, of photocopying all or parts of the copyrighted work. On the other hand, neither is entering a work in a computer’s RAM exactly the same as entering it in other forms of electronic storage or memory as RAM loses all of its information when the computer is turned off.²⁴⁷

A work which resides only in the RAM of a computer, and not in more permanent storage, is arguably not “fixed” within the meaning of section 101 of the Copyright Act, which defines a work as fixed when its embodiment in a material object “is sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration.”²⁴⁸ The legislative history of the 1976 Copyright Act confirms that this definition of fixation is designed to exclude “purely evanescent or transient reproductions such as those projected briefly on a screen, shown electronically on a television or other cathode ray tube, or captured momentarily in the ‘memory’ of a computer.”²⁴⁹

The White Paper, on the other hand, concludes that a work which resides in RAM for more than a “very brief period” is necessarily fixed, irrespective of any other indicia of permanence or stability in the work’s embodiment in a material object.²⁵⁰ While the

right bundle so far as to give the copyright owner the exclusive right to control reading”).

247. See Bradley J. Nicholson, *The Ghost in the Machines: MAI Systems Corp. v. Peak Computer, Inc. and the Problem of Copying in RAM*, 10 HIGH TECH. L.J. 147, 148-50 (1995) (describing how RAM operates).

248. 17 U.S.C. § 101 (1994). A work may be fixed, within the meaning of § 101 of the Copyright Act, if it is automatically “saved” on the hard drive of a browser’s computer. A work may also be fixed if it is “mirrored” or “cached” in the server of an on-line service or access provider. Mirroring involves replication of information available at commonly visited ftp sites. Caching involves retaining copies of Web pages that have previously been visited by customers of that services. For a further discussion of mirroring and caching, and the White Paper’s failure to discuss either, see Samuelson, *Copyright Grab*, *supra* note 239, at 26-27.

249. H.R. Rep. No. 94-1476 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5666. Early on, the White Paper cites this statement from the legislative history without comment but later chooses to ignore it and still later appears to repudiate it. WHITE PAPER, *supra* note 10, at 28, 65-66. For a discussion of this aspect of the White Paper, see *infra* note 250.

250. The White Paper cites, with apparent approval, a trial court case, *Advanced Computer Services of Michigan, Inc. v. MAI Systems Corp.*, 845 F. Supp. 356 (E.D. Va. 1994), which comes to the bizarre conclusion that fixation of a program in RAM is somehow confirmed, not refuted, by the argument that it “disappears from

White Paper can admittedly cite case law for the proposition that loading a computer program into RAM amounts to making a copy,²⁵¹ neither the cases nor the White Paper's own position can withstand close scrutiny,²⁵² which is probably why the White Paper attempts to characterize the point as well-settled and later tries to argue that the meaning of the 1976 Copyright Act is so clear that the legislative history can be entirely disregarded.²⁵³

RAM the instant the computer is turned off," but then concedes that if the computer is turned off within seconds or fractions of a second of the loading, "the resulting RAM representation of the program arguably would be too ephemeral to be considered 'fixed' or a 'copy' under the Act." *Id.* at 363. This is apparently what the White Paper means by a "very brief period." WHITE PAPER, *supra* note 10, at 65 n.202.

251. WHITE PAPER, *supra* note 10, at 65 (citing, *inter alia*, MAI Sys. Corp. v. Peak Computer, Inc., 991 F.2d 511 (9th Cir. 1993)).

252. For a critique of the MAI Systems case, on which the White Paper relies, see Nicholson, *supra* note 247, at 165-74. For critiques of the White Paper itself on this point, see Litman, *supra* note 246, at 40-43 and Samuelson, *Copyright Grab*, *supra* note 239, at 135-38.

The White Paper also relies on a 1978 report, called the CONTU Final Report, which recommended changes to U.S. copyright law that would explicitly acknowledge that computer programs are copyrightable works. CONTU Final Report, *supra* note 109. The CONTU Final Report noted that "[t]he introduction of a work into a computer memory would, consistent with the [current] law, be a reproduction of the work." Litman, *supra* note 246, at 40.

But the White Paper (and the CONTU Final Report) failed to point out that the phrase "computer memory" can mean different things. Currently, computer memory is understood as consisting of (1) RAM (random access memory), also known as "volatile" or short-term memory, because it is composed of evanescent electric signals that will disappear when the computer is turned off; (2) ROM (read only memory), which consists of information permanently imprinted on a computer chip or, more recently, on a CD-ROM; and (3) other forms of storage (also known as secondary memory, to distinguish it from RAM and ROM), which utilize such magnetic media as floppy discs, tapes or a computer's hard drive. See Nicholson, *supra* note 247, at 148-49. Merely because storing a work in the second and third type of memory constitutes a reproduction does not necessarily mean that storing a work in RAM is a reproduction. The author is indebted to Dr. Will D. Gillett, Associate Professor of Computer Science at Washington University, for his helpful comments on what the term "computer memory" can be said to encompass. For a critique of the original CONTU Final Report, including its technical shortcomings with respect to this particular point, see Samuelson, *Case Against Copyright Protection*, *supra* note 109, at 694-705.

253. WHITE PAPER, *supra* note 10, at 72 n.226. The White Paper acknowledges that the 1976 Act's legislative history describing the new display right, distinguishes displays "on a screen or a tube" from reproductions, but dismisses the significance of this statement, saying:

This language, written before the advent of the personal computer, applies easily to displays with which Congress was familiar in 1976 (those rendered by broadcast receivers), but is inapplicable to digital "browsing" where the law itself clearly—without resort to explanatory Congressional language—defines such acts as implicating the display *and* reproduction rights.

Id. By this sleight of hand, the White Paper is apparently able to ignore an earlier remark in that same legislative history, explicitly stating that the definition of "fixa-

For example, according to the logic of the White Paper, one who uses a microfilm or slide projector to project an image on a screen for more than a "very brief period" (whatever that means) would in effect be "reproducing," and not merely "displaying," the image on the screen.²⁵⁴ Thus, even though such a display may not be public (and would thus not infringe the "public display" right), the hapless operator of the projector could nevertheless be said to have infringed the copyright holder's exclusive reproduction right. Yet, the legislative history of the 1976 Copyright Act states quite clearly that "the showing of images on a screen or tube" will not be a violation of the reproduction right, although it might come within the scope of the public display right.²⁵⁵ Nor can it be argued that RAM is more analogous to the microfilm or slide than to the image on the screen, for like the image on the screen, but unlike the microfilm or the slide, the contents of RAM disappear when the computer is turned off.

In an effort to bolster its position, the White Paper hastens to note that just because copying has occurred does not mean that an infringement has occurred. The White Paper cites as possible escape hatches the fair use privilege and other statutory exemptions, as well as the judicially created doctrine that de minimis copying will not result in liability.²⁵⁶ But the White Paper's own ambiguous stance on the fair use privilege offers electronic browsers little cause

tion" in the 1976 Act would "exclude from the concept purely evanescent or transient reproductions such as those projected briefly on a screen, shown electronically on a television or other cathode ray tube, or captured momentarily in the 'memory' of a computer." H.R. Rep. No. 94-1476 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5666. For a discussion of the White Paper's disregard of the legislative history, see *supra* note 249-52 and accompanying text. In actuality, Congress seems to have had a clearer understanding of computer technology in 1976 than its own expert commission, known as CONTU, had in 1978. For a discussion of CONTU and computer memory, see *supra* note 252.

