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PATENTING INDUSTRY STANDARDS

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I. INTRODUCTION

Air pollution caused by automobile tailpipe emissions plagues virtually every country in the world;[1] in the United States, perhaps no state suffers more than California.[2] In December 1990, the Union Oil Company of California (Unocal) filed a U.S. patent application directed to "clean fuels"—automotive gasoline compositions formulated to reduce tailpipe emissions.[3] While Unocal's patent application was pending in secrecy in the United States Patent and Trademark Office (USPTO),[4] the California Air

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1. *Cf.* Keith Bradsher and Andrew C. Revkin, *A Pre-emptive Strike On Global Warming*, THE NEW YORK TIMES, May 15, 2001, at C12 (reporting that the burning of one gallon of gasoline produces twenty pounds of global warming gases, and that global-warming emissions from transportation (generated primarily through the burning of gasoline and diesel fuel in automobiles and trucks) increased by 3.4% in 1999).

2. *See* Bruce Newman, *Clearing the Air In the Land of Smog*, THE NEW YORK TIMES, May 19, 1999, at A20 (reporting that although environmental initiatives have reduced the state's air pollution to one-third of levels in the 1950s, California still has the dirtiest air in the U.S.). *See also* U.S. Patent No. 5,288,393 (issued Feb. 22, 1994), at col. 1, lns. 9-16 asserting that:

> [o]ne of the major environmental problems confronting the United States and other countries is atmospheric pollution (i.e., "smog") caused by the emission of gaseous pollutants in the exhaust gases from automobiles. This problem is especially acute in major metropolitan areas, such as Los Angeles, Calif., where the atmospheric conditions and the great number of automobiles account for aggravated air pollution.

Id.

3. Brief for the United States as Amicus Curiae at 2, Union Oil Co. of Cal. v. Atlantic Richfield Co., 208 F.3d 989 (Fed. Cir. 2000), *cert. denied*, 121 S. Ct. 1167 (2001) (No. 00-249). The Unocal application was filed with 82 claims on December 13, 1990, asserting an invention date of March 1990. *Id.* Each of the claims recited a gasoline composition characterized by a combination of four to six properties: Reid Vapor Pressure (RVP), T10, T50, T90, Olefins, Paraffins, Aromatics, and Octane. *Union Oil Co. of Cal.*, 208 F.3d at 992.

4. Although under current law most pending U.S. patent applications will be published eighteen months after their earliest effective filing date, 35 U.S.C. § 122(b)(1) (2001), the law in effect at the time of Unocal's application

Resources Board (CARB) in November 1991 issued new regulations for "clean-burning" gasoline;[5] the regulations would go into effect in 1996[6] and be mandatory for all California gasoline producers.[7] The CARB developed the regulations through consultation and technology-sharing with numerous interested parties, including Unocal and other refiners.[8] Meanwhile, Unocal's application issued as U.S. Patent No. 5,288,393 in February of 1994.[9] Notably, its claims literally "read on" the CARB standards, such that any unlicensed refiner selling gasoline in compliance with the state-mandated standards would likely infringe Unocal's '393 patent.

When Unocal later announced that it would initiate a licensing program seeking royalties for the practice of its '393 patent, Atlantic Richfield, Chevron, Exxon, and a number of other major oil refiners ("the refiners") sued for a declaratory judgment.[10] The refiners unsuccessfully attacked the patent's validity on the ground that Unocal's 1990 application did not sufficiently describe the gasoline compositions on which the patent was issued in 1994.[11] After a forty-nine day trial, a jury sustained the patent's validity.[12] A split panel of the U.S. Court of Appeals for the

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required that all pending patent applications be maintained in secrecy until issuance. 35 U.S.C. § 122 (1990).

5. CAL. CODE REGS. tit. 13, §§ 2250 *et seq.* (2000).

6. *Id.* at § 2261.

7. *Id.*

8. *See* Alexei Barrionuevo, *Exhausting Feud: A Patent Fracas Pits Unocal Corp. Against Big U.S. Oil Producers*, WALL ST. J., Aug. 17, 2000, at A1 (citing statement of Jananne Sharpless, the then chair of the CARB, that Unocal argued for various concessions, as other oil companies did, in more than two dozen meetings with California regulators to develop the CARB clean fuel regulations, but did not disclose existence of its patent application). *See generally* Brief for the United States as Amicus Curiae at 2, *Unocal*, 208 F.3d at 989.

9. U.S. Patent No. 5,288,393 (issued Feb. 22, 1994). As issued the '393 patent contained 155 claims, but Unocal later disclaimed all but forty-one of these claims. *Unocal*, 208 F.3d at 991.

10. *See* Union Oil Co. of Cal. v. Chevron U.S.A., Inc., 34 F. Supp. 2d 1222, 1224 (C.D. Cal. 1998) (describing procedural history).

11. More specifically, the declaratory plaintiff refiners charged that the '393 patent was invalid for failure to comply with the "written description of the invention" requirement of 35 U.S.C. § 112, ¶ 1. This requirement insures that the patentee "convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*." Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991) (emphasis in original).

12. *Unocal*, 208 F.3d at 994. The jury returned a special verdict form indicating that each of the 41 asserted claims had not been proven invalid for failure to comply with the written description requirement of 35 U.S.C. § 112, ¶ 1. *Id.* The forty-one asserted claims were not originally-filed claims, but they were added by amendment during prosecution of the '393 patent. *Id.* at 991.

Federal Circuit affirmed.[13]

The refiners petitioned the U.S. Supreme Court for *certiorari*, arguing primarily that Unocal had improperly participated in the CARB standards-setting process without ever revealing to the CARB, the Environmental Protection Agency (EPA), or anyone else that it had a pending patent application on the product required by these standards.[14] After the CARB issued its regulations, the refiners contended, Unocal cancelled its original patent claims and intentionally substituted amended claims to "resemble" the CARB regulations.[15] By manipulating U.S. patent law's "written description requirement,"[16] the refiners urged, Unocal engaged in "gaming" of the regulatory and patent processes, thereby placing the refiners in "a regulatory/patent law vise."[17]

Public criticism of Unocal was severe, particularly when it became known that Unocal was seeking royalties under the '393 patent of approximately 5.75 cents per gallon of gasoline sold, 90% of which were likely to be passed on to consumers.[18] California's Attorney General Bill Lockyer joined the fray, accusing Unocal of seeking to "hijack and distort" the state regulatory process

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13. *Id.* at 1002.

14. Petition for Writ of Certiorari at 13-14, Atlantic Richfield Co. v. Union Oil Co. of Cal., 208 F.3d 989 (Fed. Cir. 2000), *cert. denied*, 121 S. Ct. 1167 (2001) (No. 00-249).

15. *Id.*

16. Section 112, ¶ 1 of Title 35, U.S.C., requires that a U.S. patent provide:

> a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same . . . .

Vas-Cath, 935 F.2d at 1561-62. This statutory provision is thought to encompass two separate requirements: the "written description" requirement and the "enablement" requirement. *Id.* Compliance with the written description requirement is discussed in further detail at Part III.A *infra*.

17. Petition for Writ of Certiorari at 2, Atlantic Richfield Co. v. Union Oil Co. of California, 208 F.3d 989 (Fed. Cir. 2000), *cert. denied*, 121 S. Ct. 1167 (2001) (No. 00-249).

18. *See id.* at 9. Based on that royalty, applied to the five-month time period in 1996 at issue, the trial court awarded Unocal over sixty-nine million dollars, plus interest, attorneys' fees, and costs. *See Amici Curiae* Brief of the States of Alabama, Arizona, Arkansas, California, Colorado, Delaware, Georgia, Illinois, Indiana, Kansas, Kentucky, Maine, Massachusetts, Michigan, Minnesota, Missouri, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Texas, Utah, Virginia, Washington, West Virginia, and Wisconsin and the District of Columbia In Support of the Petition for Writ of Certiorari (hereafter *Amici Curiae Brief of the States*) at 2, Atlantic Richfield Co. v. Union Oil Co. of Cal., 208 F.3d 989 (Fed. Cir. 2000), *cert. denied*, 121 S. Ct. 1167 (2001) (No. 00-249); Barrionuevo, *supra* note 8, at A1.

through its acquisition and enforcement of the '393 patent.[19] Subsequently, Lockyer and 33 other state attorneys general filed an *amicus curiae* brief in support of the refiners' *certiorari* petition.[20] The *amici* charged that Unocal "work[ed] hand-in-glove with the other participants in a state administrative process to develop cleaner-burning gasoline, while at the same time seeking to garner a monopoly from the fruits of that joint endeavor, all the while hiding its true objective."[21]

Despite the outcry over the *Unocal* case, the Supreme Court denied *certiorari*.[22] As this article goes to print, the dispute is not yet resolved; the Federal Trade Commission is considering a request by Exxon Corporation to investigate Unocal's patenting practices[23] and a request for reexamination of Unocal's '393 patent is pending in the USPTO.[24]

The Unocal gasoline patent story is but one of a growing number of examples that illustrate the "capture"[25] of an industry standard by a firm holding intellectual property rights in the technical subject matter of that standard; *i.e.*, the assertion of intellectual property rights by a firm that both participated in the standard-setting activity and also obtained proprietary rights in some aspect of the technical subject matter of the standard. Other commentators have termed this a problem of standards "abuse"[26]

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19. *See* Julie Tamaki, *Unocal Patent on Clean Fuel Stirs Outrage*, L.A. TIMES, Oct. 9, 2000, at A3; Press Release, Attorney General of California, Attorney General Bill Lockyer Files "Friend of the Court" Brief Over Unocal Gasoline Patent, http://caag.state.ca.us/press/2000idx.htm (Sept. 14, 2000) (reporting that *amicus curiae* brief was filed on September 14, 2000 in the U.S. Supreme Court on behalf of California and thirty-three other states, arguing that Unocal "should not be able to 'hijack and distort' the state regulatory process by claiming a patent on gasoline formulas developed in cooperation with the government to meet clean air standards").

20. *Amici Curiae Brief of the States*, *supra* note 18.

21. *Id.* at 12.

22. Atlantic Richfield Co. v. Union Oil Co. of Cal., 121 S. Ct. 1167, 1167 (2001) (No. 00-249).

23. *See Exxon Mobil Seeks Probe of Unocal Patents,* L.A. TIMES, May 8, 2001, at 4 (reporting that "Unocal has received $92 million for infringements over a five-month period in California from six major oil companies, including Exxon Mobil").

24. Reexamination Serial Number 90/005,942, filed Mar. 1, 2001. UNITED STATES PATENT AND TRADEMARK OFFICE, OFFICIAL GAZETTE (Mar. 27, 2001) ("Requests for Reexamination Filed" listing, including '393 patent), *available at* http://www.uspto.gov/web/offices/com/sol/og/2001/week13/patrequ.htm.

25. Commentators have previously used the term "capture" to characterize anticompetitive behavior by certain intellectual property owners involved in standards-setting. *See* Mark A. Lemley, *Antitrust and the Internet Standardization Problem*, 28 CONN. L. REV. 1041, 1086 (1996).

26. *See In re* Dell Computer Corp., 121 F.T.C. 616, 1996 FTC LEXIS 291, *23 (1996) (Commr. Azcuenaga, dissenting) (describing the case as concerning "alleged abuse of the standards-setting process by a patent holder").

or "hidden intellectual property rights."[27]

Although previous standards disputes have implicated copyright law,[28] this Article focuses on standards capture through patent procurement. Conflicts arise when a patent license is essential to practicing a standard and the patent owner demands royalties that standards users view as commercially unreasonable, or refuses to license on any terms to certain users.[29] As patent protection eclipses copyright and other forms of intellectual property as the protection mechanism of choice for many technologies,[30] these disputes at the interface between patents and industry standards will arise with increasing frequency.[31] As

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27. Carl Shapiro, *Setting Compatibility Standards: Cooperation or Collusion* (Rev. June 8, 2000), http://haas.berkeley.edu/~shapiro/standards.pdf, at 17.

28. *See, e.g.*, Practice Mgmt. Info. Corp. v. Am. Med. Ass'n, 121 F.3d 516, 520-21 (9th Cir. 1997) (finding copyright misuse where the defendant American Medical Association (AMA) granted a copyright license to a U.S. federal government agency permitting use of AMA's copyrighted medical procedure code by physicians filling out Medicaid and Medicare claim forms, on the condition that the agency would not use any other system of medical nomenclature); Lotus Dev. Corp. v. Borland Int'l, Inc., 49 F.3d 807, 821-22 (1st Cir. 1995) (Boudin, J., concurring) (noting that Lotus 1-2-3 has become a *de facto* standard for electronic spreadsheet programs, and suggesting that Borland's unlicensed use of Lotus's menu command structure may be privileged).

29. *See* Jaap H. Spoor, *Standardization and Exclusivity in Intellectual Property*, *in* INFORMATION LAW TOWARD THE 21ST CENTURY (Kluwer 1992), at 374 (contending that patents on standards technology are not necessarily problematic, unless "the patent owner refuses to grant any licenses, or grants partial licenses only, in order to reserve a monopoly for himself").

30. For example, patenting of software-implemented business methods has virtually exploded in the U.S. in the wake of *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1093 (1999). *See* Robert P. Merges, *As Many As Six Impossible Patents Before Breakfast: Property Rights For Business Concepts and Patent System Reform*, 14 BERKELEY TECH. L.J. 577, 590-91 (1999) (arguing that sharp increase in patent applications stemming from this newly patentable subject matter has pushed the patent system into crisis). *See also* Anne H. Chasser, *Developments At The United States Patent and Trademark Office*, 19 TEMP. ENVTL. L. & TECH. J. 27, 31 (2000) (stating that the USPTO has "tripled the number of examiners that examine [patent applications directed to] business methods" since *State Street* was decided).

31. For example, Carl Shapiro and Hal Varian describe the standards-setting process for the 28.8K modem standard as one in which "[m]ultiple patent holders jockeyed to get their patents built into the standard to ensure royalty income and to gain time-to-market advantage." CARL SHAPIRO AND HAL R. VARIAN, INFORMATION RULES (1999), at 239. *See also* Timothy Baumann, *As Standards Proliferate, So Too a Rise in Defendants Asserting 'Standards Abuse'*, 2 PATENT STRATEGY & MANAGEMENT 1 (June 2001) (asserting that "[a]s standards have proliferated, so have patents covering all or portions of standards," and that as a result, "defendants in infringement suits have increasingly asserted defenses based on the 'standards abuse' of patent holders").

recently stated by the Chairman of the Federal Trade Commission, "[s]tandard setting, often under the auspices of a trade association, can facilitate innovation. On the other hand, private standard setting, precisely because it is private, is subject to abuse."[32]

I survey the rise of industry standards-setting in Part II. In Part III, I describe how instability in a number of patent law doctrinal areas facilitates standards capture through patenting. Contrary to the position taken by adherents of the "open standards" movement, I contend in Part IV that the assertion of patent rights over the subject matter of industry standards is not inherently improper. I would impose on patent owners, however, a mandatory obligation to disclose during their participation in the standards-setting process the existence of any patents or pending patent applications that are material to the standard. This obligation, which parallels that borne by all U.S. patent applicants to disclose known information material to patentability to the USPTO during patent procurement, is detailed in Part V.

If compliance with the standard ultimately adopted requires the practice of a patent that was *not* disclosed, the patent owner who participated in setting the standard but failed to disclose the patent's existence should be subject to compulsory licensing; *i.e.*, the patentee should have to license the patent to any user of the standard at commercially reasonable terms, and may not refuse to license. What is "reasonable" should be determined by a competent authority or industry experts, not left to the patent owner to determine *ex post*. In egregious cases, where the non-disclosure of a relevant patent was willful or intentional, courts should refuse to enforce the patent altogether under the patent misuse doctrine, as described in Part V.

II. THE RISE OF INDUSTRY STANDARDS-SETTING

Before addressing several specific intersections between patent law doctrine and industry standards, I review in this Part the growth of industry standards, the various types of standards now in place, and the intellectual property policies that have been adopted by many standards-setting organizations.

A. The Industries Impacted by Standards-Setting

Industry standards are pervasive. For example, one or more hardware or software standards governs virtually every aspect of using a computer or connecting to the Internet.[33]

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32. Robert Pitofsky, *Antitrust and Intellectual Property: Unresolved Issues at the Heart of the New Economy*, 16 BERKELEY TECH. L.J. 535, 550 (2001).

33. Larry Seltzer, *The Standards Industry: Corporate Consortia Are Supplanting Traditional Rule-Making Bodies*, INTERNET WORLD, Apr. 15, 2001, at 50. A recent "essay"-type advertisement for Microsoft asserts that

Standards development is particularly critical for the digital economy.[34] The U.S. Government predicts that standards are needed in at least the following areas: electronic payments; security (confidentiality, authentication, data integrity, access control, non-repudiation); security services infrastructure (e.g., public key certificate authorities); electronic copyright management systems; video and data-conferencing; high-speed network technologies (e.g., Asynchronous Transfer Mode, Synchronous Digital Hierarchy); and digital object and data interchange.[35]

Beyond computing, standards exist in all industries, including safety and health, telecommunications, information processing, petroleum, medical devices, and the like.[36] The standards mandated by the State of California's Air Resources Board in *Unocal* cover gasoline formulations. Even biotechnology is undergoing standards development.[37] Arguably, the human genome has become a *de facto* standard. Myriad firms need access to the genome's structure and sequence[38] in order to develop new drugs, therapies, and diagnostic tools based on that information. Conflicts no doubt will arise as researchers seek licenses under the relevant genome patents.[39] Standards convergence is also likely for the software platforms used to sequence, manipulate, and view

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"almost everything on the Internet, from the protocols that move data around the network to the software behind the World Wide Web, is built on open, consensus-based standards." Microsoft Corporation, *Open Minded*, THE NEW YORK TIMES, Apr. 11, 2001, at A12.

34. *See, e.g.*, The White House, *A Framework for Global Economic Commerce*, N. Y. TIMES, April 11, 2001, (National Report), at A12, *available at* http://www.ecommerce.gov/framewrk.htm (hereinafter *"Framework"*) (asserting that "[s]tandards are critical to the long term commercial success of the Internet as they can allow products and services from different vendors to work together").

35. *Id.*

36. American National Standards Institute, *Guidelines for Implementation of the ANSI Patent Policy: An Aid to More Efficient and Effective Standards Development In Fields That May Involve Patented Technology*, *at* http://web.ansi.org/public/library/guides/ppguide.html (last visited Mar. 29, 2001).

37. For example, "[b]ioinformatics.org is a non-profit, academe-based organization committed to opening access to bioinformatics research projects, providing Open Source software for bioinformatics by hosting its development, and keeping biological information freely available." Bioinformatics.org, *bioinformatics.org: The Open Lab*, *at* http://bioinformatics.org/about.php (last visited Apr. 6, 2001).

38. *See* J.C. Venter, *The Sequence of the Human Genome*, 291 SCIENCE 1304 (2001), *available at* http://publication.celera.com.

39. For further discussion of the problem of patents on research tools, *see generally* Janice M. Mueller, *No "Dilettante Affair": Rethinking the Experimental Use Exception to Patent Infringement for Biomedical Research Tools*, 76 WASH. L. REV. 1 (2001).

genetic data.[40]

Three primary factors are driving the rise of standards-setting: product interoperability,[41] public health and safety,[42] and global competitiveness.[43] Most compelling is product interoperability.[44] As increasing numbers of consumers acquire notebook computers, personal digital assistants, cellular telephones, pagers, and other productivity and communication tools, the need for these devices to communicate with one another, as well as consumer desire for new application programs that will operate on all of these devices, is self-evident. Anyone who has experienced the frustrations of converting documents created in one word processing software program to another, switching between the leading computerized legal research providers to find desired content, or using a computer keyboard manufactured in a foreign country will immediately grasp the practical importance of standardization.

B. De Facto vs. De Jure Standards

Analysis of technology standards should distinguish between

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40. Professor Arti Rai suggests that network externality issues may arise where a specific platform for viewing and manipulating computerized genetic and protein sequences becomes an industry *de facto* standard. Arti K. Rai, *Fostering Cumulative Innovation in the Biopharmaceutical Industry: The Role of Patents and Antitrust*, 16 BERKELEY TECH. L.J. 813, 821 n.33 (2001). Bioinformatics firms that obtained proprietary rights (such as copyright) in the software could obtain market power as a result of network externalities. *Id.*

41. For example, the Federal Trade Commission (FTC) has noted "the important role of standard-setting in the technological innovation that will drive much of this nation's competitive vigor in the 21st Century." *In re* Dell Computer Corp., 121 F.T.C. 616, 1996 FTC LEXIS 291, *20 (1996).

42. A terrible fire that in 1904 destroyed over 1,500 buildings in Baltimore, Maryland, aptly illustrates that public safety concerns often drive standardization. Although fire departments from other cities were called in to assist, they were powerless to fight the flames because the fire hose-connectors of Baltimore's hydrants were incompatible with those of the other cities. Malcolm W. Browne, *Refining the Art of Measurement*, THE NEW YORK TIMES, Mar. 20, 2001, at D1-D6.

43. Disparities in standards and conformity assessment practices between the U.S. and its trading partners may cause technical barriers to international trade. Global Standards and Information Program, *U.S. Department of Commerce Standards Expert*, *at* http://ts.nist.gov/ts/htdocs/210/216/sitdescr.htm (visited Mar. 31, 2001). "Standards also can be employed as de facto non-tariff trade barriers, to 'lock out' non-indigenous businesses from a particular national market." *Framework*, *supra* note 34, at Section 9 ("Technical Standards").

44. *See* Lemley, *supra* note 25, at 1047 (discussing need for "vertical compatibility" in a variety of industries). A common example is the need for compatibility between electric power plugs on appliances and the electrical outlets in the walls of homes and businesses. *See id.* (noting that a plug is "useless" unless it can connect to a wall outlet).

de jure standards and *de facto* standards.[45] *De facto* standards are not promulgated by a particular body, but rather arise spontaneously due to marketplace success. Classic examples of *de facto* standards include the QWERTY typewriter keyboard layout[46] and the Microsoft Windows operating system for personal computers.

De facto standards commonly exist in markets characterized by network externalities (or "network effects").[47] In such markets the value that consumers place on a good increases as more and more consumers use that good.[48] A fax machine is a classic example of a positive network externality – as more people own fax machines, the value of any one person's fax machine to that person increases.[49] As applied to standards, network externality theory predicts that the more widely a given technology standard is adopted, the more valuable it becomes. Network effects markets will be attractive targets for firms who can position their own proprietary technology as the technical standard in that market.[50]

The focus of this article is primarily *de jure* standards, which are rules for implementing a technology that are set by some official body, be it a government, industry, or academic consortium. The well-known ASCII (American National Standard Code for Information Interchange) standard, used in software, is a *de jure* standard promulgated by the American National Standards Institute (ANSI).[51] *De jure* standards are further

45. Seltzer, *supra* note 33, at 50-51.

46. Marketplace success does not always equate with technological superiority. The QWERTY typewriter keyboard layout was developed in the 1870s by the creators of the Type Writer brand as a means to slow down typists and thereby prevent certain frequently-used typewriter keys from excessive jamming. SHAPIRO AND VARIAN, *supra* note 31, at 185. Although the competing Dvorak layout (patented in 1932) was considered technologically superior, the QWERTY format won out because the "collective switching costs" of migration to Dvorak for users already comfortable with QWERTY was simply too high. *Id.*

47. "Externalities arise when one market participant affects others without compensation being paid." SHAPIRO AND VARIAN, *supra* note 31, at 183.

48. Mark A. Lemley and David McGowan, *Legal Implications of Network Economic Effects*, 86 CALIF. L. REV. 479, 481 (1998).

49. SHAPIRO AND VARIAN, *supra* note 31, at 183. Examples of negative network externalities include pollution: one person's sewage ruins the drinking or swimming water of many other individuals. *Id.*

50. *See* Pitofsky, *supra* note 32, at 538-39 (noting that "products and services based on intellectual property frequently exhibit 'network effects,'" and asserting that "[t]he exclusionary rights granted by intellectual property protection, coupled with trends toward standardization due to network effects, threaten to diminish market competition"). *See also* Lemley and McGowan, *supra* note 48, at 481.

51. Seltzer, *supra* note 33, at 50-51. ANSI is a private, non-profit organization that "administers and coordinates the U.S. voluntary standardization and conformity assessment system." American National

divisible between (i) mandatory *de jure* standards such as the gasoline emissions standards set by a government agency, the CARB in the *Unocal* case discussed *supra*, and (ii) consensual *de jure* standards such as the World Wide Web language Hyper Text Markup Language (HTML),[52] which was developed by the World Wide Web Consortium (W3C).[53] Consensual *de jure* standards are consensual in the sense that no firm is legally bound to follow them. However, marketplace reality suggests that most firms will comply with the standard rather than develop their own alternative technology.

C. Intellectual Property Policies

Many standards-setting bodies have implemented intellectual property policies. These policies illustrate a spectrum of obligations for holders of patent and other intellectual property rights in the subject matter of the standard. The most burdensome policies, from a patent owner's perspective, require that the owner of any patent deemed essential to practicing the standard grant a royalty-free license to any user of the standard.[54] Other standards-setting bodies require that patent owners grant licenses under terms that are "reasonable and non-discriminatory."[55] Still other bodies do not oblige patent owners to

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Standards Institute, *About ANSI*, *at* http://www.ansi.org/public/about.html (last visited May 26, 2001).

52. Jocelyn Kaiser, *Internet Patents Choking the Web?*, 284 SCIENCE 1427 (1999).

53. The World Wide Web Consortium (W3C) is an international industry and academic consortium of over 350 members dedicated to "lead[ing] the Web to its full potential by developing common protocols that promote its evolution and ensure its interoperability." World Wide Web Consortium, *About the World Wide Web Consortium [W3C]*, *at* http://www.w3.org/1999/10/28-P3P-IntermindPatentAnalysis-PressRelease.html (last visited July 21, 2001), at 2-3. Membership in the W3C is by corporation and is not open to all, unlike other standards consortia such as the Internet Engineering Task Force (IETF). *See* Seltzer, *supra* note 34, at 52.

54. For example, the Joint Electronic Devices Engineering Council (JEDEC) requires that patents incorporated into its standards be licensed either royalty-free or under "reasonable" terms and conditions that are "demonstrably free of any unfair discrimination." Electronic Industries Alliance, *JEDEC Manual of Organization and Procedure JM21-K* Annex F 42, *available at* http://www.jedic.org/Home/manuals/jm21k.pdf (Feb. 2, 1999).

55. For example, the Internet Engineering Task Force (IETF) requires that owners of IPRs in adopted standards agree to license them at openly-specified, reasonable, non-discriminatory terms. *See* Internet Engineering Task Force, *The Internet Standards Process* para. 10.3.2(C) (1996) *available at* http://www.ietf.org/rfc/rfc2026.txt, providing that:

> [w]here the IESG knows of rights, or claimed rights under (A), the IETF Executive Director shall attempt to obtain from the claimant of such rights, a written assurance that upon approval by the IESG of the relevant Internet standards track specification(s), any party will be able to obtain the right to implement, use and distribute the technology or

license, requiring only that participants make a disclosure of any patents or pending patent applications that are related to the subject matter of the standard.[56] Lastly, some standards-setting bodies do not appear to have any formal intellectual property policies whatsoever, as in the case of the CARB in *Unocal*.[57]

III. PATENT LAW AND THE FACILITATION OF STANDARDS CAPTURE

A number of substantive patent law doctrines operate at the intersection of industry standards and proprietary rights. Doctrinal instability in several areas of patent law helps explain how patents are being obtained in the technology of industry

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works when implementing, using or distributing technology based upon the specific specification(s) under openly specified, reasonable, non-discriminatory terms.

Id. For a list of statements by corporate IETF members on their respective IPRs, *see* Internet Engineering Task Force, *IETF Page of Intellectual Property Rights Notices*, *available at* http://www.ietf.org/ipr.html (last visited Apr. 7, 2001). The IETF is "a large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet. It is open to any interested individual." Internet Engineering Task Force, *Overview of the IETF*, *available at* http://www.ietf.org/overview.html (last visited Apr. 7, 2001). The IETF has been described as "the single most important Internet standards body." Lawrence Lessig, *The Limits in Open Code: Regulatory Standards and the Future of the Net,* 14 BERKELEY TECH. L.J. 759, 760 n.2 (1999).

Similarly, the patent policy of the American National Standards Institute (ANSI) provides that ANSI does not object in principle to proposed American National Standards that include the use of a patented item, if such use is technologically justified. However, the identified patent holder must supply ANSI with a written assurance that it will license applicants who desire to implement the standard either without compensation or "under reasonable terms and conditions that are demonstrably free of any unfair discrimination." American National Standards Institute, *Guidelines for Implementation of the ANSI Patent Policy*, *at* http://web.ansi.org/public/library/guides/ppguide.html (last visited Mar. 29, 2001).

56. For example, the Joint Electronic Devices Engineering Council (JEDEC) has a policy requiring all participants in standards-setting discussions to disclose any IP they hold that might be involved in the standard at issue. *See* Electronic Industries Alliance, *JEDEC Manual of Organization and Procedure JM21-K* Annex F 42, at http://www.jedec.org/Home/manuals/jm21k.pdf (Feb. 2, 1999) (providing that standards that require use of patented technology "may not be considered by a JEDEC committee unless all of the relevant technical information covered by the patent or pending patent is known"). However, JEDEC does require that any such patent be licensed either royalty-free or under "reasonable" terms and conditions that are "demonstrably free of any unfair discrimination." *Id.*

57. *Cf.* Tamaki, *supra* note 19, at A3 (reporting that Unocal officials "contend they have done nothing wrong. No law or agreement required them to disclose their patent application . . ."); Barrionuevo, *supra* note 8, at A1 (reporting position of Unocal officials that "[n]o law required Unocal to reveal its patent ambitions").

standards, subject matter that many consider to be the product of communal development and by definition not subject to exclusive rights.

A. Shifting Interpretations of the "Written Description of the Invention" Requirement

The declaratory plaintiff refiners in *Unocal*[58] challenged the validity of Unocal's '393 patent under the statutory requirement that a U.S. patent must contain a "written description of the invention."[59] The refiners specifically criticized Unocal's conceded amendment of its pending patent claims to "resemble" the CARB regulations.[60]

Issues of compliance with the written description requirement frequently arise when, as in *Unocal,* new patent claims are added to a pending patent application,[61] or when existing claims are substantively amended.[62] U.S. patent law allows applicants to add and amend claims during the patent procurement process, so long as the originally-filed application "supports" the new claim language, and the amendments introduce no "new matter"[63] into the application.[64]

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58. Union Oil Co. of Cal. v. Atlantic Richfield Co., 208 F.3d 989 (Fed. Cir. 2000), detailed in Part I, *infra*.

59. *Id.* at 994; 35 U.S.C. § 112 (2001) requiring that patent include:

> [A] written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same . . . .

Id.

60. *See* Barrionuevo, *supra* note 8, at A1 (reporting that Unocal inventor Dr. Peter Jessup admitted in his 1997 federal court testimony that "some of the company's patent claims 'were narrowed' to 'resemble the regulations'").

61. *See Unocal*, 208 F.3d at 1002 (Lourie, J., dissenting-in-part) (stating that "[n]one of [the claims at issue] were in the original application; all were added by amendment"). *See generally In re* Smith, 481 F.2d 910, 914 (C.C.P.A. 1973), explaining that:

> [s]atisfaction of the description requirement insures that subject matter presented in the form of a claim subsequent to the filing date of the application was sufficiently disclosed at the time of filing so that the prima facie date of invention [of that newly-claimed subject matter] can fairly be held to be the filing date of the application.

Id.

62. *See, e.g., In re* Smythe, 480 F.2d 1376, 1382-85 n.2 (C.C.P.A. 1973) (addressing whether the written description and original claims adequately supported limitation added by preliminary amendment).

63. "New matter" is a patent law term of art. Professor Chisum explains that "[n]ew matter includes any alteration or addition to the matter originally disclosed. It does not include amendments that merely clarify or make definite matter originally disclosed." DONALD S. CHISUM, CHISUM ON PATENTS 1-G1 (2001) ("Glossary" entry for "new matter").