254. This is essentially the hypothetical described in *MAI Systems*:

[O]ne need only imagine a scenario where the computer, with the program loaded into RAM, is left on for extended periods of time, say months or years, or indeed left on for the life of the computer. In this event, the RAM version of the program is surely not ephemeral or transient; it is, instead, essentially permanent and thus plainly sufficiently fixed to constitute a copy under the Act.

845 F. Supp. at 363. On the strength of this unlikely scenario and in apparent disregard of the language and the legislative history of the Copyright Act, the court concludes that a work is also fixed in RAM where, as in the case before it, "the computer is left on for a time measured in minutes, if not longer." *Id.* For a discussion of the Copyright Act, see *supra* notes 249-53 and accompanying text.

255. H.R. Rep. No. 94-1476 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5675. For the White Paper's dubious attempt to dismiss this piece of legislative history, see *supra* notes 249-52 and accompanying text.

256. WHITE PAPER, *supra* note 10, at 65 n.203.

for reassurance. Early on, in an effort to characterize its proposed amendments to the 1976 Copyright Act as no more than “fine tuning” of existing copyright law, the White Paper notes, but seemingly rejects the argument that “because it may now be technically feasible to meter each use of a copyrighted work, and to charge a user a fee for the use, the concept of fair use has no place in the NII environment.”²⁵⁷ In its more extended discussion of the fair use doctrine, however, the White Paper concedes that “it may be that technological means of tracking transactions and licensing will lead to reduced application and scope of the fair use doctrine.”²⁵⁸ In other words, all that the White Paper rejects is an immediate legislative repeal of the fair use doctrine as it applies to the NII environment; it does not necessarily oppose, and even hints that it might favor, judicial determinations reducing the application and scope of the fair use doctrine in cyberspace.²⁵⁹

The White Paper’s conclusion about how the reproduction right currently applies to electronic bulletin board operators and on-line service or access providers is equally controversial. Here, the controversy is not so much over the White Paper’s view that whenever a digitized file is “uploaded” from a user’s computer to a bulletin board system (BBS) or other server, or “downloaded” from the BBS or other server, a potentially infringing copy is made.²⁶⁰ Rather, the controversy is over its glib conclusions that (1) a BBS operator or on-line service or access provider will be strictly liable, under existing U.S. copyright law, as a direct infringer of the reproduction right, whenever a user uploads or downloads infringing material, whether or not the BBS operator or service or access provider has reason to know about infringement or has taken reasonable steps to prevent its occurrence and (2) that, in any event, a

257. *Id.* at 17.

258. *Id.* at 82 (citing *American Geophysical Union v. Texaco Inc.*, 802 F. Supp. 1 (S.D.N.Y. 1992), *aff’d*, 37 F.3d 881, 892 (2d Cir. 1994), which established liability “for the unauthorized photocopying of journal articles based in part on the court’s perception that obtaining a license for the right to make photocopies via the Copyright Clearance Center was not unreasonably burdensome”). The White Paper fails to add that, under the fair use doctrine, there would be a critical difference between this case, where an academic journal sued a commercial enterprise for systematically photocopying articles, and the converse case, where a commercial digital content provider would be claiming that, given the availability of metering, systematic electronic browsing by academics should not be considered fair use.

259. *Id.*

260. *Id.* at 64-66.

BBS operator or service or access provider will be vicariously liable for the conduct of its users.²⁶¹

According to critics, this dubious reading of existing U.S. case law would in effect impose an obligation on access and service providers to serve as "copyright police," without any particular regard to whether this new industry is in fact capable of exercising that function.²⁶² The White Paper is said to be "quite frank in its determination that on-line service providers should become centralized control centers for enforcing copyright law,"²⁶³ while ignoring a variety of constraints, including provisions of the Electronic Communications Privacy Act,²⁶⁴ which might inhibit the industry's exercise of that function.

In support of its view that under current U.S. copyright law on-line service providers directly infringe a copyright owner's reproduction right whenever a user uploads or downloads infringing material, the White Paper cites two recent trial court cases, both of which involved only BBS operators as defendants, and both of which were arguably decided on grounds other than a finding of direct infringement of the copyright owner's reproduction right.²⁶⁵

261. *Id.* at 114-24. The White Paper concedes that determining the standard for service provider liability "is a difficult issue, with colorable arguments on both sides." *Id.* at 114. It also assumes, however, that any standard other than strict liability for direct infringement "would be a significant departure from current copyright principles and law and would result in a substantial derogation of the rights of copyright owners." *Id.* In fact, the question is far from well-settled. For a further discussion of service provider liability, see *infra* notes 262-64 and accompanying text.

The bulk of the White Paper's discussion of on-line service provider liability is devoted to justifying the imposition of strict liability for direct infringement. At points in its discussion, however, the White Paper offers justifications that are more appropriate to a discussion of vicarious liability. WHITE PAPER, *supra* note 10, at 117-18. The White Paper also misleadingly suggests that those held vicariously liable "are not held to strict liability, but rather to a higher threshold for liability." *Id.* at 115. It is, of course, true that one party will be held vicariously liable for the "fault" of another only where there is a "right and ability" to supervise the faulty party. But a finding of a "right and ability" to supervise is not tantamount to a finding of an unreasonable failure to supervise (*i.e.*, negligence). Further, where the basis for the "faulty" party's liability is itself strict liability for harm done, as it is in the case of direct copyright infringement, vicarious liability may be imposed in the absence of any actual "fault" (*i.e.*, negligence or intentional misconduct) on the part of anyone.

262. See Samuelson, *Copyright Grab*, *supra* note 239, at 136, 190-91 (questioning technical feasibility of on-line services to continuously monitor user accounts).

263. *Id.* at 190.

264. Electronic Communications Privacy Act of 1986 (ECPA), Pub. L. No. 99-508, 100 Stat. 1848 (1986) (codified as amended in scattered sections of 18 U.S.C. (1994)).

265. See WHITE PAPER, *supra* note 10, at 120-22 (discussing Playboy Enters., Inc. v. Frena, 839 F. Supp. 1552 (M.D. Fla. 1993), and Sega Enters., Ltd. v.

In a more recent trial court case, which was decided after the White Paper was issued and specifically ruled on the issue of on-line service provider liability for direct infringement, the court cited both of the cases the White Paper relied on and the White Paper itself, but nevertheless declined to hold either a BBS operator or an Internet access provider directly liable for a user's uploading of copyrighted material onto their servers.²⁶⁶

The court concluded that BBS operators and on-line access providers could be held liable in such a case only on the basis of (1) contributory infringement, if they had knowledge of the infringing activity and materially contributed to it or (2) vicarious liability, if they had both the right and the ability to control the user and received a direct financial benefit from the infringing activity.²⁶⁷

If the scope of the reproduction right were actually as clear-cut and sweeping as the White Paper claims, there would arguably be little need to propose amendments expanding any of the other exclusive rights of the copyright holder. Yet, that is exactly what the White Paper proceeds to do. Its first specific proposed amendment of the 1976 Copyright Act would "expressly recognize that copies or phonorecords of works can be distributed to the public by transmis-

MAPHIA, 857 F. Supp. 679 (N.D. Cal. 1994)). Both cases were brought against BBS operators. As the White Paper itself concedes, the *Playboy* case was actually based on a finding of infringement of the distribution right, apparently because of the court's "uncertainty whether the operator of the bulletin board system could itself be held to have reproduced a work that was (a) uploaded by one subscriber and (b) downloaded by another." *Id.* at 68. It also concedes that the *Sega* case was based, at least in part, on a finding of contributory infringement—i.e., the "BBS operator . . . sold special copiers, the 'only substantial use' of which was to copy *Sega's* copyrighted video games." *Id.* at 114 (citing *Sega*, 857 F. Supp. at 685).

266. *Religious Tech. Ctr. v. Netcom On-Line Communication Servs., Inc.*, 907 F. Supp. 1361 (N.D. Cal. 1995). The court first disposes of the two cases relied on in the White Paper, finding that neither provides a basis for a finding of direct infringement of the reproduction right by either the BBS operator or the service provider. *Id.* at 1370-71. Then, the court notes its disagreement with the *Sega* case, to the extent that *Sega* "holds that BBS operators are directly liable for copyright infringement when users upload infringing works to their systems." *Id.* at 1371 n.17. The court goes on to classify the holding as dicta "as there was evidence that the defendant knew of the infringing uploads by users and, in fact, actively encouraged such activity" thus suggesting that the *Sega* decision was in fact based on a finding of contributory infringement. *Id.*

267. *Id.* at 1373-77. With respect to the vicarious liability of the on-line service provider, the court discusses at length what is meant by "direct financial benefit" and ultimately concludes that, because the plaintiffs "failed to raise a question of fact on this vital element, their claim of vicarious liability fails." *Id.* at 1377. It also rules in favor of the BBS operator as a matter of law, thus leaving for trial only the issue of the on-line service provider's potential liability for contributory infringement. *Id.* at 1381.

sion, and that such transmissions fall within the exclusive distribution right of the copyright owner."²⁶⁸

To be sure, "[i]t is not [entirely] clear under the current law that a transmission . . . constitute[s] a distribution of copies or phonorecords of a work."²⁶⁹ As the White Paper concedes, "the right to distribute copies of a work has traditionally covered [only] the right to convey a possessory interest in a tangible copy of the work," and is substantially circumscribed by the "first sale" doctrine, which limits the copyright owner's distribution right to the initial distribution of a particular lawful copy of the copyrighted work.²⁷⁰ By contrast, transmissions are treated under current copyright law merely as a means of communicating a performance or display.²⁷¹

The application of the distribution right to digital transmissions, however, is no more uncertain than the application of the reproduction right to works residing in a computer's RAM or to BBS or on-line service or access providers whose subscribers upload or download copyrighted works. For instance, one of the two cases the White Paper cites for the proposition that a BBS operator directly infringes the reproduction right when its server is used by subscribers to upload or download copyrighted works, in fact based its finding of direct infringement on the distribution and public display rights, not on a violation of the reproduction right.²⁷² The White Paper concedes that "[t]he court may not have focused on the reproduction right, [precisely] because of its uncertainty whether the operator of the bulletin board system [BBS] could itself be held to have reproduced a work that was (a) uploaded by one subscriber and (b) downloaded by another."²⁷³

In short, the White Paper is highly selective about which uncertainties in existing U.S. copyright law it would like Congress to address. That very selectivity makes critics suspicious about the White Paper's motivation in proposing that the distribution right be

268. WHITE PAPER, *supra* note 10, at 213.

269. *Id.*

270. *Id.* at 68-69. The "first sale" doctrine is codified in the Copyright Act, 17 U.S.C. § 109 (1994). Section 109 lists two exceptions to the first sale doctrine, which in effect endows the copyright holder with an exclusive right to authorize the rental of computer programs or sound recordings. 17 U.S.C. § 109(b)(1)(a). These exceptions implicitly recognize that the primary purpose of such rentals is to make unauthorized copies of the copyrighted work.

271. 17 U.S.C. § 101 (1994) (defining term "transmit" as communication of "a performance or display . . . by any device or process whereby images or sounds are received beyond the place from which they are sent").

272. For a discussion of one of the cases the White Paper cites (*Playboy*), see *supra* note 265 and accompanying text.

273. WHITE PAPER, *supra* note 10, at 68 (footnote omitted).

amended so as to expressly apply to transmissions. The White Paper's explanation for its proposed amendment is that there is simply "no reason to treat works that are distributed in copies to the public by means of transmission differently than works distributed in copies to the public by other, more conventional means,"²⁷⁴ particularly given that, "[i]n the future, transmission may become the conventional means of distribution."²⁷⁵

Critics, however, suggest that "the real purpose behind the proposed digital transmission right is to enable copyright owners to control all digital performances and displays of copyrighted works, without regard to whether they are public or private."²⁷⁶ The White

274. *Id.* at 216.

275. *Id.*

276. See *NII Intellectual Property Report*, *supra* note 239, at 23. The White Paper's only reference to the effect that its proposed amendment of the distribution right will have on the public performance right is concerned entirely with assuring owners of the latter right that the new distribution right will not in any way diminish the economic value of the existing public performance right. See WHITE PAPER, *supra* note 10, at 214 n.536. The White Paper nowhere acknowledges that any public interest is being served by the current limitation of the exclusive performance right to "public" performances. Nor does it ever acknowledge that its proposal to classify transmissions as a form of distribution might have the practical effect of extending the overall scope of copyright protection to nonpublic as well as public performances.

The White Paper does make oblique footnote reference to the fact that "[t]he term 'public' as used in connection with the distribution right is not coincident with the meaning assigned to that term in connection with the public performance or public display right." *Id.* at 215 n.540. The definition of "publication" in § 101 of the Copyright Act makes it clear that "[a] public performance or display of a work does not of itself constitute publication." 17 U.S.C. § 101. The converse, however, is also true; just because a transmission does not happen to constitute a "public" performance does not mean that the transmission will not constitute a "public" distribution. A performance or display is "public" only if (1) it occurs "at a place open to the public or at any place where a substantial number of persons outside of a normal circle of a family and its social acquaintances is gathered" or (2) it is transmitted or otherwise communicated to such a place or to the public. *Id.* (defining "publicly"). Thus, a transmission to a place not open to the public, where only a normal circle of a family and its social acquaintances is gathered, will not constitute a public performance under existing law, but may constitute a public distribution under the proposed amendment.