64. *See* 35 U.S.C. § 132(a) (2001) (providing that claims may be amended and specifying that "[n]o amendment shall introduce new matter into the

When patents issue with new or amended claims that are not adequately supported by the originally-filed written description, the patent applicant is not entitled to those claims,[65] and they may be held invalid in subsequent litigation.[66] Imposition of the written description requirement in this manner guards against "over-reaching" by inventors.[67] The requirement operates as a timing mechanism to ensure fair play in the presentation of claims after the original filing date and to guard against manipulation of that process by the patent applicant. Absent written description scrutiny, a later-presented claim not truly entitled to the earlier filing date of the application would be improperly examined against a smaller universe of prior art than is legally available.[68] The written description requirement takes a "snapshot" view of the inventor's contribution as of the filing date of the application, and asks whether that "snapshot" reasonably conveys to persons of ordinary skill that any subsequently-claimed subject matter was truly and fairly part of that contribution.[69] If not, those claims may be rejected by the PTO examiner, or even if allowed, adjudicated invalid in subsequent litigation.

The Federal Circuit panel majority in *Unocal* concluded that Unocal's '393 patent complied with the written description requirement.[70] In the view of the majority, persons of ordinary skill in the art, having read the originally-filed 1990 application, would have understood from that disclosure how to make the later-claimed gasoline formulations.[71] The majority upheld the validity of the disputed claims despite the fact that the supporting disclosures, which corresponded to the various chemical property limitations of the asserted claims, were scattered throughout different portions of the patent application and not collected in any

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disclosure of the invention").

65. *See, e.g., In re* Ruschig, 379 F.2d 990 (C.C.P.A. 1967).

66. *See* Regents of the Univ. of Cal. v. Eli Lilly and Co., 119 F.3d 1559, 1575 (Fed. Cir. 1997) (invalidating patent claims for failure to comply with written description requirement of 35 U.S.C. § 112, ¶ 1).

67. *See* Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1561 (Fed. Cir. 1991) (quoting Rengo Co. v. Molins Mach. Co., 657 F.2d 535, 551 (3d Cir. 1981) (identifying written description policy concern of "guard[ing] against the inventor's overreaching by insisting that he recount his invention in such detail that his future claims can be determined to be encompassed within his original creation").

68. Janice M. Mueller, *The Evolving Application of the Written Description Requirement to Biotechnological Inventions*, 13 BERKELEY TECH. L.J. 615, 622 (1998).

69. *Id.* at 621.

70. Union Oil Co. of Cali. v. Atlantic Richfield Co., 208 F.3d 989, 1001 (Fed. Cir. 2000).

71. *Id.* at 999 (concluding that "the record shows that the inventors possessed the claimed invention at the time of filing in the assessment of those of ordinary skill in the petroleum refining art").

one discrete description of a claimed composition.[72]

The highly deferential "substantial evidence" standard of review applied by the *Unocal* majority to the jury's verdict of written description compliance, a question of fact, no doubt influenced the result.[73] More broadly, the *Unocal* majority's affirmance may signal a retreat from the ultra-rigorous application of written description rules illustrated by other recent Federal Circuit pronouncements on the subject.[74] The *Unocal* decision reflects a much more liberal perspective of the evidentiary requirements necessary to establish an inventor's "possession" of a claimed invention than the Federal Circuit's controversial 1997 decision in *Regents of the University of California v. Eli Lilly*,[75] authored by the dissenting judge on the *Unocal* panel.[76] The disputed claims in *Lilly*, directed to insulin-encoding cDNA for humans and other higher mammals, were invalidated based on the application's failure to provide the precise nucleotide sequence corresponding to this cDNA.[77] The Federal Circuit held the claims invalid despite the fact that the patentee had provided the nucleotide sequence for insulin-encoding rat cDNA, as well as disclosed a method by which the human sequence could be derived therefrom. The accused infringer never challenged the patent's validity on enablement grounds.[78]

The *Unocal* majority's reliance on what persons of ordinary

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72. *See id.* at 998 (table showing support for claim limitations of claim 117); *id.* at 1002 (Lourie, J., dissenting-in-part) (noting "references to different parts of the specification for the various components" and concluding that "[t]he patent does not contain such complete descriptions of those compositions").

73. *See id.* at 999 (noting that the *Unocal* jury "reached the same conclusion [of written description compliance] as a matter of fact – a proposition that this court cannot disturb on this record which supplies substantial evidence to support that finding").

74. *See* Lawrence M. Sung, *On Treating Past as Prologue*, 2001 U. ILL. J. L. TECH. & POL'Y 75, 92-93 (2001) (contending that in *Unocal*, Federal Circuit shifts the focus of written description requirement away from patentee's disclosure considered in isolation and towards the understanding of the disclosure gleaned by those of ordinary skill in the art).

75. *See* Regents of the Univ. of Cal. v. Eli Lilly and Co., 119 F.3d 1559, 1569 (Fed. Cir. 1997) (holding that the written description requirement was not satisfied for university's patent claims to a DNA absent an express disclosure in the specification of the nucleotide sequence for that DNA).

76. *See Unocal*, 208 F.3d at 1002 (Lourie, J., dissenting-in-part).

77. *See Lilly*, 119 F.3d at 1567 (contrasting lack of human cDNA sequence data with Regents' provision of rat cDNA sequence data in Example 5 of '525 patent).

78. *See* Regents of the Univ. of Cal. v. Eli Lilly and Co., 39 U.S.P.Q.2d 1225, 1239-41 (S.D. Ind. 1995) (identifying written description requirement as the only issue of invalidity raised with respect to Regents' '525 patent). *See also Federal Circuit Rules it Takes More Than One cDNA Sequence to Claim a Genus*, III INTELL. PROP. LAWCAST (Dec. 29, 1997) (audio interview of Regents' counsel Harold J. McElhinny) (stating that Lilly never raised non-enablement as a defense to Regents' '525 patent).

skill in the art would have understood from Unocal's 1990 disclosure, supplemented by their pre-existing knowledge of that art, echoes the perspective taken in *Vas-Cath v. Mahurkar*.[79] In that 1991 decision the Federal Circuit signaled the appropriateness of importing the knowledge of the art worker into the written description analysis.[80] The *Vas-Cath* "skill in the art" analysis was largely abandoned in an intervening line of stringent inventor-possession-centric written description decisions exemplified by *Lilly*,[81] *Lockwood v. American Airlines*,[82] and *Gentry Gallery v. Berkline*.[83]

While the *Unocal* decision returns the Federal Circuit to a more liberal construction of written description compliance, it also facilitates standards capture by amendments during prosecution that attempt to track a developing industry standard, like those made by Unocal. Such amendments are not improper as a matter of patent law, so long as adequate written description support was present in the application as filed. Doctrinal play in the "adequate support" requirement thus facilitates standards capture. After *Unocal*, patentees have a decidedly stronger basis for argument that sufficient support exists for their amendments made with a view towards aligning patent claim coverage with industry standards requirements.

Unocal amicus curiae California Attorney General Bill Lockyer contends that when patent rights intersect with government regulation as in the *Unocal* case, public policy considerations warrant "strict construction" of the written description requirement.[84] The Federal Circuit chose not to address those larger public policy questions when determining written description compliance in *Unocal*, and with good reason. Modifying the substantive requirements of patentability for specific technologies or types of patent claims would inject an unacceptable degree of uncertainty into an area of patent jurisprudence already perceived as unstable. Other tools are more

79. 935 F.2d 1555, 1561 (Fed. Cir. 1991).

80. *Id.* at 1565-67 (finding that declaration testimony of Dr. Stephen Ash, submitted by patentee as representative of understanding of person of ordinary skill in the art, evidenced inventor's possession of claimed invention as of application filing date).

81. *See generally Lilly*, 119 F.3d 1559.

82. 107 F.3d 1565, 1572 (Fed. Cir 1997), holding that:

> [a] description which renders obvious the invention for which an earlier filing date is sought is not sufficient . . . . It is not sufficient for purposes of the written description requirement of § 112 that the disclosure, when combined with the knowledge in the art, would lead one to speculate as to modifications that the inventor might have envisioned, but failed to disclose.

Id.

83. *See generally* 134 F.3d 1473 (Fed. Cir. 1998).

84. *See Amici Curiae Brief of the States*, *supra* note 18, at 8-9.

appropriate.[85] Rather than contracting written description doctrine to deal with patents on government-regulated subject matter, the better approach is to deal with such public policy concerns through limitations on patent enforcement such as compulsory licensing, and in extreme cases, non-enforcement under a theory of patent misuse, as discussed below.[86]

B. Non-Availability of Industry Standards as Prior Art

Unlike the patent law of other nations, U.S. patent law is a first-to-invent regime.[87] In order to operate as prior art that can potentially anticipate or render obvious the subject matter of a U.S. patent claim, a qualifying disclosure must have an effective date that is prior to the patent applicant's invention date.[88] The prior art disclosure need not have been publicly available. Ror example, in *OddzOn Prods., Inc. v. Just Toys, Inc.*,[89] the Federal Circuit held that the secret disclosure of a design that "inspired" the inventor was properly considered prior art under 35 U.S.C. § 102(f)/103.[90]

The patent owner in *Unocal* asserted an invention date of March 1990.[91] Assuming that this assertion is correct, Unocal's invention date was prior to Unocal's participation in the CARB

85. *See* Brief for the United States as Amicus Curiae at 13 n.4, Atlantic Richfield Co. v. Union Oil Co. of Cal., 208 F.3d 989 (Fed. Cir. 2000), *cert. denied*, 121 S. Ct. 1167 (2001) (No. 00-249) (agreeing with the Unocal court that "Section 112 states important requirements that protect the public against patent monopolies that are unjustified by the purposes of patent law," but disagreeing with Unocal's assertion that "Section 112 is particularly directed toward 'gaming of the regulatory and patent regimes,' or that it is the 'only bulwark' against such conduct").

86. For a discussion of applicable remedies, see Part V *infra*.

87. *See generally* 3-10 DONALD S. CHISUM, CHISUM ON PATENTS § 10.01 (2001) (contrasting first-to-file systems with first-to-invent systems).

88. *See* 35 U.S.C. §§ 102(a), (e), (g) (2001) (requiring that novelty-destroying events occurred "before the invention" by the patent applicant); 35 U.S.C. §103 (requiring that invention be non-obvious "at the time the invention was made"). This before-the-invention-date rule for prior art does not apply in countries other than the U.S., which have a first-to-file system that assesses novelty as of the applicant's *filing* date and are not concerned with any earlier *invention* date. *See, e.g.*, European Patent Convention, Art. 54 (2001) (providing that "[a]n invention shall be considered to be new if it does not form part of the state of the art," and defining "state of the art" as "everything made available to the public by means of a written or oral description, by use, or in any other way, before the date of filing of the European patent application").

89. 122 F.3d 1396 (Fed. Cir. 1997).

90. *Id.* at 1401, 1403-04.

91. *See* Brief for the United States as Amicus Curiae at 2, Atlantic Richfield Co. v. Union Oil Co. of Cal., 208 F.3d 989 (Fed. Cir. 2000), *cert. denied*, 121 S. Ct. 1167 (2001) (No. 00-249) (stating that Unocal's patent application was filed on December 13, 1990, and asserted an invention date of March 1990). *See also* Union Oil Co. of Cal. v. Atlantic Richfield Co., 34 F. Supp. 2d 1208, 1214 (C.D. Cal. 1998) (stating that Unocal's invention date was March 30, 1990).

deliberations that led to the clean gasoline standards at issue in that case.[92] Thus, any disclosures subsequently made by Unocal or the other refiners during those deliberations could not operate as prior art to anticipate or render obvious the inventions claimed in Unocal '393 patent. Whether Unocal's asserted invention date of March 1990 was legally correct involved relatively complex issues of conception and reduction to practice that the Federal Circuit did not consider. These issues also arise in the context of determining inventorship.

C. *Improper Inventorship, Lack of Originality, and Derivation Under 35 U.S.C. § 102(f)*

Patents that incorrectly designate inventorship are potentially invalid under 35 U.S.C. § 102(f). A patent will not be granted to the named inventor if "he did not himself invent the subject matter sought to be patented."[93] However, liberalization of the rules for naming inventors in the 1952 Patent Act allows the correction of inventorship in many cases.[94] For example, the Federal Circuit recently held in a case of first impression that a putative inventor need not have any claim to an ownership interest in a disputed patent in order to have standing to sue for correction of its inventorship.[95]

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92. *See* Brief for the United States as Amicus Curiae at 2 n.1, Atlantic Richfield Co. v. Union Oil Co. of Cal., 208 F.3d 989 (Fed. Cir. 2000), *cert. denied*, 121 S. Ct. 1167 (2001) (No. 00-249) (stating that at time of Unocal's application filing date (Dec. 13, 1990), CARB had announced its intent to issue clean gasoline regulations but the precise parameters of those regulations were still unclear).

93. *See* 35 U.S.C. § 102(f) (2001) (providing that "[a] person shall be entitled to a patent unless . . . he did not himself invent the subject matter sought to be patented").

94. *See* 35 U.S.C. § 256 (2001) (providing that "error of omitting inventors . . . shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section"); Pannu v. Iolab Corp., 155 F.3d 1344, 1350 (Fed. Cir. 1998) (broadly interpreting § 256 as a "savings provision" to prevent loss of patent rights merely because inventors were improperly named). If the patent owner agrees to the correction of inventorship, this may be done by application to the USPTO. MCV, Inc. v. King-Seeley Thermos Co., 870 F.2d 1568, 1570 (Fed. Cir. 1989); 35 U.S.C. § 256, ¶ 1. If the patent owner does not agree, however, a federal district court has subject matter jurisdiction to correct inventorship so long as all parties have received adequate notice and an opportunity to be heard. *MCV*, 870 F.2d at 1570; 35 U.S.C. § 256 ¶ 2.

95. Chou v. Univ. of Chicago, 254 F.3d 1347, 2001 U.S. App. LEXIS 15028 (Fed. Cir. July 3, 2001). The *Chou* court held that despite a former university graduate student's obligation to assign all inventions to her university employer such that she would not have an ownership interest in the disputed patent, the student possessed standing to sue for correction of inventorship of that patent under 35 U.S.C. § 256 because of her "concrete financial interest" in potential royalty income and stock to which named inventors are entitled under the university's patent policy. *Id.* at *21. In *dicta*, the Federal Circuit suggested that even "reputational interest alone" (*i.e.*, one's interest in being

Determining whom should be named as the inventor of a particular invention is a rather indeterminate task. The key criterion is contribution to the conception of the invention. Conception has been described as the "touchstone" of inventorship.[96] More particularly, conception involves the formation in the mind of the inventor of the complete and operative invention, as it is thereafter reduced to practice.[97]

A corollary to the proper naming of inventors is the patent law concept of derivation.[98] Section 102(f) of the Patent Act "bars issuance of a valid patent to a person or persons who derive the conception of the invention from any other source or person."[99] In other words, if a patent applicant claims an invention whose conception was communicated to the applicant by a third party who is not named as an inventor, any resulting patent on that invention would be subject to invalidation under Section 102(f).[100]

The *Unocal* trial court flatly rejected an assertion by the refiners that Unocal had derived its inventions by "cop[ying] the invention from CARB,"[101] and this issue was not addressed by the Federal Circuit on appeal. However, other standards-setting scenarios are easily foreseeable that could invoke inventorship and derivation disputes, particularly where a patent application is filed during or after the standard-setting body's deliberations. At a minimum, patent applicants engaged in standards-setting activities must maintain thorough records that document their claim of sole inventorship. Asserted invention dates that post-date the applicant's participation in standards-setting deliberations will be suspect.

D. Secret Pendency of U.S. Patent Applications

Standards-setting participants are significantly less likely to conceal the existence of their pending patent applications after passage of the American Inventors Protection Act (AIPA) of

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named as an inventor to enhance professional prestige) might be enough to confer standing to sue for correction of inventorship. *Id.* at *20.

96. Burroughs Wellcome Co. v. Barr Labs., Inc., 40 F.3d 1223, 1227 (Fed. Cir. 1994).

97. *Id.* at 1228.

98. *See* DONALD S. CHISUM, CHISUM ON PATENTS (2001) § 2.03 (characterizing rule of proper joinder of inventors as "corollary" to derivation rule).