The White Paper does insist that "the transmission of a copyrighted work from one person to another in a private e-mail message would not constitute a distribution to the public." WHITE PAPER, *supra* note 10, at 215. Yet, despite its own previous assertions about what constitutes an infringing reproduction of a work in a computer and what constitutes a direct infringement of the reproduction right by an on-line service or access provider, it fails to consider that any on-line service or access provider who facilitates the transmission of that e-mail message could be held liable for reproducing the work in its own computer if the message remained there for more than a "very brief period," whether or not the further distribution of that copy to the receiver constitutes a public distribution. For a discussion of what constitutes infringing reproduction, see *supra* notes 244-66 and accompanying text. Indeed, the White Paper makes this exact argument by way of explaining that the "first sale" doctrine will, in effect, not apply to distributions by transmis-

Paper, in effect, concedes that this new digital distribution right will in fact be different from the more conventional distribution right, when it asserts that distribution by transmission will be unencumbered by the "first sale" doctrine that limits the distribution right in other contexts.²⁷⁷ According to the White Paper, unauthorized distribution by transmission, unlike more conventional distributions, will necessarily involve electronic "copying," and thus a violation of the reproduction right, which (unlike the distribution right) is not limited by the first sale doctrine.²⁷⁸

The White Paper proposes adding two new provisions to the U.S. copyright law that are equally controversial. One provision would make it illegal to import, manufacture or distribute any device or service, the "primary purpose or effect of which is to . . . circumvent . . . any . . . system [such as encryption] which prevents or inhibits the violation of any of the exclusive rights under Section 106."²⁷⁹ This provision would in effect legislatively overrule the judicially developed test for contributory infringement, which requires that a device have no substantial noninfringing uses.²⁸⁰ As Part II of this Article has pointed out, not all attempts to bypass copy-protection or other security systems are necessarily illegitimate. Yet, this provision is so broad that it could be interpreted as prohibiting virtually any device designed to aid in the decompilation of mass-marketed computer programs.²⁸¹ Object-code, after all, is arguably a kind of encryption system which prevents or inhibits the translation of the program into human-readable form and the preparation of other derivative works.

The second new copyright provision that the White Paper recommends would make it illegal to knowingly remove or alter any

sion. WHITE PAPER, *supra* note 10, at 95 ("[T]ransmission by means of current technology involves both the reproduction of the work and the distribution of that production.").

277. For the White Paper's claim that distribution by transmission should not be treated differently from other distributions, see WHITE PAPER, *supra* note 10, at 92-95.

278. For a critique of the White Paper's assertion that electronic transmissions necessarily involve reproduction, even when a work merely resides momentarily in a computer's memory, see *supra* notes 250-59 and accompanying text.

279. WHITE PAPER, *supra* note 10, at 230.

280. See, e.g., *Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417, 440 (1984) (reasoning that manufacturers of staple articles of commerce that are capable of substantial noninfringing uses should not be held liable as contributory infringers).

281. See Samuelson, *Copyright Grab*, *supra* note 239, at 190 (noting White Paper's endorsement of changes in commercial law to validate common terms in shrink-wrap licenses, including prohibitions on decompilation).

copyright management information, knowingly distribute or import copyright management information which has been altered, or knowingly distribute or import works from which copyright management information has been removed.²⁸² This provision becomes less innocuous when one discovers that “copyright management information” is defined to include not only the name and other identifying information of the author or copyright owner of the work, but also any terms and conditions for uses of the work.²⁸³ The latter phrase apparently prohibits the removal of electronic “shrink-wrap licenses,” suggesting that the White Paper believes that such terms can constitute a valuable and enforceable copyright management tool, at least in an NII environment.²⁸⁴ The provision becomes even less innocuous when it is understood that copyright management information systems could include “smart” systems that would “have the ability to secretly report back to the copyright owner via the network on what the user was doing with the work, and the ability to search the consumer’s hard disk and report back on what else was there.”²⁸⁵ This is apparently the very

282. WHITE PAPER, *supra* note 10, at 235-36.

283. *Id.* at 235.

284. *Id.* (stating that “copyright management information . . . may be critical to the efficient operation and successes of NII”). That impression is confirmed in the White Paper’s discussion of on-line licensing transactions, where the White Paper asserts that “on-line licenses should be encouraged because they offer efficiency for both licensors and licensees.” *Id.* at 58. It also asserts that:

[S]tate validating statutes—similar to those used to validate shrink wrap licenses—can be used for on-line licenses to help overcome concerns regarding adhesion; and such statutes should not be preempted as long as they do not attempt to grant rights equivalent to any of the exclusive rights within the general scope of copyright.

Id. at 58-59. For a recent appellate decision echoing that view, see *ProCD, Inc. v. Zeidenberg*, 86 F.3d 1447 (7th Cir. 1996), discussed *supra* note 145. For an argument that shrink-wrap license restrictions on reverse engineering do grant rights equivalent to those within the general scope of copyright and thus are preempted under section 301 of the Copyright Act, and may also undermine the policies of federal patent law, see *McManis*, *supra* note 106, at 88-95. For a discussion of shrink-wrap contracts in cyberspace, compare Mark A. Lemley, *Shrinkwraps in Cyberspace*, 35 JURIMETRICS J. 311 (1995) with Robert L. Dunne, *Deterring Unauthorized Access to Computers: Behavior in Cyberspace Through a Contract Law Paradigm*, 35 JURIMETRICS J. 1 (1994).

285. Samuelson, *Copyright Grab*, *supra* note 239, at 188. One example of a smart system is a software device called a “cookie.” For a technical description of cookies, see http://www.netscape.com/newsref/std/cookie_spec.html, which describes a cookie as “a general mechanism which server side connections . . . can use to both store and retrieve information on the client side of the connection.” This same technical discussion goes on to describe how “cookies” work:

A server, when returning an HTTP object to a client, may also send a piece of state information which the client will store. Included in that state object is a description of the range of URLs for which that state is valid. Any future HTTP requests made by the client which fall in that

type of copyright management system that the White Paper had in mind when it suggests that "technological means of tracking trans-

range will include a transmittal of the current value of the state object from the client back to the server.

Id.

An on-line discussion of the risk to privacy posed by "cookies" can be found at <http://www.utopia.com/ mailing/ rre/ HTTP.cookie.privacy.risk.html>. The on-line discussion of the HTTP cookie privacy risk includes the following report from one computer user:

I recently installed Netscape 3.0b4, a beta [i.e. test] version, to try out the new (compared to 1.1N) features

One of the new features, a security feature strangely categorized as a "network" feature, queries the user before allowing "cookies" to be set. Out of curiosity I set it so as to find out how often this feature was invoked. . . .

I was surprised to find that every night for the last two weeks after enabling this I've been handed a "cookie" by a site I never knowingly visited, at <http://ad.doubleclick.net>.

Upon visiting this site I discovered they engage in attempts to collect various data about web users including their o/s [operating systems]. Why they feel it necessary to "ping" me each night to set a cookie I do not know, but it seems they are also collecting data about browser usage. Such a statistic regarding times online while in a browser would seem valuable from a marketing standpoint.

While cookies may be useful when voluntary and insofar as they may be helpful to the user [c]ookies from marketing companies benefit me not.

Categorize this as a risk to users of older netscapes lacking the conditional-cookie setting?

<http://www.utopia.com/ mailing/ rre/ HTTP.cookie.privacy.risk.html>. An on-line discussion of the risk to privacy posed by a software device called a "cookie" can currently be found at <http://www.utopia.com/ mailings/ rre/ HTTP.cookie.privacy.risk.html>.

For a more sanguine account of the use of cookies, see Thomas E. Weber, *Marketers' Tracking Methods May Not Be Cause for Panic*, THE WALL ST. J. INTERACTIVE EDITION, June 27, 1996, who nevertheless concedes that the use of cookies is controversial:

With cookies, which have come into use only in recent months, a Web site places a tiny file on a visitor's computer that serves as a kind of tracking beacon. The site doesn't know your name or e-mail address, but it does know that you represent a distinct user. (Curious? Search your hard drive for a file called "cookies" and open it in a word-processing program to see who has served you a cookie).

Cookies feed some of the more dire privacy scenarios. With them, a Web magazine can see which articles you read; a merchant can tell not only which products you bought, but also which product descriptions you simply viewed. . . .

Still, some of these fears are no doubt overblown. To begin, surfing is an anonymous activity, and cookies can't automatically penetrate that shield. When you visit a Web site, the computer maintaining that site may know your domain, but it can't know your identity, or even your e-mail address, unless you volunteer it. Of course, plenty of sites that sell products on-line require names, addresses, e-mail addresses and credit card information. Providing it, however, is your choice.

Id. Still, one wonders how many Web users who have provided such information are aware that "cookie" technology may have been implanted in their computers.

actions and licensing will lead to reduced application and scope of the fair use doctrine."²⁸⁶

Yet, as one critic points out, the White Paper "contains no promises that consumers will be charged lower prices in exchange for giving up fair use, first sale, and other rights."²⁸⁷ In the view of this critic, "[h]istory teaches us to be skeptical about claims that giving publishers broad monopoly rights will be in the public interest."²⁸⁸ There is said to be no particular reason to believe that the grant of strong copyright protection for digital works will necessarily result in ubiquitous access and low prices.²⁸⁹

In addition to proposing specific amendments to U.S. copyright law, the White Paper comments at length on the international implications of the emerging global information superhighway. The White Paper cautions that the existing international system of copyright protection could make electronic commerce over the global information infrastructure (GII) "difficult unless the United States moves promptly to identify needs for protection and initiates efforts to work toward a new level of international copyright harmonization."²⁹⁰

In the discussion that follows, it becomes clear that what the White Paper means by working "toward a new level of international copyright harmonization" is utilizing its proposed revisions of U.S. copyright law as a blueprint for developing new international norms. For example, the White Paper specifically asserts that "work on a Berne Protocol and New Instrument should focus on issues not addressed in TRIPS, such as protection of rights management information, the use of technical security measures and the prohibition of devices and services whose primary purpose or effect is to defeat technical security measures."²⁹¹ The White Paper claims that "[o]ne of the most important issues for international norm setting

286. WHITE PAPER, *supra* note 10, at 82.

287. Samuelson, *Copyright Grab*, *supra* note 239, at 191.

288. *Id.*

289. *Id.*; cf. Reichman, *Legal Hybrids*, *supra* note 59, at 2496-97 (expressing somewhat analogous concern that Database Directive might "confer exorbitant market power on first comers," and noting that "the harsh conditions and high prices that electronic database publishers increasingly impose on users everywhere, including institutional users such as libraries and research organizations, have already alarmed the United States Office of Technology Assessment."); OFFICE OF TECHNOLOGY ASSESSMENT, U.S. CONGRESS, FINDING A BALANCE: COMPUTER SOFTWARE, INTELLECTUAL PROPERTY, AND THE CHALLENGE OF TECHNOLOGICAL CHANGE 177-79 (1992) (noting high subscription fees, user charges, etc.).

290. WHITE PAPER, *supra* note 10, at 131.

291. *Id.* at 149.

is to define the nature of a dissemination of a work or a transmission of a work in digital form.”²⁹²

In the course of discussing international harmonization, the White Paper also makes two other salient—if not entirely consistent—points. First, the White Paper emphasizes that the principle of national treatment is the cornerstone of the Paris and Berne Conventions and is also a keystone of international trade agreements, such as GATT and the recently established WTO.²⁹³ Although conceding “that there is some controversy over the scope of the national treatment obligation under the Berne Convention and its application to what some [countries] may regard as newly created rights and subject matter,”²⁹⁴ the White Paper nevertheless takes the position that intellectual property rights “must unequivocally be granted in national legislation fully on the basis of national treatment for *all* rights and benefits.”²⁹⁵ At an absolute minimum, the White Paper says, national treatment must apply to the minimum obligations established in any WIPO-sponsored Berne Convention protocol or New Instrument.²⁹⁶

The obvious targets of these remarks are the various European countries which currently grant foreign nationals protection for a variety of so-called “neighboring rights”—soon to include the new *sui generis* database right—solely on the basis of material reciprocity.²⁹⁷ By contrast, the White Paper points out that recent “U.S.

292. *Id.*

293. *Id.* at 140.

294. *Id.* at 148.

295. *Id.*

296. *Id.* at 150.

297. See Samuelson, *Intellectual Property*, *supra* note 80, at 25. Samuelson points out that:

[S]ome member nations of the EU, such as France, require payment of royalties to authors of motion pictures when videotapes are rented. These royalties, however, are unavailable to non-EU authors unless they are from countries having an equivalent law. Because the U.S. gives owners of copyrights in motion pictures the right to control *sales* of videocassettes but not *rentals* of them, U.S. film producers are ineligible to receive royalties arising from video rentals in European countries that have adopted this reciprocity-based rule.

Id.

The White Paper itself notes that public performance rights in sound recordings are also granted in many countries and that “[d]ue to the lack of a performance right in the United States, U.S. performers and record companies are denied their fair share of foreign royalty pools for the public performance of U.S. sound recordings in some countries and are in danger of losing access to their share in others.” WHITE PAPER, *supra* note 10, at 222-23. For that reason, the White Paper concludes that an amendment to U.S. copyright law, granting “[a] full public performance right—particularly with respect to all digital transmissions—is warranted.” *Id.* at 225.

copyright legislation has granted rights that some other nations may regard as new rights beyond those set forth in the Berne Convention—for example, rental rights in computer programs, sound recordings . . . [and] musical works embodied in sound recordings [and] a system of royalties on blank digital audio recording media and digital audio recorders” yet has done so exclusively on the basis of national treatment.²⁹⁸

In declaring that the United States believes the grant of national treatment to be consistent with its obligations under the Berne Convention and other international intellectual property and trade treaties and agreements,²⁹⁹ the White Paper conveniently ignores the (now moot) question whether extending semiconductor chip design protection to foreign nationals on the basis of material reciprocity was consistent with the national treatment obligations of the United States under the Paris Convention.³⁰⁰ Still, the clear implication of the White Paper’s remark is that the United States currently takes the view that the grant of intellectual property protection on the basis of material reciprocity is inconsistent with the national treatment provisions of the Paris and Berne Conventions and TRIPS. Thus, while the White Paper expresses a willingness to consider a *sui generis* unfair extraction right for databases as a supplement to copyright protection and urges that the Database Directive be carefully evaluated,³⁰¹ it also seems to reserve the right to invoke the WTO dispute settlement process to challenge material reciprocity provisions such as the one contained in the Database Directive should a proposed Berne Protocol and New Instrument not moot the issue.³⁰²

At the same time, however, the White Paper also emphasizes a second point—namely that “[a]n important aspect of the participation of foreign entities through a GII in the U.S. domestic information infrastructure is the provision of adequate and effective intellectual property protection in the country wishing to participate.”³⁰³ The White Paper notes that “[t]o the extent that participation in the NII can be linked to the provision of intellectual property protection, it will promote the ability of U.S. businesses to

298. *Id.* at 151.