99. *Id.*

100. *See, e.g.*, Campbell v. Spectrum Automation Co., 513 F.2d 932 (6th Cir. 1975).

101. Union Oil Co. of Cal. v. Chevron U.S.A., Inc., 34 F. Supp. 2d 1222, 1224 (C.D. Cal. 1998) (finding that "[n]o competent evidence was introduced in support of . . . [the derivation] argument and the jury did not find the patent invalid on that basis").

1999.[102] As amended by the AIPA, the U.S. Patent Act now requires publication of most pending U.S. patent applications[103] eighteen months after the earliest priority date claimed by the applicant.[104] Competitors possessing prior art that appears to contravene an applicant's assertion of novelty and non-obviousness may submit that art to the PTO while the application is still pending.[105]

However, patent applicants who file only in the U.S. may opt out of eighteen-month publication.[106] Given the size and dominance of the U.S. technology market, particularly in the computer and software sector,[107] it is not improbable that the adoption of a U.S. industry standard which requires the use of an applicant's invention might be far more valuable to some applicants than the possibility of multi-national patent protection. Applicants seeking U.S. patent protection for standards technology could continue to conceal the existence of their pending applications from fellow standards-setting participants by foregoing international protection. Because the new USPTO publication rules will not guarantee that all pending patent applications pertinent to the ongoing development of an industry standards will be revealed in a timely fashion, other publication-forcing mechanisms are required. I propose *infra* the sanctions of compulsory licensing and unenforceability for patent misuse.[108]

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102. Intellectual Property and Communications Omnibus Reform Act of 1999, Title IV (American Inventors Protection Act of 1999), Pub. L. No. 106-113, §§ 4001-4808, 113 Stat. 1501A-521, 1501A-552-591 (1999).

103.T he USPTO estimates that approximately eighty (80) percent of all applications will be published under the new law. Sabra Chartrand, *Patents: A New Law Removes Some Secrecy from the Applications*, THE NEW YORK TIMES, Dec. 4, 2000, at C6 (reporting that USPTO is "preparing to publish 80 percent of all applications").

104. *See* 35 U.S.C. § 122(b)(1)(A) (2001).

105. 37 CFR 1.99 (2001) providing in part that:

> [a] submission by a member of the public of patents or publications relevant to a pending published application may be entered in the application file if the submission complies with the requirements of this section and the application is still pending when the submission and application file are brought before the examiner.

Id.

106. 35 U.S.C. § 122(b)(1) (2001).

107. *See* Office of Information Technologies, *Size of the U.S. Computer Software Industry*, *at* http://exportit.ita.doc.gov/ocbe/USIndust.nsf/806cbc35babba983852569510078 4a38/538b5d24b610208985256962006c91c8!OpenDocument (last updated Sept. 22, 2000) (reporting that from 1992 to 1997, total employment in U.S. computer software industry increased by 75% totaling 1,457,405, and that estimated receipts rose from $95 billion to $231 billion). *See generally* J. Thomas McCarthy, *Intellectual Property-America's Overlooked Export*, 20 U. DAYTON L. REV. 809 (1995).

108. *See* Part V, *infra.*

IV. PATENT RIGHTS ARE NOT INCOMPATIBLE WITH INDUSTRY STANDARDS

Industry standards often encompass proprietary technology, including technology that has been patented or is the subject of pending patent applications.[109] It is not surprising that many standards are based on technology that qualifies for patent protection, because one would expect an industry standard to be built upon novel and nonobvious advances in technology rather than simply whatever is available in the public domain.[110] This view is reflected by the position of leading trade associations that "[s]tandards in . . . high-tech industries must be based on the leading-edge technologies. Consumers will not buy second-best products that are based only on publicly available information."[111]

Conversely, standards development is sometimes driven by the desire to *avoid* proprietary technology. For example, in late 2000 the National Institute of Standards and Technology (NIST), a non-regulatory federal agency within the U.S. Department of Commerce,[112] announced its selection of the new cryptographic standard that would replace the prior Digital Encryption Standard (DES).[113] The new standard was based on the Rijmen algorithm, named after the algorithm's designer.[114] Notably, the Rijmen algorithm was the only algorithm among the five finalists that would not potentially infringe patents owned by Hitachi

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109. *See, e.g.*, American National Standards Institute, *Guidelines for Implementation of the ANSI Patent Policy*, *available at* http://web.ansi.org/public/library/guides/ppguide.html (last visited Mar. 29, 2001) (providing that ANSI has "no objection in principle to [the] drafting [of] a proposed American National Standard in terms that include the use of a patented item, if it is considered that technical reasons justify this approach"); Electronic Industries Alliance, *JEDEC Manual of Organization and Procedure JM21-K* § 7.3, *available at* http://www.jedec.org/Home/manuals/jm21k.pdf (Feb. 2, 1999) (stating that there is "no restriction against drafting a proposed standard in terms that include a patented item if technical reasons justify the inclusion," but that such standards should be considered "with great care"). *See also* Spoor, *supra* note 29, at 374 (contending that "many standards are partly or entirely covered by patents").

110. For example, the Joint Electronic Devices Engineering Council (JEDEC) takes the position that "[c]ommittee discussion of pending or existing patents is . . . encouraged when the committee feels that the patented item or process represents the best technical basis for a standard." Electronic Industries Alliance, *JEDEC Manual of Organization and Procedure JM21-K* Annex G 43, *at* http://www.jedic.org/Home/manuals/jm21k.pdf (Feb. 2, 1999).

111. Letter of Dan Bart, Electronic Industries Association (EIA)/Telecommunications Industry Association (TIA) Vice President, to Federal Trade Commission (Jan. 22, 1996) (on file with author), at 4.

112. National Institute of Standards and Technology, *General Information*, *at* http://www.nist.gov/public_affairs/general2.htm (last visited Mar. 31, 2001).

113. Charles Seife & David Malakoff, *Science Scope*, 290 SCIENCE 25 (2000).

114. *Id.*

Corporation.[115] These patents, issued to Hitachi earlier in 2000, claimed an array of mathematical techniques used by ciphers.[116] Like NIST, other standards-setting organizations have gone to considerable lengths to establish that the technology they have adopted does not infringe any existing patents.[117]

Proprietary rights such as patent ownership appear inconsistent, at least facially, with the concept of "open" standards.[118] Some standards proponents contend that consensus-based industry standards are antithetical to proprietary rights by individual firms, and would not permit any patenting of industry standards. Adherents of the "Open Source"[119] and "Free Software"[120] movements[121] support this view, pointing to classic, successful open source efforts developed in the absence of intellectual property rights, such as the computer operating systems Linux, Perl, and Apache.[122] Some legal scholars suggest

115. *Id.*

116. *Id.*

117. For example, in January 1999 the Seattle-based Internet company Intermind Corporation obtained a patent directed to its software that assists Web surfers in tracking how the sites they visit are using their personal data. *See* U.S. Patent No. 5,862,325 (issued Jan. 19, 1999) (titled "Computer-Based Communication System and Method Using Metadata Defining a Control Structure"). Intermind claimed that its '325 patent was infringed by an "open-source," or freely shared, privacy protocol for exchanging data specified by the W3C's Platform for Privacy Preferences Project ("P3P"). W3C subsequently obtained an opinion of non-infringement from outside patent counsel and published the opinion on its web site. *See generally* World Wide Web Consortium, *Analysis of P3P and US Patent 5,862,325*, *available at* http://www.w3.org/TR/P3P-analysis (Oct. 27, 1999).

118. *See* Mark A. Lemley, *Standardizing Government Standard-Setting Policy for Electronic Commerce*, 14 BERKELEY TECH. L.J. 745, 751-52 (1999) (noting that "as a rule intellectual property ownership in a *de facto* standard is inimical to open standard setting").

119. Open Source.Org, *The Open Source Initiative: Home Page*, http://www.opensource.org (last visited May 16, 2001).

120. GNU's Not Unix *at* http://www.fsf.org (last visited May 16, 2001). The Free Software Foundation's objections to proprietary rights in software are set forth by Richard Stallman, *Why Software Should Not Have Owners*, *available at* http://www.fsf.org/philosophy/why-free.html (last visited May 16, 2001).

121. *See* M. Craig Tyler and J. Wesley Jones, *Open-Source Software Raises Licensing Issues, Too*, NAT'L L.J., May 14, 2001, at C14 (arguing that open-source software is not in reality completely free of proprietary rights, and discussing "copyleft" protection of open-source code).

122. *See* Seltzer, *supra* note 33, at 53. Some commentators believe that Open Source proponents are behind the September 2000 votes by Germany, France, Italy and other countries having representation in the Administrative Council of the European Patent not to delete the prohibition on patenting computer programs "as such" from Article 52(2) of the European Patent Convention. Erwin J. Basinski, *An Open-and-Shut Case: The Diplomatic Conference to Revise the Articles of the European Patent Office Votes to Maintain the Status Quo Regarding Software Patents in Europe Pending Issuance of a New Software Patent Directive by the European Union*, 6 INT'L. J.

that Congress could altogether forbid patenting in standards technology.[123]

Any *per se* exclusion from the patenting of technical innovation encompassed in industry standards would be unwise for a number of reasons. Historically, technology-specific exclusions from patentability have rarely been implemented in U.S. patent law.[124] Such exclusions would also likely run afoul of U.S. international trade obligations.[125]

More importantly, without patenting's promise of time-limited exclusionary control to permit recoupment of innovation costs,[126] it is unlikely that an optimal level of research and development would occur in certain standards technologies. In the case of standards technology that is highly complicated and expensive to develop, "the availability and quality of the standard may very much depend on the reward provided, or not provided, by intellectual property law."[127] The first-mover advantage simply may not be enough to spur the requisite level of innovation in these sophisticated technology markets. The development of compact disc (CD) technology and the extensive patent holdings that allowed Philips and Sony to dominate the CD industry (and later, the Digital Versatile Disc (DVD) market) are a powerful example.[128]

COMM. L. & POL'Y 1, 2 (Winter 2000/2001).

123. See Lemley, *supra* note 118, at 757 (suggesting that Congress could "preclude ownership of industry standards altogether," or at least legislatively permit copying of technology needed to achieve interoperability, as in copyrighted application programming interfaces (APIs)).

124. The only technology-specific subject matter exclusions from patenting currently recognized in U.S. law involve inventions directed to national security and nuclear technology. *See* 35 U.S.C. § 181 (2001) (authorizing withholding of patent grants on inventions "detrimental to the national security"); 42 U.S.C. § 2181(a) (2001) ("No patent shall hereafter be granted for any invention or discovery which is useful solely in the utilization of special nuclear material or atomic energy in an atomic weapon.")

125. *See* General Agreement on Tariffs and Trade Uruguay Round Agreements, Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), Art. 27(1) (1994) (providing that, subject to limited exceptions, "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").

126. I propose herein that owners of patents on industry standards technology retain their right to completely exclude other competitors or to voluntarily license those competitors at terms set by the patentee, safeguarded from imposition of compulsory licensing, so long as the patent owners fully disclosed their relevant patents and patent applications to the standards-setting body in a timely fashion that would have permitted the body to select alternative, non-patented technology. *See* Part V, *infra*.

127. David Friedman, *Standards as Intellectual Property: An Economic Approach*, 19 U. DAYTON L. REV. 1109, 1122 (1994).

128. *See* SHAPIRO AND VARIAN, *supra* note 31, at 271 (noting that the patent portfolios of Sony and Philips were their "core assets" in the areas of CD and

The availability of patent protection may be especially important where the standard is a *de facto* one. In the absence of formal standard-setting (or where formal standard-setting is significantly delayed), a particular product or technology may become a *de facto* standard simply because it is preferred and adopted by the majority of industry participants.[129] If the product is not protected by patent or other intellectual property protection and can be freely copied, the firm that developed the technology may not be able to recoup its research and development costs, much less make a profit for its contribution.[130]

Patent rights that intersect with government-mandated health and safety standards are a more difficult case.[131] The government can make compliance with its standards mandatory through imposition of fines or other penalties for non-compliance, while adherence to standards generated by industry consortia, at least in theory, is optional.[132] The potential for unfair exploitation of users of government-mandated standards is significant, for these firms *must* employ the patented technology and will be required to pay whatever the patentee demands in terms of royalties. Rather than creating a two-tiered system of patentability rules for dealing with patents on subject matter that is the subject of government standards, the better approach is to permit such patents to issue but to limit their enforcement. To remedy this situation, I suggest in the next Part that when a technology standard is mandated by the federal government, the government should consider exercising its eminent domain power over patents that the owner refuses to license widely on commercially reasonable terms.

DVD technology). *See also* Press Release, Department of Justice, Justice Department Approves Joint Licensing of Patents Essential for Making DVD-Video and DVD-ROM Discs and Players (Dec. 17, 1998) (approving pooling of patents on DVD technology by Philips, Sony, and Pioneer) *available at* http://www.usdoj.gov/atr/public/press_releases/1998/2120.htm.

129. For example, Microsoft's Windows operating system was not developed by industry as a *de jure* standard, but is surely a *de facto* standard by virtue of its overwhelming market share. *See* Seltzer, *supra* note 33, at 51.

130. Spoor, *supra* note 29, at 369-70. This result is no different for innovators in the absence of standards; the distinguishing fact is the position of third parties. *Id.* at 370. Once a standard has been adopted, third parties are forced to copy the technology that is essential to the standard. *Id.*

131. *See* Press Release, Attorney General Bill Lockyer, Attorney General Bill Lockyer Files "Friend of the Court" Brief Over Unocal Gasoline Patent, California Attorney General Press Releases 00-122 (Sept. 14, 2000) *available at* http://caag.state.ca.us/press/2000idx.htm (warning in *amicus curiae* brief to U.S. Supreme Court that, in addition to Unocal's patents on clean fuel formulations, "other companies may seek patents for other products that the state may mandate for public health and safety").

132. Industry participants could choose to forego the industry standard and develop successful alternatives, much as the Apple Macintosh operating system was developed as an alternative to DOS and Windows-based systems.

V. EXPANDING THE PATENT MISUSE DOCTRINE TO REMEDY ABUSIVE STANDARDS CAPTURE

A number of remedies may apply when patents on the subject matter of industry standards conflict with the full achievement of the purposes of those standards. In this Part, I briefly discuss several non-patent law remedies that have been applied in earlier cases of standards capture, including antitrust and contract-based remedies (fraud, equitable estoppel, and implied license). Because of inherent limitations in these remedies, I propose the application of the patent law-derived remedies of mandatory disclosure, compulsory licensing and patent misuse-based non-enforcement to target certain cases of standards abuse by patent owners.

A. Antitrust Law

The capture of industry standards has been previously remedied through the use of governmental antitrust enforcement actions, such as the FTC's consent decree in *In re Dell Computer Corp.*.[133] In addition to actions based on the Federal Trade Commission Act, the Sherman Act provides authority for government antitrust enforcement as well as for private party antitrust lawsuits.[134] These actions are generally brought under Section 2 of the Sherman Act, which prohibits acquisition or maintenance of monopoly power through anticompetitive conduct.[135] The party asserting a Section 2 violation must show that the patentee has monopoly power in the relevant market, and that it has acquired and is maintaining that power in an anticompetitive manner.[136]

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133. *See generally* 121 F.T.C. 616, 1996 FTC LEXIS 291 (1996).

134. *See* § 2 Sherman Act, 15 U.S.C. § 2 (2001) (providing that "[e]very person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a felony . . . ."); § 4 Clayton Act, 15 U.S.C. § 15 (establishing jurisdiction of federal district courts over private party treble damages actions by "any person who shall be injured in his business or property by reason of anything forbidden in the antitrust laws . . . .").

135. *See* 15 U.S.C. § 2 (2001) (providing that "[e]very person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a felony . . . .").

136. *See* U.S. Philips Corp. v. Windmere Corp., 861 F.2d 695, 703 (Fed. Cir. 1988) (quoting United States v. Grinnell Corp., 384 U.S. 563, 570-71 (1966)). The Court in *Grinnell* held that:

> [t]he offense of monopoly under §§ 2 of the Sherman Act has two elements: (1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident.

In practice, the requirement for a showing of market power excludes much of typical patent owner behavior from antitrust prosecution.[137] The successful assertion of an antitrust counterclaim against a patent owner bringing an infringement suit is relatively rare because of certain antitrust protections given to intellectual property holders. The mere fact that a firm owns a patent on an industry standard does not itself demonstrate market power in the antitrust sense, because antitrust law recognizes the possibility of non-infringing substitutes for the patented technology.[138] As applied by the Federal Circuit,[139] antitrust doctrine preserves the patentee's immunity unless the defendant establishes either that (i) the patent was obtained from the USPTO through knowing and willful fraud within the meaning of *Walker Process Equipment, Inc. v. Food Machinery & Chem. Corp.*,[140] or (ii) the infringement suit is a "mere sham" to cover what is in reality "an attempt to interfere directly with the business relationships of a competitor."[141] Thus, the owner of a patent on an industry standard who seeks to enforce its statutory right through bringing a patent infringement suit against a non-licensed user of the standard enjoys presumptive immunity from antitrust liability, even if maintenance of the infringement suit would have anticompetitive effect.

Several commentators propose that the structural impediments to antitrust enforcement against patent owners could be circumvented by treating industry standards as "essential facilities" under U.S. antitrust doctrine.[142] The essential facilities

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Id.

137. *See* Robert Merges, *Reflections on Current Legislation Affecting Patent Misuse*, 70 J. PAT. & TRADEMARK OFF. SOC'Y 793, 793 (1988) (noting that "the often very limited (or 'thin') markets for patented technology make it difficult to apply antitrust law's consumer-demand definition of the relevant market").

138. *See* Abbott Labs. v. Brennan, 952 F.2d 1346, 1354-55 (Fed. Cir. 1991).

139. *See* Nobelpharma AB v. Implant Innovations, Inc., 141 F.3d 1059, 1068 (Fed. Cir. 1998).

140. 382 U.S. 172, 177 (1965).

141. *See In re* Ind. Serv. Orgs. Antitrust Lit., 203 F.3d 1322, 1326 (Fed. Cir. 2000). The *Noerr-Pennington* doctrine of antitrust law provides that an attempt to influence the government (e.g., by the filing of a patent infringement lawsuit) is generally immune from antitrust liability. Eastern R.R. Presidents Conf. v. Noerr Motor Freight, Inc., 365 U.S. 127, 138-39 (1961); United Mine Workers v. Pennington, 381 U.S. 657, 670 (1965). An exception exists to *Noerr-Pennington* antitrust immunity for "sham litigation," where the defendant establishes that the litigation is objectively baseless. *See* Professional Real Estate Investors v. Columbia Pictures Indus., 508 U.S. 49, 60-61 (1993) (discussing the two-part definition of "sham" litigation). *See also* Filmtec Corp. v. Hydranautics, 67 F.3d 931, 937-38 (Fed. Cir. 1995) (detailing contours of "sham litigation" exception under *Professional Real Estate Investors* in patent cases).

142. Wendy Milanese, *The Tension Must Break: The Irreconcilable Interplay Between Antitrust Defenses to Infringement and Protection of Standardized*

doctrine provides that it is an antitrust violation for the owner of an essential facility (*i.e.*, a "facility" essential for firms to compete) to deny access to that facility at nondiscriminatory terms.[143] Courts have held that a local electricity monopoly, a stadium, and a railroad are essential facilities.[144] In the classic essential facilities case *United States v. Terminal R.R. Assoc.*,[145] the Supreme Court required that a cartel of railroads collectively owning the only railroad switching yard in St. Louis give all the railroads access to the yard on equal terms.[146]

Despite the seeming attractiveness of the essential facilities doctrine, courts have routinely rejected its application.[147] For example, in *Alaska Airlines v. United Airlines*,[148] the Ninth Circuit held that the United Airline's computer reservation system was not an essential facility because United's practices merely resulted in imposing higher costs on United's competitor, the plaintiff Alaska Airlines, rather than eliminating Alaska from competition.[149] The same rationale could be applied to preclude application of the essential facilities doctrine in the case of

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Software Development Tools, 15 SANTA CLARA COMPUTER & HIGH TECH. L.J. 407, 438 n.4 (1999) (suggesting that "an owner of software technology [that has become a standard] could be liable under the essential facility doctrine"); Lemley, *supra* note 25, at 1084; E. Robert Yoches, *Licensing Patents For Software and Computer Technology*, INTELLECTUAL PROPERTY TODAY (Jan. 1995), at 8 (noting that essential facilities doctrine "has not been applied to standards, but an aggrieved litigant could argue that a patentee controls an essential facility if its patent covers an industry standard necessary to make, use or sell certain equipment").

143. *See* Milanese, *supra* note 142, at 438 n.4; *See also* Alaska Airlines, Inc. v. United Airlines, Inc., 948 F.2d 536, 542 (9th Cir. 1991) ("Stated most generally, the essential facilities doctrine imposes liability when one firm, which controls an essential facility, denies a second firm reasonable access to a product or service that the second firm must obtain in order to compete with the first").

144. *See* Milanese, *supra* note 142, at 438 n.4 (citing, *e.g.*, Otter Tail Power Co. v. United States, 410 U.S. 366, 378 (1973)) (citing with approval district court's finding that electric utility's "refusals to sell at wholesale or to wheel were solely to prevent municipal power systems from eroding its monopolistic position"); *see also* United States v. Terminal R.R. Assoc., 224 U.S. 383 (1912); Hecht v. Pro-Football, Inc., 570 F.2d 982, 992-93 (D.C. Cir. 1977) (holding that district court prejudicially erred by refusing to instruct jury on potential applicability of essential facilities doctrine to defendants' football stadium).

145. 224 U.S. 383 (1912).

146. *Id.* at 411-12. *See* Lemley, *supra* note 25, at 1084 (discussing the doctrine of "essential facilities").

147. *See, e.g.*, *Alaska Airlines*, 948 F.2d at 543-45; Twin Labs., Inc. v. Weider Health & Fitness, 900 F.2d 566, 569-70 (2d Cir. 1990) (holding that a sales force was not an "essential facility" because the potential for competition was not eliminated by its withdrawal); Olympia Equip. Leasing Co. v. W. Union Tel. Co., 797 F.2d 370, 376-80 (7th Cir. 1986).

148. 948 F.2d 536 (9th Cir. 1991).

149. *Id.* at 545-46.

standards promulgated by industry consortia, with which compliance is technically voluntary. Legal scholars have also criticized the essential facilities doctrine, which Professor Areeda has termed "an epithet in need of limiting principles."[150]

Although significant difficulties may arise in proceeding against standards patentees under U.S. antitrust law given the limitations of the essential facilities doctrine and the breadth of a patent owner's presumptive immunity, antitrust-style remedies may be more viable for standards users in Europe. Applying European competition jurisprudence addressing "abuse of a dominant position,"[151] the European Commission in July 2001 ordered compulsory licensing as a remedy when the owner of copyright in a proprietary system for collecting data on German pharmaceutical sales of drugs that had become a "national standard" refused to license its competitors.[152] The Commission noted that the refusal to license an intellectual property right is not normally considered to be an abuse of a dominant position.[153] Compulsory licensing was justified in this case, however, because the German pharmaceutical industry had contributed to the development of the copyrighted system, there was no viable substitute for the system, and the system was therefore "indispensable" to operation of the German pharmaceutical industry.[154]

B. Fraud

Besides antitrust action, other remedies have been employed in private party litigation against those who participate in standards-setting while failing to disclose pertinent patent rights. One such approach involves bringing a cause of action for fraud. In a pivotal case for the semiconductor industry,[155] a Virginia jury

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150. Phillip Areeda, *Essential Facilities: An Epithet In Need of Limiting Principles*, 58 ANTITRUST L.J. 841 (1989); *see also* Intergraph Corp. v. Intel Corp., 195 F.3d 1346, 1357 (Fed. Cir. 1999) (noting that "the viability and scope of the essential facility theory has occasioned much scholarly commentary"); E. THOMAS SULLIVAN AND JEFFREY L. HARRISON, UNDERSTANDING ANTITRUST LAW AND ITS ECONOMIC IMPLICATIONS 306 (3d ed. 1998) (describing essential facilities doctrine as "fairly dormant").

151. *See* Treaty Establishing the European Community (Treaty of Rome) Art. 82 (listing examples of "abuse by one or more undertakings of a dominant position within the common market"), *available at* http://www.europa.eu.int/abc/treaties_en.htm (last visited July 17, 2001).

152. *See* Press Release, Commission Imposes Interim Measures on IMS HEALTH In Germany (July 3, 2001), *available at* http://www.europa.eu.int/rapid/start/cgi/guesten.ksh (last visited July 13, 2001).

153. *Id.*

154. *Id.*

155. *See* Ariana Eunjung Cha, *Rambus Must Pay Damages*, THE WASHINGTON POST, May 10, 2001, at E1 (describing Rambus litigation against

ordered that Rambus, Inc., a California designer of high-speed computer memory chips, pay $3.5 million in punitive damages based on verdicts of actual and constructive fraud.[156] Asserted by defendant Infineon Technologies AG as a counterclaim to Rambus's charges of patent infringement,[157] the fraud allegations were based on Rambus's non-disclosure of patents that cover an aspect of the standard developed by the Joint Electronic Devices Engineering Council ("JEDEC") for synchronous dynamic random access memory chips ("SDRAMs").[158] Rambus, which plans to appeal the verdict, contends that it complied with JEDEC's disclosure policy, although it views the policies as "confusing, conflicting, poorly communicated and generally not complied with by other JEDEC members."[159]

C. Equitable Estoppel / Implied License

The doctrines of equitable estoppel and implied license may also operate in certain circumstances to prohibit a patent owner from recovering for infringement if the owner fails to disclose the existence of its proprietary rights to a standards-setting organization, as illustrated by *Wang Labs. v. Mitsubishi.*[160] Wang developed Single In-Line Memory Modules ("SIMMs") in the 1980s and encouraged Mitsubishi to make 256K chips incorporating the

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Infineon, one of a number of suits pending that involves the Rambus patents on SDRAM technology, as "pivotal" for the industry).

156. *See id.*; Verdict Form, Rambus Inc. v. Infineon Tech., Inc., Civil Action No. 3:00cv524 (E.D. Va. May 9, 2001), *available at* http://www.rambusite.com/RambusVsInfineon/Docket319.htm; *see also* Dan Goodin, *Rambus is Ordered by Jury to Pay $3.5 Million to Infineon Over Patents,* WALL STREET J., May 10, 2001, at B8; George Leopold, *Update: Jury Awards Infineon $3.5M on Fraud Charges*, EETIMES.COM, May 9, 2001, *available at* http://www.eetimes.com/story/OEG20010509S0053.

157. *See* Defendants' Answer and Counterclaims, Rambus Inc. v. Infineon Tech., Inc., Civil Action No. 3:00cv524 (E.D. Va. Sept. 25, 2000), *available at* http://www.rambusite.com/RambusVsInfineon/Docket07.htm.

158. Goodin, *supra* note 156. Infineon alleged that Rambus, as a member of JEDEC, had a duty to disclose all patents and pending patent applications relating to the SDRAM technology being standardized, and that Rambus intentionally failed to disclose its relevant patents and pending applications knowing that JEDEC's members would rely on Rambus's silence. Infineon further contended that the SDRAM standard was adopted based on that reliance, and that it suffered damages as a result of Rambus's failure to disclose when Rambus sued it for infringement of the non-disclosed patents. *See* Defendants' Answer and Counterclaims, *supra* note 157, at 33-34 (Count 7 alleging "Actual Fraud") and 34-35 (Count 8 alleging "Constructive Fraud"); Leopold, *supra* note 156.

159. Therese Poletti, *Rambus Found Guilty of Fraud*, MERCURY NEWS, May 9, 2001, at 2 (quoting statement by Rambus Chief Executive Geoff Tate), *available at* http://www0.mercurycenter.com/business/center1/rambus0510.htm.

160. Wang Labs. v. Mitsubishi Elecs. Am., Inc., 103 F.3d 1571 (Fed. Cir. 1997).

SIMMs.[161] Wang succeeded in its campaign to have the JEDEC adopt SIMMs as a standard, without informing JEDEC that it was seeking to patent the SIMMs technology.[162]

The Federal Circuit affirmed a district court's holding that the accused infringer Mitsubishi was entitled to an irrevocable, royalty-free implied license under Wang's patent, based on six years of interaction between the parties that led Mitsubishi to reasonably infer consent to its use of the invention Wang had patented. [163] Although Wang did not itself make SIMMs and had to buy them from other manufacturers such as Mitsubishi, Wang benefitted from Mitsubishi's reliance in the form of lowered prices as the market for SIMMs grew.[164] The Federal Circuit acknowledged that its imposition of an implied license in *Wang* was "in the nature of" equitable estoppel, a recognized but rarely-established defense in U.S. patent law,[165] but determined that "a formal finding of equitable estoppel [was not required] as a prerequisite to a legal conclusion of implied license."[166]

A potential weakness of the implied license/equitable estoppel defense as applied in industry standards cases is its requirement that a defendant establish detrimental reliance on the patentee's assertion that it would not enforce its patent. Third parties who did not participate in the standards-setting activity and had no contact with the patentee would be unable to establish detrimental reliance. If those third parties ultimately had to infringe the patent in order to practice the standard, they would not necessarily benefit from another party's establishment of an implied license/equitable estoppel defense.

A better approach would consider whether the owner of a standards patent should be permitted, as a matter of public policy, to enforce its patent, regardless of the degree of prior contact between the patentee and the ultimate users of the standard. Patent law-based doctrines such as patent misuse permit this approach.

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161. *Id.* at 1575.

162. *Id.*

163. *Id.* at 1581-82.

164. *Id.* at 1579-80.

165. *Id.* at 1582. *See* A.C. Aukerman Co. v. R.L. Chaides Const., 960 F.2d 1020, 1041-44 (Fed. Cir. 1992) (*en banc*) (setting forth elements of equitable estoppel and reversing district court's grant of summary judgment that patentee was equitably estopped to assert patent infringement).

166. *Wang,* 103 F.3d at 1581. The implied license was not in the nature of legal estoppel, the Federal Circuit explained, which "refers to a narrower category of conduct encompassing scenarios where a patentee has licensed or assigned a right, received consideration, and then sought to derogate from the right granted." *Id.* (quoting Spindelfabrik v. Schubert, 829 F.2d 1075, 1080 (Fed. Cir. 1987)).

D. Eminent Domain

Standards developed by the government rather than industry merit separate treatment. The assertion of patent rights in the subject matter of government-mandated technology standards represents a uniquely difficult clash of policy concerns – protecting the public's welfare versus maintaining sufficient incentives to bring forth adequate levels of innovation in the technology of the standards. There is little extant case law on this point, but what exists supports the position that government-mandated public health and safety requirements should, in some cases, trump the exclusivity right of intellectual property owners. When the federal government mandates a standard, particularly one related to public health or safety, it is appropriate to require anyone holding patent rights on the subject matter of the standard to license all users on commercially reasonable terms.