299. *Id.*

300. For a discussion of national treatment obligations under the Paris Convention and the Berne Convention, see *supra* note 222-23 and accompanying text.

301. WHITE PAPER, *supra* note 10, at 153.

302. For a discussion of the argument that the United States might make, see *supra* notes 223-24 and accompanying text.

303. WHITE PAPER, *supra* note 10, at 131-32.

use the NII and the GII to disseminate works to foreign consumers via other countries' information infrastructures."³⁰⁴ It finds it necessary to add, however, that "[i]n considering linkages, careful consideration will have to be given to obligations under international intellectual property treaties and other international agreements."³⁰⁵

This last remark appears to be an oblique reference to what is surely the single most controversial question that is likely to confront the WTO dispute settlement process—namely whether and to what extent the United States can lawfully continue to take or threaten unilateral action under "Special 301" of the U.S. Trade Act to remedy what it conceives to be inadequate or ineffective intellectual property protection in another country. On the one hand, some commentators contend that the effect of Article 23 of the 1994 Understanding "is not only to make any retaliatory action taken by the United States under Section 301 explicitly inconsistent with the GATT, but also to make investigations of possible GATT breaches conducted under Section 301 illegal."³⁰⁶ On the other hand, in the Uruguay Round Agreements Act, Congress specifically amended "Special 301" to state that "[a] foreign country may be determined to deny adequate and effective protection of intellectual property rights, notwithstanding the fact that the foreign country may be in compliance with the specific obligations of [TRIPS]."³⁰⁷

Thus, the stage seems set for an inevitable international showdown on the question whether the United States can utilize "Special 301" procedures to pressure other countries to adopt intellectual property provisions more extensive than those required by TRIPS. While there is no way of knowing exactly what "hot-button" issue will trigger this showdown or how it will be handled in the WTO dispute resolution process, the dispute itself seems highly likely to arise in the not too distant future. At the moment, the

304. *Id.* at 132.

305. *Id.*

306. McDorman, *supra* note 89, at 124. McDorman quotes still other commentators who point out that: "It is indeed hard to see why many states should accept new multilateral commitments in this area [intellectual property] if they remain vulnerable to unilateral actions." *Id.* (citing David Hartridge & Arvind Subramanian, *Intellectual Property Rights: The Issues in GATT*, 22 VAND. J. TRANSNAT'L L. 893, 909 (1989)).

307. Uruguay Round Agreements Act, Pub. L. No. 103-465, § 313, Stat. (1994) (codified as amended at 19 U.S.C. § 2242(d)(4) (Supp. 1996)). For a further discussion of the Uruguay Round Agreements, see *supra* notes 4, 99 and accompanying text.

possible Berne Protocol and New Instrument currently being discussed by the United States and European Union seems to be the most likely candidate to trigger the showdown. Of course, because any actual U.S. retaliation, such as an "increase in duties or imposition of quantitative restrictions on imports," will likely be held to be a violation of Articles I, II or XI of GATT,³⁰⁸ the very prospect of a confrontation may have a tempering effect on how the United States goes about ensuring the adequacy of intellectual property protection on the emerging global information superhighway.

If it does not, the potential for more, rather than less, international conflict over intellectual property protection is great, particularly if the Berne Protocol and New Instrument finally hammered out is widely perceived as essentially a bilateral bargain between the United States and the European Union at the expense of the rest of the world. Any attempt on the part of the United States to impose such an agreement on unwilling third-party countries by means of threatened unilateral trade sanctions will undoubtedly be challenged.³⁰⁹ The likely timing of that dispute could hardly be worse, as it will probably coincide with the expiration of the transition period that TRIPS provides to developing countries and will thus arise just as TRIPS implementation by the developing world is creating its own (possibly serious) economic dislocations.³¹⁰

308. See Judith H. Bello & Alan F. Holmer, *GATT Dispute Settlement Agreement: Internationalization or Elimination of Section 301?*, 26 INT'L LAW. 795, 799-800 (1992). Bello and Holmer note that while GATT Dispute Settlement Agreement does "internationalize" section 301, in the sense that it provides "dramatically more effective international enforcement against unfair traders," it also "diminishes the credibility of the threat of unilateral retaliation by the United States under section 301." *Id.* at 799. The reason for this is simple:

Any such retaliation—consisting in all cases to date of either an increase in duties or imposition of quantitative restrictions on imported goods—is likely to be in violation of GATT articles I, II, or XI, or all three. If the United States takes such action without GATT authorization, then it is likely to be challenged. And, if challenged, the United States' retaliation is likely to be found in violation of the GATT.

Id. at 800 (footnotes omitted).

309. *Id.*

310. See, e.g., Sumner J. La Croix, *The Rise of Global Intellectual Property Rights and Their Impact on Asia*, in ASIA PACIFIC ISSUES 1995 (Analysis from the East-West Center Series Nov. 23, 1995). La Croix notes that although government officials in the West have long contended that Asia-Pacific countries and other developing nations would benefit from stronger intellectual property rights, new theoretical and empirical work in economics does not support this view. *Id.* at 2. For example, one empirical study cited by La Croix found that variations in intellectual property protection have little impact on foreign investment. *Id.* at 4 (citing Keith Maskus & Denise Eby Konan, *Trade-Related Intellectual Property Rights: Issues and Exploratory Results*, in ANALYTICAL AND NEGOTIATING ISSUES IN THE GLOBAL TRADING SYSTEM 401, 438-39 (Alan V. Deardorff & Robert M. Stern eds., 1994)). A particularly striking conclusion of a second, theoretical economic study that La Croix cites

Yet, the prospect for a balanced international agreement on the global information superhighway is not entirely favorable. In the international debate over interoperability, the European Directive on the Legal Protection of Computer Programs, buttressed by a number of timely U.S. court decisions, managed to achieve a much more appropriate balance between the interests of software industry leaders and second-comers than would the position that the United States government has been advocating.³¹¹ In the debate over the global information infrastructure (GII), by contrast, the United States and the European Union are both vigorously promoting the interests of their own favored constituencies of content providers, with little concern for other constituencies interested in the emerging GII. Consequently, the proposed Berne Protocol and New Instrument may well fail to achieve an appropriate balance between the interests of digital content providers, on the one hand, and the interests of on-line service and access providers, and the ultimate users of digital information, on the other.

is that "the developing country never gains from stronger intellectual property regimes until it is ready to engage in research and development at the frontiers of knowledge." La Croix, *supra*, at 1-8 (citing Elhanan Helpman, *Innovation, Imitation, and Intellectual Property Rights*, 61 *ECONOMETRICA* 1247 (1993)). La Croix's own studies suggest that:

[F]oreign pressure to strengthen [intellectual property rights] . . . may benefit some more-advanced developing countries, such as Singapore and South Korea In other countries, such as Indonesia, foreign pressure to adopt a stronger [intellectual property rights] regime may be premature, as no sector has the potential to develop new frontier technologies. In this case, Helpman's analysis applies: foreign pressure produces a gain in the welfare of the developed country but a loss in the welfare of the developing country.