In extreme cases, courts may interpret legislation protecting public health as having effectively revoked conflicting intellectual property rights. In the copyright case of *SmithKline Beecham Consumer Healthcare, L.P. v. Watson Pharms., Inc.*,[167] plaintiff SmithKline asserted copyright in "labeling" material (*i.e.*, a written user's guide and an audiotape) that it had prepared and submitted to the U.S. Food and Drug Administration ("FDA") for approval[168] in connection with its application to make over-the-counter ("OTC") sales of "Nicorette" gum, a product designed to help smokers overcome the need for nicotine.[169] When the defendant Watson sought FDA approval to sell a generic equivalent of Nicorette after the expiration of SmithKline's patent on the gum, Watson submitted virtually identical copies of the user's guide and audiotape to the FDA.[170] The Second Circuit affirmed the district court's dismissal of SmithKline's lawsuit alleging copyright infringement by Watson on the ground that the FDA regulations *require* that generic manufacturers use "the same" labeling[171] as that approved for the sale of the corresponding pioneer drug.[172] "Because [the Hatch-Waxman] Amendments were designed to facilitate rather than impede the approval and OTC sale of generic drugs, the FDA's requirement that Watson use much of SmithKline's label precludes a copyright infringement action by SmithKline."[173]

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167. 211 F.3d 21 (2d Cir. 2000), *cert. denied*, 121 S. Ct. 173 (2000).
168. *Id.* at 23.
169. *Id.*
170. *Id.*
171. *See id.* (citing 21 U.S.C. § 355(j)(2)(A)(v) and 21 C.F.R. § 314.127(a)(7)).
172. *SmithKline*, 211 F.3d at 24-25.
173. *Id.* The Second Circuit viewed its decision as a straightforward resolution of conflict between the Copyright Act and the Hatch-Waxman Amendments to the Federal Food, Drug and Cosmetic Act. *Id.* at 27. The

Beyond copyright, public welfare concerns have led the courts in rare cases to refuse to enforce infringed patents.[174] In these cases, "the patentee's legitimate exercise of monopoly rights conflicted sharply with a clear and immediate threat to public welfare–and the patents were not enforced."[175] A classic case is *Vitamin Technologists, Inc. v. Wisconisin Alumni Research Found.*,[176] in which the Ninth Circuit concluded that a patent owner's refusal to license its process of irradiating foodstuffs to increase Vitamin D content, helpful in the treatment of rickets, for use with margarine, "the butter of the poor," justified the refusal of the injunctive and accounting relief sought by the patent owner.[177]

Another setting in which governmental concerns for public safety have prevailed over intellectual property owners' exclusivity rights involves procurements of patented technology needed for military defense purposes. Under the statutory framework of 28 U.S.C. § 1498, when the U.S. federal government needs to procure a weapons system that is covered by a third party's patent, the government can acquire and use that system from a different supplier without fear of injunction.[178] The grant of a U.S. patent on these systems is effectively subject to a non-exclusive but

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court declined to examine the defendant's further contentions that its use of the plaintiff's copyrighted label was permitted either under the copyright fair use defense of 17 U.S.C. § 107 or an implied, non-exclusive license purportedly granted to the FDA by SmithKline when it submitted the original label for approval. *Id.* at 25.

174. *See* Vitamin Technologists, Inc. v. Wis, Alumni Res. Found., 146 F.2d 941, 944-45 (9th Cir. 1945); City of Milwaukee v. Activated Sludge, Inc., 69 F.2d 577, 593 (7th Cir. 1934) (affirming award of money damages for the city's infringement of patent on sewage purification process but refusing to enjoin infringement because doing so "would close the sewage plant, leaving the entire community without any means for the disposal of raw sewage other than running it into Lake Michigan, thereby polluting its waters and endangering the health and lives of that and other adjoining communities").

175. Merges, *supra* note 137, at 796.

176. 146 F.2d 941 (9th Cir. 1945).

177. *Id.* at 954-56. This holding is arguably *dicta*, however, the Ninth Circuit also held the patents in suit invalid, and opined that "the public interest is served better by our decision that the patents are invalid." *Id.* at 956.

178. *See* 28 U.S.C. § 1498(a) (2001) providing in pertinent part that:

> [w]henever an invention described in and covered by a patent of the United States is used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same, the owner's remedy shall be by action against the United States in the United States Court of Federal Claims for the recovery of his reasonable and entire compensation for such use and manufacture.

Id. *See* Decca Ltd. v. United States, 640 F.2d 1156, 1166 (Ct. Cl. 1980) (explaining that "[t]he Government has a right to take patent licenses and cannot be enjoined from doing this").

royalty-bearing license in the federal government. Having waived its sovereign immunity for patent infringement, the government assumes any potential patent infringement liability on the part of its suppliers through clauses in its procurement contracts,[179] and if the procured system is found to infringe, the government will pay a reasonable royalty to the patent owner.[180] This statutory scheme has been explained as a form of compulsory licensing in which the federal government condemns a license and is obligated to pay just compensation in accordance with Fifth Amendment Takings Clause principles.[181]

Applying these principles to a setting in which the owner of a patent on a government-imposed standard refuses to license certain competitors, or offers licenses only at commercially unreasonable rates, the standards users might initiate declaratory judgment proceedings and assert non-liability in accordance with the public policy rationale of *SmithKline*. Alternatively, the federal government could consider eminent domain proceedings against the patent owner, along the lines of the statutory scheme found at 28 U.S.C. § 1498.[182] Significant legislative amendment

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179. 28 U.S.C. § 1498(a) providing that:

> the use or manufacture of an invention described in and covered by a patent of the United States by a contractor, a subcontractor, or any person, firm, or corporation for the Government and with the authorization or consent of the Government, shall be construed as use or manufacture for the United States.

Id.

180. *Decca*, 640 F.2d at 1167 (identifying reasonable royalty computation as "preferred method" of determining value of patent license taken by government).

181. The U.S. federal government cannot be enjoined from infringing another's U.S. patent, and it is deemed to have condemned a license in the eminent domain sense when it infringes. *See Decca*, 640 F.2d at 1166. If the federal government is found to have infringed, it must pay "just compensation" for the taking in accordance with the Fifth Amendment. *Id.* at 1167 n.17. The typical remedy for infringement by the government is a reasonable royalty. Leesona Corp. v. United States, 599 F.2d 958, 968 (Ct. Cl. 1979). The *Leesona* court explained that:

> [t]he nature of the property taken by the government in a patent infringement suit has traditionally been a compulsory compensable license in the patent, and just compensation has in most cases been defined by a calculation of a "reasonable royalty" for that license, or, when a reasonable royalty cannot be ascertained, another method of estimating the value of the lost patent.

Id.

182. *Contra* CCC Info. Svcs. v. MacLean Hunter Mkt. Reports, Inc., 44 F.3d 61, 74 (2d Cir. 1994) stating that court was:

> not prepared to hold that a state's reference to a copyrighted work as a legal standard . . . results in loss of the copyright. . . . [A] rule that the adoption of such a reference by a state legislature or administrative body deprived the copyright owner of its property would raise very substantial problems under the Takings Clause of the Constitution.

would be required, however, to extend the existing statutory framework to infringements committed by parties other than the U.S. federal government or those in contractual privity therewith; *i.e.*, to all entities that must comply with the government-mandated standard.[183]

E. Compulsory Licensing as a Sanction for Failure to Disclose Patent Rights

The case for compulsory licensing to all users of a patented standard is less compelling when the standard is merely a consensus standard promulgated by an industry consortium rather than one mandated by the government. In the case of industry-generated standards, those who implement the standard are not legally bound to do so.[184] Compulsory licensing should be required in this situation only as a penalty for failure to timely disclose patent rights relevant to the standard. Any firm that participates[185] in creating an industry standard and thereafter obtains patent rights in some aspect of the standard must, at a minimum, disclose the existence of any patents or pending patent applications[186] that may be relevant to the standard.

Id.

183. Currently the statutory scheme only covers infringements that are specifically authorized or consented to by the U.S. federal government, *e.g.*, by a government contractor. *See* 28 U.S.C. § 1498(a) (2001) providing in part that:

> [f]or the purposes of this section, the use or manufacture of an invention described in and covered by a patent of the United States by a contractor, a subcontractor, or any person, firm, or corporation for the Government and with the authorization or consent of the Government, shall be construed as use or manufacture for the United States.

Id.

184. *See supra* note 132 and accompanying text.

185. The degree of "participation" necessary to trigger such a disclosure requirement is at issue in the ongoing Rambus patent litigation over standards for SDRAM computer memory. Cha, *supra* note 155, at E1. Rambus filed its parent patent application on SDRAM technology before joining the Joint Electronic Devices Engineering Council (JEDEC), but amended the claims of its pending applications while a member of JEDEC. Michael Kanellos, *Infineon Fights On With Rambus Countersuit*, NEWS.COM (May 7, 2001), *at* http://news.cnet.com/news/0-1003-200-5848778.html. The patents issued after Rambus withdrew from JEDEC. *Id.* Rambus contends that it was a passive member of JEDEC, attending meetings but never advocating or voting on standards related to its patent. *Id.*

186. Some commentators question whether patent *applications*, as opposed to issued patents, should be subject to a disclosure obligation. *See* Baumann, *supra* note 31, at 3 (identifying this issue as an "open question" and noting that applications "represent a work in progress that is kept secret during the examination process" and that "the claims of a patent application likely will change as the application is examined at the Patent Office"). The issue is to some extent moot because, as discussed in the text, most newly-filed U.S. patent applications will be automatically published eighteen months after

The proposed disclosure obligation for standards-setting participants would parallel that created by the existing body of inequitable conduct case law[187] and the USPTO regulations placing a duty of candor on all patent applicants in their dealings with the agency.[188] The duty of candor requires disclosure to the agency of any information, known to the applicant, which is material to patentability.[189] The boundaries of this disclosure obligation are

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their earliest priority date.

More broadly, the necessity that standards-makers possess full and complete information of any potential proprietary rights in the subject matter of a standard in development justifies requiring all standards-setting participants to make full and immediate disclosure of pending patent applications. *Cf.* Electronic Industries Alliance, *JEDEC Manual of Organization and Procedure JM21-K* Annex F 42 (Feb. 2, 1999), *available at* http://www.jedec.org/Home/manuals/jm21k.pdf (visited July 21, 2001) (mandating that standards which require use of patented technology "may not be considered by a JEDEC committee unless all of the relevant technical information covered by the patent *or pending patent* is known") (emphasis added). The failure to implement a requirement for timely disclosure of pending patent applications would deprive standards-setting organizations of the option to adopt an alternative standard that utilized non-proprietary technology. *See In re* Dell Computer Corp., 121 F.T.C. 616, 1996 FTC LEXIS 291, *15 (1996) (contending that enforcement action was appropriate where evidence established that standards-setting body "would have implemented a different non-proprietary design had it been informed of the patent conflict during the certification process, and where [patentee] failed to act in good faith to identify and disclose patent conflicts").

187. *See generally* DONALD S. CHISUM, CHISUM ON PATENTS § 19.03 (2001) ("Fraudulent Procurement—Inequitable Conduct") (summarizing "vast" body of inequitable conduct case law and literature).

188. 37 C.F.R. § 1.56 (2001).

189. *See id.* at § 1.56(a) providing that:

> [e]ach individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section.

Id. The USPTO regulations further define "material to patentability" as:

> [information that] is not cumulative to information already of record or being made of record in the application, and
>
> 1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or
>
> (2) It refutes, or is inconsistent with, a position the applicant takes in:
>
> (i) Opposing an argument of unpatentability relied on by the Office, or
>
> (ii) Asserting an argument of patentability.
>
> A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

familiar to all patent applicants and their patent counsel, and compliance with parallel rules in the standards-setting arena should not represent an additional undue burden on standards-setting participants.

Mandating the disclosure of all relevant patent holdings to the standards-setting body is essential. Mandatory disclosure preserves for the standards-setting body the option to decide whether it will adopt a standard that requires the use of the patented technology or develop a different standard that avoids it altogether.[190] Imposing the threat of compulsory licensing for failure to comply with the disclosure requirement will help to ensure compliance, as does the risk that patents, which are procured through intentional withholding of material prior art from the USPTO, may be rendered unenforceable for inequitable conduct. Moreover, if an industry standard is ultimately adopted that requires the use of a patent that was not timely disclosed during the standard-setting activity, the imposition of compulsory licensing will ensure that all users of the standard will be able to practice the patent without fear of injunction.

The Federal Trade Commission ("FTC) imposed compulsory licensing without remuneration for the patentee as the remedy in *In re Dell Computer Corporation*,[191] a ground-breaking FTC antitrust enforcement action. Dell had participated in setting the Video Electronics Standards Association ("VESA") standard for the VESA Local Bus or "VL-bus" (a computer hardware device that carries instructions between a computer's CPU [central processing unit] and its peripheral devices),[192] without disclosing that it owned a patent on an aspect of the VL-Bus design.[193] The FTC cited evidence indicating that had the VESA been aware of Dell's patent, it would have implemented a different, non-proprietary

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Id. at § 1.56 (b).

190. Hyundai, a party to the ongoing Rambus patent litigation, *see supra* note 185, contends that JEDEC was also denied this option when it developed the SDRAM standard. Cha, *supra* note 155, at E1. *See* Kanellos, *supra* note 185, at 2 (quoting Hyundai lawyer Patrick Lynch as contending that "[i]f Rambus had disclosed these patents at JEDEC . . . these standards would never have been adopted. . . . The intent was to have an open standard").

191. 121 F.T.C. 616, 1996 FTC LEXIS 291 (1996).

192. *Id.* at 1996 FTC LEXIS 291, *2.

193. *Id.* at *3. Dell obtained U.S. Patent No. 5,036,481 before it joined VESA's Local Bus Committee, but did not disclose the patent's existence to VESA. *Id.* at *2-*3. Voting on VESA's proposed VL-bus design standard, Dell's representative certified in writing that the proposed standard did not infringe any intellectual property rights owned by Dell. *Id.* at *3. Dell thereafter threatened to sue firms planning to follow the VL-bus standard for infringement of its patent. *Id.* at *3-*4. The FTC majority concluded that Dell's actions constituted "unfair methods of competition in or affecting commerce" in violation of Section 5 of the Federal Trade Commission Act (15 U.S.C. §§ 41-58). *Id.* at *5.

design.[194] Finding that Dell's actions constituted "unfair methods of competition in or affecting commerce" in violation of Section 5 of the Federal Trade Commission Act,[195] the FTC imposed a consent order that broadly prohibited Dell from enforcing its '481 patent against "any person or entity . . . using or applying VL-bus in its manufacture of computer equipment" for the life of the patent.[196] In effect, the FTC required that Dell grant royalty-free licenses under its patent to anyone using Dell's patented technology to practice the VL-bus standard.[197]

The dissenting Commissioner in *Dell Computer* attacked the majority for imposing "a strict liability standard, under which a company would place its intellectual property at risk simply by participating in the standards-setting process."[198] She pointed out that simply being aware of the existence of a patent does not equate with an awareness that it infringes a given standard,[199] a point well-taken in view of the uncertainty of determining patent infringement under current Federal Circuit case law.[200] Other commentators have questioned the ability of any major corporation to identify with certainty any and all patent holdings that will be implicated by the practice of a given standard, and some firms strongly oppose the imposition of a disclosure requirement.[201] Because many firms that participate in standards-setting have extensive patent portfolios,[202] standards-setting

194. *Id.* at 291, *15. The FTC majority opined that the wide acceptance of VESA's VL-bus standard "effectively conferred market power upon Dell as the patent holder," *id.* at *15 n.2, and that this market power "was not inevitable." *Id.* For these reasons, enforcement action for "unfair methods of competition in or affecting commerce" in violation of section 5 of the Federal Trade Commission Act, 15 U.S.C. §§ 41-58, was considered appropriate by the majority. *Id.* at *15.

195. *See generally* 15 U.S.C. §§ 45(a)(1) (2001).

196. *Dell Computer*, 1996 FTC LEXIS 291, at *8.

197. *Id.* at *36-*37 (Commissioner Azcuenaga, dissenting).

198. *Id.* at *29 (Commissioner Azcuenaga, dissenting).

199. *Id.*

200. *Cf.* Cybor Corp. v. FAS Tech., Inc., 138 F.3d 1448, 1476 (Fed. Cir. 1998) (*en banc*) (Rader, J., dissenting) (noting study reporting that approximately 40% of patent claim determinations are reversed on appeal to the Federal Circuit).

201. *See Dell Computer*, 1996 FTC LEXIS at *40 (Commissioner Azcuenaga, dissenting) (stating that seven of the eleven public comments received in response to FTC's Federal Register notice of proposed consent order "strongly opposed the imposition on participants in the standards-setting process of any duty to identify and disclose patents").

202. *See* Letter of Dan Bart, Electronic Industries Association (EIA)/Telecommunications Industry Association (TIA) Vice President, to Federal Trade Commission (Jan. 22, 1996) (on file with author), at 3 (stating that "[m]any of the larger member companies [that participate in the process of voluntary standards development] have literally tens of thousands of patents").

organizations contend that having to conduct exhaustive patent searches prior to participating in standards-setting represents a significant resource burden that will chill the participation of those firms.[203]

Such concerns are likely over-stated. Many standards-setting organizations already impose requirements that their participants make full disclosure of any relevant intellectual property rights.[204] Moreover, firms with large patent portfolios must already address the resource problems engendered by ensuring compliance with their duty to disclose information material to patentability to the USPTO.[205] Patent owners who seek to position their technology as an industry standard must accept the burden of maintaining thorough oversight of their patent portfolios as a cost of doing business in industries that give rise to standards.[206] An expansive disclosure requirement is not likely to chill industry participation in standards-setting, because "participation in standards-setting is motivated by commercial self-interest and is not a form of community service."[207]

If compulsory licensing is imposed as a remedy for non-disclosure of patent rights pertinent to industry standards as proposed herein, some competent authority must set a licensing

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203. *See id.* at 4 (stating position of EIA/TIA that FTC's decision in *Dell Computer* "should not be interpreted to place an affirmative duty on companies to perform exhaustive patent searches in order to participate in standards activities. Such a requirement would deter many companies in the electronics and communications industries from engaging in standards development, especially larger companies with extensive patent interests"). *See also Dell Computer*, 1996 FTC LEXIS 291 at *40 (Commissioner Azcuenaga, dissenting) (noting comments received by FTC from American National Standards Institute (ANSI), in opposition to "the imposition of any affirmative duty to identify and disclose patents, because it would chill participation in standards development").

204. *See supra* notes 54-56 in Part II.C, "Intellectual Property Policies" and accompanying text.

205. In fact, large firms are less likely to be negatively impacted by a standards-setting disclosure obligation than small firms. *See* Baumann, *supra* note 31, at 3 (noting that "[l]arge companies have resources to track disclosures and educate employees who attend standards meetings, but smaller companies lack the resources to perform either of these services").

206. *Cf.* Sage Prods. v. Devon Indus., 126 F.3d 1420, 1425 (Fed. Cir. 1997), stating in context of doctrine of equivalents analysis that:

> [g]iven a choice of imposing the higher costs of careful prosecution on patentees, or imposing the costs of foreclosed business activity on the public at large, this court believes the costs are properly imposed on the group best positioned to determine whether or not a particular invention warrants investment at a higher level, that is, the patentees.

Id.

207. *In re* Dell Computer Corp., 121 F.T.C. 616, 1996 FTC LEXIS 291, *46 (1996) (Commissioner Azcuenaga, dissenting) (citing four of the eleven public comments received in response to FTC's Federal Register notice of proposed consent order).

fee structure that will determine the patentee's remuneration.[208] The perceived difficulty of quantifying a commercially reasonable royalty "has long been a leading argument against adoption of compulsory licensing in the U.S."[209] Permitting the patent owner to set the royalty at any desired level is for all practical purposes to permit the patentee to refuse to license, and would defeat the underlying purpose of the compulsory licensing – providing access to the patented invention for all users of the industry standard. Panels of industry experts should be created to set licensing fee schedules for standards in particular industries, rather than delegating the task to a government official or agency possessing less familiarity with the industry standard in question.[210]

F. Patent Misuse

Very few courts have applied the patent misuse doctrine to the problem of industry standards capture via patenting, and those that have reject the misuse defense.[211] The most likely

208. *See* General Agreement on Tariffs and Trade Uruguay Round Agreements, Agreement on Trade-Related Aspects of Intellectual Property Rights, Art. 31(h) (1994) (providing that where a member country's law provides for compulsory licensing, "the right holder shall be paid adequate remuneration in the circumstances of each case, taking into account the economic value of the authorization").

209. *See* Mueller, *supra* note 39, at 63 (citing EDITH TILTON PENROSE, THE ECONOMICS OF THE INTERNATIONAL PATENT SYSTEM 172 (1951) (listing difficulty of reasonable royalty determination as one of six primary arguments against compulsory licensing).

210. *See* Milanese, *supra* note 142, at 437 (proposing establishment of "an independent body of industry persons to determine the appropriate royalty or licensing fee" for licensing patents on standardized software tools).

211. For example, an accused infringer's patent misuse counterclaim was dismissed in a recent case alleging infringement of patents covering an industry standard for 56K modems. *See generally* Townshend v. Rockwell Int'l Corp., 2000 U.S. Dist. LEXIS 5070, 55 U.S.P.Q.2d 1011 (N.D. Cal. 2000). Townshend obtained several patents on 56K modem technology, which he subsequently licensed to 3Com Corporation. *Id.* at 2000 U.S. Dist. LEXIS 5070, *4-*5. After lobbying by Townshend and 3Com, the International Telecommunications Union (ITU) adopted Townshend's patented technology as the V.90 industry standard for 56K modems. *Id.* at *6-*7. Accused infringers Rockwell and Conexant Systems, Inc., alleged that Townshend refused to license them under the patents at reasonable commercial terms, instead requiring "unfair royalty rates, double-charging of customers and manufacturers, mandatory cross-licenses, and reservation of the right to condition licenses on the resolution of litigation." *Id.* at *22. The defendants charged that Townshend's licensing tactics amounted to patent misuse, as well as antitrust violation, unfair competition under state law, and inequitable conduct. *Id.* at *5. Holding that the defendants had failed to establish any anti-competitive conduct, the district court rejected the patent misuse defense. *Id.* at *46-47. Because "a complete refusal to license does not constitute patent misuse," *id.* at *47, the court held, Townshend's statement of proposed licensing terms also "cannot constitute patent misuse." *Id.* The *Townshend* court gave significant weight to the fact that, unlike the scenario of *In re Dell*

reasons for the rejection of the misuse defense are the statutory limitations imposed by the Patent Misuse Reform Act of 1988, including the provisions of 35 U.S.C. § 271(d)(4) that protect a patent owner's refusal to license its patent from patent misuse scrutiny.[212] Below, I examine the development of those statutory limitations and conclude that they should not prevent courts from applying the patent misuse doctrine to curb standards abuse by patent owners.

Patent misuse is a rather amorphous doctrine,[213] generally understood as "a method of limiting abuse of patent rights separate from the antitrust laws."[214] Different policies ground patent misuse and antitrust doctrine. Misuse focuses primarily on the patentee's behavior in expanding the scope of its rights beyond the statutory patent grant, while antitrust measures the impact of that behavior on the marketplace.[215] The misuse doctrine has its

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Computer Corp., 121 F.T.C. 616, 1996 FTC LEXIS 291 (1996), Townshend had disclosed his pending patent applications as well as his proposed licensing terms to the ITU during its standards-setting deliberations, and that the ITU thereafter adopted Townshend's technology as the standard with full knowledge of the patents and proposed licensing terms. *Id.* Accordingly, the district court granted plaintiff Townshend's motion to dismiss the patent misuse counterclaim. *Id.* FTC Chairman Pitofsky has criticized *Townshend* as "illustrating the way *CSU v. Xerox* may be misused." Pitofsky, *supra* note 33, at 546 n.27 (citing *Townshend* court's dismissal of antitrust counterclaims on ground that patentee has legal right to refuse to license on any terms).

212. *See, e.g.*, Lemley, *supra* note 25, at 1061 n.69:

> One might interpret the patent misuse doctrine as a rule compelling interoperability [of IP law and industry standards] in limited circumstances. The problem with this approach is that Congress appears to have foreclosed it in 1988, when it passed the Patent Misuse Reform Act. That Act added 35 U.S.C. § 271(d)(4), which provides that refusal to license a patent does not constitute patent misuse.

Id.

213. Professor Chisum observes in the misuse area "the absence of a clear and general theory for resolving the problem of what practices should be viewed as appropriate exercises of the patent owner's statutory patent rights." DONALD S. CHISUM, CHISUM ON PATENTS § 19.04 (2001). But given that misuse is a doctrine based in equity, the lack of clarity is hardly surprising. *See* Merges, *supra* note 137, at 796 (noting that "[t]he nature of equity is that it is somewhat 'messy'").

214. B. Braun Med. v. Abbott Labs., 124 F.3d 1419, 1426 (Fed. Cir. 1997).

215. Richard Calkins, *Patent Law: The Impact of the 1988 Patent Misuse Reform Act and Noerr-Pennington Doctrine on Misuse Defenses and Antritrust Counterclaims*, 38 DRAKE L. REV. 175, 187 (1988-89) (explaining that the antitrust laws are "intended to foreclose unreasonable restraints of trade and illegal monopolies," and consequently bear severe punishments for violators, while patent misuse doctrine, which merely suspends patent owner's right to recover for infringement, "'prevent[s] a patentee from projecting the *economic* effect of his admittedly valid grant beyond the limits of his legal monopoly,'" which effect can occur "regardless of whether the defendant in a patent infringement action is injured or a monopoly in trade and commerce results") (emphasis added) (quoting Panther Pumps & Equip. Co. v. Hydrocraft, Inc.,

genesis in judicial decisions that pre-date any significant development of U.S. antitrust law.[216] Procedurally, patent misuse is asserted as an affirmative defense to an allegation of patent infringement.[217]

As with the parallel doctrine of copyright misuse,[218] the roots of patent misuse lie in the equitable doctrine of unclean hands,[219] "whereby a court of equity will not lend its support to enforcement of a patent that has been misused."[220] Application of the misuse doctrine seeks to restrain practices that draw "anticompetitive strength" from the patent right.[221]

Although the patent misuse doctrine has been broadly defined as preventing a patent owner from using its patent in a manner contrary to the public interest, this characterization is too indefinite to provide any meaningful notice to a patentee of the boundaries of prohibited conduct.[222] In practice, determinations of

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468 F.2d 225, 231 (7th Cir. 1972)).

216. USM Corp. v. SPS Techs., Inc., 694 F.2d 505, 511 (7th Cir. 1982).

217. Virginia Panel Corp. v. Mac Panel Co., 133 F.3d 860, 868 (Fed. Cir. 1997); Windsurfing Int'l, Inc. v. AMF, Inc., 782 F.2d 995, 1001 (Fed. Cir. 1986).

218. *See generally* Brett Frischmann and Dan Moylan, *The Evolving Common Law Doctrine of Copyright Misuse: A Unified Theory and Its Application to Software*, 15 BERKELEY TECH. L.J. 865 (2000). The doctrine of copyright misuse derives from the unclean hands doctrine and bars a copyright owner from prevailing in an action for infringement of the misused copyright. *See* Lasercomb Am., Inc. v. Reynolds, 911 F.2d 970, 972 (4th Cir. 1990) (finding copyright misuse where software copyright owner's license prohibited licensee from developing any kind of related software, not just that protected by copyright). The accused infringer bears the burden of establishing that the owner used its copyright to gain rights in unprotected material. *See id.* at 979 (holding that "[t]he misuse arises from Lasercomb's attempt to use its copyright in a particular expression, the Interact software, to control competition in an area outside the copyright, *i.e.*, the idea of computer-assisted die manufacture, regardless of whether such conduct amounts to an antitrust violation"). A finding of copyright misuse does not invalidate the copyright, and the copyright owner may sue for infringement after purging the misuse. *See id.* at 979 n.22. The courts have relied on public policy arguments rather than antitrust principles in evaluating the copyright misuse defense. *See Lasercomb*, 911 F.2d at 978. *See generally* Alcatel USA, Inc. v. DGI Techs., Inc., 166 F.3d 772 (5th Cir. 1999); Practice Mgmt. Info. Corp. v. Am. Med. Ass'n, 121 F.3d 516 (9th Cir. 1997).

219. In a recent "unclean hands" case a Northern District of California judge declared a patent unenforceable for "inequitable conduct" that had occurred during the litigation to enforce the patent (rather than the typical inequitable conduct involving procurement of the patent in the USPTO). *See* Aptix Corp. v. Quickturn Design Sys., Inc., No. C98-00762 WHA, 2000 U.S. Dist. LEXIS 8408, at *87-95 (N.D. Cal. June 14, 2000) (declaring patent in suit unenforceable based on inventor/CEO's fabrication of invention date evidence after commencement of infringement suit).

220. B. Braun Med. v. Abbott Labs., 124 F.3d 1419, 1427 (Fed. Cir. 1997).

221. *Windsurfing Int'l*, 782 F.2d at 1001-02.

222. *See USM Corp.*, 694 F.2d at 510 (asserting that such a vague

patent misuse have been based upon a fairly narrow range of specific acts or practices of the patent owner,[223] often (but not exclusively) in the context of patent licensing.[224] The key inquiry is whether, by imposing a challenged condition (*e.g.*, the imposition of an onerous term in a license granted under the patent), the patent owner has "impermissibly broadened the 'physical or temporal scope' of the patent grant with anticompetitive effect."[225]

A paradigm case of patent misuse involves a patentee "tying" the grant of a patent license to the licensee's promise to purchase from the patent owner a non-patented, staple good. In *Morton Salt v. Suppinger*,[226] the U.S. Supreme Court refused to enforce the patent in suit where the patent owner had conditioned the grant of licenses to use its patented salt tablet deposition machines upon the licensees' purchase of unpatented salt tablets from the patent owner.[227] Although the Court concluded that this tying constituted patent misuse that justified non-enforcement of the patent, the offense in *Morton Salt* did not necessarily rise to the level of an antitrust violation because no evidence existed that the patent owner's licensing practice "substantially lessened competition or tended to create a monopoly in salt tablets."[228] Although the patentee could not enjoin the infringement, it did not face antitrust remedies such as the imposition of treble damages.[229] Nor was the misused patent held permanently unenforceable, because misuse can be "purged" by alleviating a challenged condition.[230]

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formulation, if "taken seriously . . . would put all patent rights at hazard").

223. *Id.*

224. *See generally* DONALD S. CHISUM, CHISUM ON PATENTS § 19.04[3] (2001) ("Acts of Misuse"). Although the majority of patent misuse cases have examined a patentee's licensing practices, the misuse defense has also been raised in a case involving restrictions placed by the patent owner on the conditions of post-sale use of its patented device. *See* Mallinckrodt, Inc. v. Medipart, Inc., 976 F.2d 700, 709 (Fed. Cir. 1992) (reversing grant of summary judgment of unenforceability based on patent misuse and remanding for determination of whether post-sale restriction was valid under applicable sales law and within scope of patent grant).

225. *Windsurfing*, 782 F.2d at 1001 (quoting Blonder-Tongue Labs., Inc. v. Univ. of Ill. Found., 402 U.S. 313, 343 (1971)).

226. Morton Salt Co. v. G.S. Suppinger Co., 314 U.S. 488 (1942).

227. *Id.* at 489-90, 494.

228. *Id.* at 490. *See also* Calkins, *supra* note 215, at 183 (concluding that "*Morton Salt* reinforced the Court's earlier rulings that the misuse defense was grounded on public policy underlying the patent laws and was not limited to a violation of the antitrust laws . . . .")

229. *Id.* at 490. *See also* § 4 Clayton Act, 15 U.S.C. § 4 (2001)(providing treble damages remedy).

230. *See Morton Salt,* 314 U.S. at 493, stating that:

> [e]quity may rightly withhold its assistance from . . . [a misuse] of the patent by declining to entertain a suit for infringement, and should do so at least until it is made to appear that the improper practice has been

Notably, the defendant/accused infringer in *Morton Salt* was not itself a "victim" of the misuse, because it was not a licensee.[231] In the Court's view, the true victim of the misuse was the public at large. The Court refused to enforce the patent on public policy grounds:

> [T]he public policy which includes inventions within the granted monopoly excludes from it all that is not embraced in the invention. It equally forbids the use of the patent to secure an exclusive right or limited monopoly not granted by the Patent Office and which it is contrary to public policy to grant.[232]

Thus, since *Morton Salt*, an accused infringer asserting a patent misuse defense is not required to show that it was personally harmed by the misuse.[233] This liberal notion of "standing" to assert the patent misuse defense, justified on public policy grounds, supports the proposition that a patent misuse defense should be potentially available to any entity denied a license to practice a patent on an industry standard, regardless of that entity's prior interactions with the patentee. The patent misuse defense should not be limited to only those standards users who actually participated with the patentee in the standards-setting negotiations and detrimentally relied on the patentee's non-disclosure of its patent holdings.[234]

The 1988 Patent Misuse Reform Act limitations on patent misuse dealt with the problematic intersection of that doctrine and the doctrine of contributory infringement.[235] An assertion of

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abandoned and that the consequences of the misuse of the patent have been dissipated."

Id. *See generally* DONALD S. CHISUM, CHISUM ON PATENTS § 19.04[4] (2001) ("Purging and Dissipaton of Misuse").

231. *Morton Salt*, 314 U.S. at 490-91, 494.

232. *Id.* at 492.