Id.

La Croix also cites two empirical studies of his own on the pharmaceutical industries in Japan and South Korea, which show that "the effect of stronger intellectual property rights will vary greatly depending on the nature of a country's industry." See Akihiko Kawaura & Sumner J. La Croix, *Japan's Shift from Process to Product Patents in the Pharmaceutical Industry: An Event Study of the Impact on Japanese Firms*, 33 *ECON. INQUIRY* 89 (1995) (noting value of Japanese drug companies actually went *up* by 25% when patent protection for pharmaceutical was strengthened); Sumner J. La Croix & Akihiko Kawaura, *Product Patent Reform and Its Impact on Korea's Pharmaceutical Industry*, *INT'L ECON. REV.* (forthcoming) (noting value of South Korean pharmaceutical firms went *down* 61% over 14-month transition period for strengthening pharmaceutical patent protection). In any event, says La Croix, it seems clear that some developing countries will see short-term losses as additional royalty payments to foreign firms push consumer prices higher without producing more foreign investment or higher expenditures on research and development. La Croix, *supra*, at 5.

311. For a discussion of the EC Directive, see *supra* note 8 and accompanying text. For a discussion of the U.S. government's position on interoperability, see *supra* notes 152-55 and accompanying text.

Some visionaries claim, however, that the attempt to protect intellectual property on the emerging global information superhighway is itself doomed to inevitable failure. They argue that the changes being wrought by digital technologies—which many describe as the greatest innovation in information technology since the invention of moveable type in the fifteenth century—raise the distinct possibility that copyright law itself will become an anachronism, unless its fundamental premises are rethought and revised.³¹²

The challenge posed by digital technology is said to be that it is “detaching information from the physical plane, where property law of all sorts has always found definition.”³¹³ Even intellectual property law, which purports to protect intangible works of the intellect, creates rights of invention and authorship that have traditionally adhered to activities in the physical world. Its value has been embodied in the physical conveyance rather than the thoughts conveyed—the bottle, as it were, rather than the wine.³¹⁴

But in cyberspace, the physical bottles are said to be vanishing. Eventually:

[A]ll of the goods of the Information Age—all of the expressions once contained in books or film strips or newsletters—will exist either as pure thought or something very much like thought: voltage conditions darting around the Net at the speed of light, in conditions that one might behold in effect, as glowing pixels or transmitted sound, but never touch or claim to “own” in the old sense of the word.³¹⁵

As the bottles disappear, innovators are beginning to lay claim to the ideas themselves and not merely their expression and have taken to “patenting abstractions, sequences of virtual events, and mathematical formulae—the most unreal estate imaginable.”³¹⁶

312. See Raymond T. Nimmer & Patricia A. Krauthaus, *Copyright on the Information Superhighway: Requiem for a Middleweight*, 6 STAN. L. & POL'Y REV. 25, 26 (1994) (stating that “the focus of the copyright legal system is poorly fitted to the world of modern electronic information systems”).

313. John P. Barlow, *The Economy of Ideas: A Framework for Rethinking Patents and Copyrights in the Digital Age (Everything You Know about Intellectual Property is Wrong)*, WIRED, Mar. 1994, at 84, 85.

314. *Id.*

315. *Id.*

316. *Id.* See generally Cohen, *supra* note 137, at 1153-63 (discussing “profusion of slippery slopes” in judicial attempts to isolate patentable subject matter in software patent claims).

Compounding the dilemma for traditional intellectual property law, digital technology is also erasing national boundaries, "replacing them with the unbounded and perhaps permanently lawless waves of cyberspace."³¹⁷ In this virtual world, the debate over national treatment versus material reciprocity in the grant of intellectual property rights seems to have virtually no relevance.

In the face of such daunting technological changes, we are said to be sailing into the future on a sinking jurisprudential ship—namely, the accumulated canon of copyright and patent law, which was "developed to convey forms and methods of expression very different from the vaporous cargo it is now being asked to carry."³¹⁸ Indeed, it is not so much that the ship is sinking; it is just that commerce on the emerging global information superhighway will not be using this (or any) ship.³¹⁹

At the very least, intellectual property law, both domestic and international, may stand in need of radical reconfiguration to meet the demands of the digital age. Commentators have already begun suggesting what some of these modifications may entail.

One author has identified the following consequences that digital technology will have for copyright law. First, the classification of copyrighted works into discrete subject-matters may no longer be relevant or necessary, as the convergence of technology and the detachment of information from the physical plane makes the traditional classifications obsolete.³²⁰ Second, a new concept of authorship may be required to take into account computer generated works compiled from pre-existing works.³²¹ Third, a collective method of enforcement and licensing may be necessary.³²² Fourth, a new exclusive right to prevent "access" to the work may be in or-

317. Barlow, *supra* note 313, at 84.

318. *Id.*

319. For a discussion of the economic effects of digitization on intellectual property, see *infra* notes 326-31 and accompanying text.

320. For a discussion of economic rights and the classification of copyright subject-matters, see Christie, *supra* note 1, at 524-25.

321. Christie, *supra* note 1, at 524-25; see generally THE CONSTRUCTION OF AUTHORSHIP: TEXTUAL APPROPRIATION IN LAW AND LITERATURE (Martha Woodmansee & Peter Jaszi eds., 1994) (discussing legal development of concept of authorship).

322. Christie, *supra* note 1, at 525. Christie notes that:

One of the recommendations of the Japanese Institute of Intellectual Property in its 1994 report entitled 'Exposure '94—A proposal of the new rule on intellectual property for Multimedia' . . . is for the establishment of a 'Digital Information Center', to act as a clearing house to administer voluntary licences to use copyright works in the creation of multimedia products.

Id. (footnotes omitted).

der, though such a right might be tantamount to an exclusive right to prevent any unauthorized use of the work.³²³ Fifth and finally (albeit paradoxically), it may be that none of these changes, or for that matter any copyright protection at all, will be necessary to protect digital works.

It may well be that a combination of technological restrictions (such as encryption), contractual arrangements and criminal sanctions (for unauthorized decryption)—which is to say, classic trade secret protection—will provide more than sufficient (i.e., too much) protection to content providers.³²⁴ The more difficult intellectual property question could turn out to be how to avoid the problem of over-protection. For example, should digital content providers be able to protect, or should second-comers be able to reverse engineer, encrypted but uncopyrightable (i.e., public domain or purely functional) works? And how can the reverse engineer (or for that matter the public at large) know in advance whether encrypted information is a legitimate subject for copyright or trade secret protection?

It is equally paradoxical that while this combination of trade secret-like protection may turn out to be more than sufficient to enable content providers to control the pricing of their digital products, they will nevertheless be operating in an increasingly competitive marketplace in which much of the intellectual property will increasingly be distributed free as suppliers of digital information proliferate.³²⁵ In the new economic environment of cyberspace, it is predicted that a new set of economic rules will apply, chief among which is that “content is free.”

While not all content will be free, the new economic dynamic will operate as if it were. In the world of the Net, content (including software) will serve as advertising for services such as support, aggregation, filtering, assembly and integration of content modules, or training of customers in their use.³²⁶

323. *Id.* at 526; see also Litman, *supra* note 246, at 34 (examining intellectual property bargain from public's vantage point).

324. Christie, *supra* note 1, at 526. For contrasting views over the use of contract law in cyberspace, compare Lemley, *supra* note 132 with Dunne, *supra* note 284.

325. See Esther Dyson, *Intellectual Value*, WIRED, July 1995, at 136. As Dyson notes, these trends are already beginning to play out. For example, the producers of the two leading Internet software search products, Netscape and Microsoft Internet Explorer, recently began free distribution of their products.

326. *Id.* at 137.

Already, empirical evidence can be found to support this prediction.³²⁷

In this brave new world of free content, content providers will be rewarded primarily “for personal effort—process and services—rather than for mere ownership of assets.”³²⁸ While much of the value added by these services will take the form of “incremental innovation bearing know-how on its face,”³²⁹ much value will also reside in the certification of authenticity and reliability, rather than in content itself.³³⁰ This latter type of value, of course, is precisely what has traditionally been protected by the fourth and final major category of intellectual property law—namely the law of trademarks and trade names.³³¹

This suggests that in cyberspace, trademark, trade name and trade secret protection may largely supplant the law of copyrights and patents as the dominant forms of intellectual property protection. The irony, of course, is that, strictly speaking, neither trademarks and trade names, nor trade secrets can be called intellectual property, as they merely represent the economic value of an innovator’s commercial reputation and commercial privacy, respectively.³³² Thus, the primary legal consequence of digital technology’s detachment of information from the physical plane may well be that the subject of intellectual property protection in cyberspace will no longer be conceived of as “property” at all, but rather as the economic value of the public and private spheres of innovative activity. In a word, the law of digital intellectual property may eventually be replaced by a law of digital unfair competition.

International harmonization of the law of unfair competition and specifically the law of trademarks, trade names and trade secrets should prove to be a far less daunting task than the current effort to harmonize international copyright and patent law. Admittedly, it will not always be easy to decide what should be considered private and public, or whether and to what extent an innovator’s reputation or incentive to innovate has been economically impaired as a result of unfair competition and what relief will repair

327. See, e.g., Peter H. Lewis, *Microsoft Offering News Without Charge on Internet*, N.Y. TIMES, Apr. 30, 1996, at D4 (“[T]here will be no subscription charge for access . . . [but] Microsoft and its partners can expect to reap potentially large revenues from advertising . . .”).

328. Dyson, *supra* note 325, at 140.

329. Reichman, *Legal Hybrids*, *supra* note 59, at 2444.

330. *Id.*

331. For a discussion of the law of trademarks and the interest it protects, see *supra* note 65.

332. Reichman, *supra* note 59, at 2444.

or eliminate the economic injury, without at the same time granting protection against legitimate competition.³³³ The task is magnitudes simpler, however, than attempting to define, much less enforce, disembodied intellectual property rights.

Indeed, international harmonization of the law of unfair competition is already well underway. As we have seen, both the Paris Convention and the TRIPS agreement contain provisions specifically defining various species of unfair competition and obliging member countries to provide the nationals of other member countries effective protection against unfair competition. Article 10^{bis} of the Paris Convention enumerates those unfair acts that are injurious to commercial reputation,³³⁴ while Article 39 of TRIPS delineates the requirements for obtaining legal protection of undisclosed information.³³⁵ Although a need may well arise for a new form of "portable trade secret protection," reaching an international consensus on the appropriate scope of that protection will be both conceptually simpler and politically more palatable if the *sui generis* protection is consciously modelled on traditional trade secret law, rather than being viewed as a diluted or hybrid form of copyright or patent protection.³³⁶

V. CONCLUSION

The foregoing article reaches the following conclusions on three interrelated subjects:

1. *The TRIPS Agreement*—Although the TRIPS agreement is an important milestone in international intellectual property protection, its substantive significance for emerging computer technologies and the global information superhighway is quite limited. The TRIPS agreement specifies that computer programs and compilations of data are to be protected as literary works under the older Berne Convention for the Protection of Literary and Artistic Works, but contains no provisions defining the precise scope of copyright protection for computer programs or databases. TRIPS also does not offer any explicit guidance on the patentability of computer

333. For a perceptive series of studies suggesting how these questions should be addressed, see *supra* note 66 and accompanying text.

334. For a discussion of the definition of "unfair competition" under Article 10^{bis} of the Paris Convention, see *supra* note 33.

335. For a discussion of the protection of undisclosed information under Article 39, see *supra* note 55 and accompanying text.

336. See Reichman, *Legal Hybrids*, *supra* note 59, at 2519-25 ("[S]trained applications of the patent and copyright paradigms . . . have led to the recurring cycles of under- and overprotection . . .").

program related inventions. Thus, TRIPS contributes little of substance to either the ongoing "interoperability" debate or the emerging debate over the protection of intellectual property on the information superhighway. Indeed, so profound are the substantive gaps in the TRIPS agreement that its most important contribution to the protection of emerging computer technologies and intellectual property protection on the global information superhighway may well turn out to be the international dispute resolution procedures that it establishes.

2. *The Interoperability Debate*—Although the TRIPS agreement itself does not address the issue of interoperability, a workable international consensus on the copyright and trade secret aspects of the issue has arguably been reached and codified in the EC Directive on the Legal Protection of Computer Programs. While international consensus over the appropriate scope of patent protection for computer program-related inventions is developing more slowly, such a consensus is most likely to be shaped by a nuanced application of the traditional substantive patent law requirement that a patentable invention consist of a product or process that is novel, useful and nonobvious, and the procedural requirement that the patent applicant make an enabling and best-mode disclosure of the invention. On these points, the United States has the opportunity to play the same constructive role in forging a global consensus that the European Union has played in the copyright and trade secret phases of the interoperability debate.

3. *The Emerging Global Information Superhighway*—Thus far, little in the way of any international consensus has emerged with respect to the appropriate scope of intellectual property protection on the global information superhighway. In contrast to the EC Directive on the Legal Protection of Computer Programs, the newly adopted Directive for the Protection of Databases does not reflect any broad international consensus on either the need or the appropriate scope of protection for a new *sui generis* form of intellectual property in data contained in a database. Similarly, the Clinton administration's White Paper has thus far provoked more controversy than consensus over the appropriate scope of digital copyright protection. Even if these two initiatives do eventually find their way into a new Berne Convention Protocol, the United States and European Union will nevertheless confront a formidable political challenge in persuading the rest of the world to abide by the protocol. Ironically, any attempt to resort to the sort of coercive political pres-

sure that produced the TRIPS agreement may now be prohibited by that very agreement and the larger GATT/WTO framework.

Whatever the immediate outcome of efforts to enhance intellectual property protection on the global information superhighway, emerging digital technology and the global information superhighway itself are eventually likely to work a far more profound transformation on international intellectual property protection. If intellectual property law is to have any relevance at all in cyberspace, it first may be necessary to reconceive it as essentially a means of preventing unfair competition in the public and private spheres of innovative digital activity.