233. DONALD S. CHISUM, CHISUM ON PATENTS § 19.04[5] (2001).

234. *But see* Mark A. Lemley, *The Economic Irrationality of the Patent Misuse Doctrine*, 78 CAL. L. REV. 1599, 1618-19 (1990) (criticizing patent misuse doctrine in part because availability of patent misuse remedy (in effect, a royalty-free compulsory license) for parties not actually harmed by the misuse contravenes goals of patent system because it "unnecessarily rewards (and therefore encourages) infringement").

235. The doctrine of contributory patent infringement, statutorily codified at 35 U.S.C. § 271(c) in the 1952 Patent Act, originated in judicial decisions such as *Wallace v. Holmes*, 29 F. Cas. 74 (No. 17,100) (C.C. Conn. 1871). Under a theory of joint tort-feasance, the *Wallace* court held liable for infringement the defendant supplier of a burner which, when combined by consumers with a chimney, resulted in direct infringement of the plaintiff's patent on the overall lamp device comprising burner and chimney. *See id.* at 79-80. *See* Tom Arnold and Louis Riley, *Contributory Infringement and Patent Misuse: The Enactment of § 271 and its Subsequent Amendments*, 76 J. PAT. & TRADEMARK OFF. SOC'Y 357, 365 (1994) (discussing the view of some courts that after *Mercoid* "the mere act of bringing a contributory infringement action was patent misuse").

contributory infringement challenges a defendant's supply of one or more components that make up less then the entirety of the claimed invention.[236] The related patent misuse concern is that through such assertions, the patentee is attempting to expand the scope of its statutorily-granted exclusionary right by restraining competition in these components, which are generally non-patented items.[237] The following history of the patent misuse limitations or safe harbors of section 271(d) shows that they have primarily developed as a counterweight to contributory infringement; that development did not contemplate the current conflict between industry standards and patent rights.

After the Supreme Court's 1944 *Mercoid* decisions,[238] some courts viewed the very act of bringing a lawsuit that alleged contributory infringement as an act of patent misuse.[239] In response to concerns that patent misuse was eradicating contributory infringement, Congress enacted in the 1952 Patent Act section 271(d), which specified certain exceptions or "safe harbors" to patent misuse.[240] The statutory provision did not purport to define patent misuse, but rather set forth three specific acts which, if the patentee were otherwise entitled to relief for direct or contributory infringement, would not be considered misuse.[241]

Attorney (later Judge) Giles S. Rich and others successfully lobbied for the inclusion of the section 271(d) safe harbor provisions as a necessary counter-balance to the contributory

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236. *See* 35 U.S.C. § 271(c) (2001) (defining contributory infringement).

237. *See* Dawson Chem. Co. v. Rohm and Haas Co., 448 U.S. 176, 197 (1980) (noting that "an inevitable concomitant of the right to enjoin another from contributory infringement is the capacity to suppress competition in an unpatented article of commerce").

238. *See generally* Mercoid Corp. v. Mid-Continent Inv. Co., 320 U.S. 661 (1944), and Mercoid Corp. v. Minneapolis-Honeywell Regulator Co., 320 U.S. 680 (1944).

239. *See* Arnold and Riley, *supra* note 235, at 365 (1994) (citing Stroco Prods., Inc. v. Mullenbach, 67 U.S.P.Q. 168, 171 (S.D. Cal. 1944)).

240. 35 U.S.C. § 271(d) (1)-(3).

241. The three patent misuse "safe harbors" included in the 1952 Patent Act, for which "[n]o patent owner otherwise entitled to relief for infringement or contributory infringement of a patent shall be denied relief or deemed guilty of misuse or illegal extension of the patent right by reason of his having done one or more of the following," were that the patentee had:

> (1) derived revenue from acts which if performed by another without his consent would constitute contributory infringement of the patent;
>
> (2) licensed or authorized another to perform acts which if performed without his consent would constitute contributory infringement of the patent; and
>
> (3) sought to enforce his patent rights against infringement or contributory infringement.

Act of July 19, 1952, ch. 950, §§ 1, 66 Stat. 811, codified at 35 U.S.C. § 271(d)(1)-(3) (1952).

infringement provision that had been contemporaneously enacted as section 271(c). In view of the Supreme Court's *Mercoid* decisions and the lower courts' reaction thereto, Rich and his colleagues contended that having a contributory infringement provision in the statute was meaningless without a counterpart provision making clear that the assertion of contributory infringement by a patent owner under limited conditions involving a defendant's supply of a non-staple article[242] should not be regarded as patent misuse.[243] Congress ultimately agreed, enacting sections 271(d) (1)-(3) as part of the 1952 Patent Act.[244]

The Supreme Court did not have occasion to scrutinize the patent misuse safe harbors of section 271(d) until 1980.[245] In *Dawson Chemical Co. v. Rohm and Haas Co.*,[246] the Court considered the propriety of a patent owner's refusal to license the defendant and other producers of the non-staple but un-patented chemical propanil[247] to perform a patented process for applying propanil to inhibit the growth of weeds in rice crops. The Court also scrutinized the patent owner's practice of "tying" the grant to rice farmers of implied licenses for use of the method based on the farmers' purchase of propanil from the patentee, rather than from its competitors who also manufactured the un-patented propanil.[248] The defendant conceded that its sales of propanil with instructions for use amounted to contributory infringement of the method patent, but asserted the affirmative defense of patent misuse.[249] The defendant argued that the patentee's acts of tying and refusal to license went well outside the three then-existing patent misuse safe harbors of section 271(d), and that by virtue of those acts the patentee was excluded from the category of patentees "otherwise entitled to relief" under the prefatory language of section 271(d).[250]

By a 5-4 vote, the *Dawson* majority rejected the defendant's

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242. *See Dawson Chem. Co.*, 448 U.S. at 200. The Court explained that Section 271(c) identifies the basic dividing line between contributory infringement and patent misuse. It adopts a restrictive definition of contributory infringement that distinguishes between staple and nonstaple articles of commerce. It also defines the class of nonstaple items narrowly. In essence, this provision places materials like the dry ice of the *Carbice* case outside the scope of the contributory infringement doctrine. *Id.*

243. *See generally* Arnold and Riley, *supra* note 235, at 366-70.

244. *See Dawson Chem. Co.*, 448 U.S. at 235 (White, J., dissenting) (stating that "the impetus for enactment of § 271 was this Court's decisions in the *Mercoid* cases").

245. *Id.* at 215-20 (demonstrating that Court's patent infringement decisions following passage of 1952 Act did not require it to address the patent misuse provisions of 35 U.S.C. § 271(d)).

246. 448 U.S. 176 (1980).

247. *Id.* at 181-82.

248. *Id.* at 183, 186.

249. *Id.* at 186.

250. *Id.* at 187.

assertion of misuse, concluding that the patentee's acts were "not dissimilar in either nature or effect from the [safe harbor] conduct that is clearly embraced within § 271(d)."[251] With respect to the refusal to license, the majority provided little analysis except to note that the patentee "does *not* license others to sell propanil, but nothing on the face of the statute requires it to do so."[252] The majority's decision ultimately focused much greater attention on the patentee's act of tying than its refusal to license its competitors. The tying was held acceptable because the tied product, propanil, was a non-staple good, one that had "no use except through practice of the patented method."[253] In the majority's view, "the provisions of § 271(d) effectively confer upon the patentee, as a lawful adjunct of his patent rights, a limited power to exclude others from competition in nonstaple goods."[254]

Congress in 1988 legislatively codified the *Dawson* decision by adding new sub-sections (4) and (5) to the patent misuse safe harbors of 35 U.S.C. § 271(d).[255] Of particular interest in the industry standards context is sub-section (4), which provides that when a patent owner is "otherwise entitled to relief for infringement or contributory infringement of a patent," the patentee shall not be deemed guilty of patent misuse by reason of his having "refused to license or use any rights to the patent . . . ."[256] The legislative history on the enactment of sub-section (4) is extremely limited and indicates only that the provision was intended to codify existing case law.[257]

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251. *Dawson Chem. Co.*, 448 U.S. at 202, 223.

252. *Id.* (emphasis in original). The dissent criticized this analysis as simplistic, pointing out that:

> Section 271(d) does not define conduct that constitutes patent misuse; rather it simply outlines certain conduct that is not patent misuse. Because the terms of the statute are terms of exception, the absence of any express mention of a licensing requirement does not indicate that respondent's refusal to license others is protected by § 271(d).

Id. at 234 (White, J., dissenting).

253. *Id.* at 199.

254. *Id.* at 201.

255. Act of Nov. 19, 1988, P.L. 100-703, Title II, §§ 201, 102 Stat. 4676.

256. 35 U.S.C. § 271(d)(4).

257. *See* 134 CONG. REC. 32295 (Oct. 20, 1988):

> The underlying complaint about current law with respect to patent misuse is that it was developed to address allegedly anticompetitive effects of patent licensing arrangements. To address this problem the Senate-passed bill [S. 1200] requires that the court find a violation of the antitrust laws, after undertaking an economic analysis, before it can find a patent holder guilty of misuse.
>
> The proposal before the House today [H.R. 4972] does not adopt such a sweeping and inflexible view. Instead the bill before us proceeds on the basis of consensus about two categories of misuse that the Committee on the Judiciary concluded should not be the subject of a rigid *per se* rule.
>
> The two subject matters affected by the proposed amendment are

Some scholars have suggested that the enactment of section 271(d)(4) as a safe harbor for refusals to license precludes the assertion of a patent misuse defense in the standards capture context.[258] I contend that the patent misuse defense should not be so circumscribed. To the contrary, the sensitivity of the patent

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"refusal to use or license" a patented invention and the tying of a patented product to another separate product. Codification of the "refusal to use or license" as not constituting patent misuse is consistent with the current caselaw and makes sense as a matter of public policy.[4] [Footnote 4:] *See* SCM Corp. v. Xerox, 645 F.2d 1195 (2d Cir. 1981); *see generally* Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 U.S. 405, 426-430 (1908).

Id. (excerpt of statement by Rep. Kastenmeier, concurring in Senate amendment to H.R. 4972, Patent and Trademark Office Authorization).

Oddly, this legislative history does not cite the Supreme Court's decision on refusals to license in *Dawson Chem. Co. v. Rohm and Haas Co.*, 448 U.S. 176 (1980), clearly the most pertinent authority, but rather relies on the Ninth Circuit's *SCM v. Xerox* antitrust decision, which is not a patent misuse case. *See SCM*, 645 F.2d at 1197 (holding that Xerox's acquisition of and subsequent refusal to license a portfolio of patents directed to plain-paper copying did not support a claim for monetary relief under either Section 1 or Section 2 of the Sherman Act, 15 U.S.C. §§ 1, 2 (1976), coupled with Section 7 of the Clayton Act, 15 U.S.C. § 18 (1976)). Moreover, *SCM* leaves the door open for a patent misuse remedy based on a refusal to license; the Ninth Circuit in *SCM* court expressly refused to reach the trial court's decision to "le[ave] open the possibility of granting the plaintiff equitable relief," *id.*, despite the denial of any damages recovery.

Continental Paper Bag, the other authority cited in the remarks of Rep. Kastenmeier, likewise does not clearly support the § 271(d)(4) refusal to license safe harbor. The Supreme Court in its 1908 *Continental* decision rejected the petitioner's argument that a court of equity lacked jurisdiction to restrain infringement of a patent on a machine for making paper bags, when the patent had never been practiced because the non-manufacturing owner refused to license competitors. *Cont'l Paper Bag*, 210 U.S. at 423-24, 429-30. The Court noted that the exclusion of competitors from use of a patent "may be said to have been of the very essence of the right conferred by the patent," *id.* at 429, and further pointed out that, unlike many foreign countries, the U.S. had never (with one minor exception for aliens) imposed a working requirement on patent owners. *Id.* Notably, the *Continental* Court questioned whether the patentee's refusal to license its paper bag-making machine was truly "unreasonable or that the rights of the public were involved," *id.*; it left open the possibility of relief for truly unreasonable refusals to license that harmed the public's welfare. *Id.* at 430 (stating that "[w]hether, however, as case cannot arise where, regarding the situation of the parties in view of the public interest, a court of equity might be justified in withholding relief by injunction we do not decide").

258. *See, e.g.*, Lemley, *supra* note 25, at 1061 n.69:

> One might interpret the patent misuse doctrine as a rule compelling interoperability [of IP law and industry standards] in limited circumstances. The problem with this approach is that Congress appears to have foreclosed it in 1988, when it passed the Patent Misuse Reform Act. That Act added 35 U.S.C. § 271(d)(4), which provides that refusal to license a patent does not constitute patent misuse.

Id.

misuse doctrine to public policy concerns beyond the marketplace impact-focus of antitrust makes it perhaps the most viable tool available to remedy abusive standards capture by patent owners.

Only a few reported appellate decisions following *Dawson* have addressed section 271(d)(4) and whether an outright refusal to license is patent misuse, and these have not concerned patents on industry-promulgated standards. In the recent *CSU v. Xerox* litigation[259] the Federal Circuit summarily rejected an accused infringer's assertion that a patent owner's refusal to license or sell it patented products constituted patent misuse. CSU, an independent service organization for photocopiers, sued Xerox for violation of the antitrust laws based on Xerox's refusal to sell it Xerox-patented replacement parts. CSU also alleged patent misuse as well as antitrust violation.[260] The district court granted Xerox summary judgment, and the Federal Circuit affirmed,[261] concluding that:

> [i]n the absence of any indication of illegal tying, fraud in the Patent and Trademark Office, or sham litigation, the patent holder may enforce the statutory right to exclude others from making, using, or selling the claimed invention free from liability under the antitrust laws. We therefore will not inquire into his subjective motivation for exerting his statutory rights, even though his refusal to sell or license his patented invention may have an anticompetitive effect, so long as that anticompetitive effect is not illegally extended beyond the statutory patent grant.[262]

> We answer the threshold question of whether Xerox's refusal to sell its patented parts exceeds the scope of the patent grant in the negative.[2] [Footnote 2: Having concluded that Xerox's actions fell within the statutory patent grant, we need not separately consider CSU's allegations of patent misuse and they are rejected.] Therefore, our inquiry is at an end. . . .[263]

Regrettably, the Federal Circuit in *CSU* provided no analytical measure by which to determine the key patent misuse inquiry of when an anticompetitive effect "illegally extend[s] beyond the statutory patent grant."[264] The court's conclusion that Xerox's acts did not so "extend beyond" was dispositive of both the

259. *In re* Ind. Serv. Orgs. Antitrust Litig. (CSU, L.L.C. v. Xerox Corp.), 203 F.3d 1322, 1324 (Fed. Cir. 2000).

260. *In re* Ind. Serv. Orgs. Antitrust Litig., 989 F. Supp. 1131, 1132 (D. Kan. 1997) (addressing "the legal issue of whether Xerox's unilateral refusal to license or sell its patented and copyrighted products may constitute a misuse defense to an infringement claim or unlawful exclusionary conduct under the antitrust laws").

261. CSU, 203 F.3d at 1324.

262. *Id.* at 1327-28.

263. *Id.* at 1328.

264. *Id.* at 1327.

antitrust[265] and patent misuse[266] defenses. The Federal Circuit essentially treated the patent misuse claim as subsumed by the antitrust finding. The court summarily concluded that Xerox had not misused its patent, because it found no antitrust violation.[267] This approach ignores the fundamental policy differences between patent misuse and antitrust.[268]

Chairman Robert Pitofsky of the Federal Trade Commission sharply criticized the Federal Circuit's decision in *CSU v. Xerox*, asserting that the decision was "[a] striking example of an approach that gives undue weight to intellectual property rights."[269] In Chairman Pitofsky's view, the Federal Circuit unjustifiably:

> leapt from the undeniable premise that an intellectual property holder does not have to license anyone in the first instance to the

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265. *Id.* at 1327-28 (citing in discussion of antitrust counterclaim the court's earlier decision in *Glass Equip. Dev., Inc. v. Besten, Inc.*, 174 F.3d 1337, 1344 (Fed. Cir. 1999) (affirming dismissal of Besten's antitrust counterclaim "where Besten's counterclaim was grounded only on GED's attempts to enforce its right to exclude others from practicing the methods claimed in its '582 patent").

266. *See Windsurfing Int'l, Inc.*, 782 F.2d at 1001 (defining patent misuse as acts that "impermissibly broaden[] the 'physical or temporal scope' of the patent grant with anticompetitive effect") (quoting Blonder-Tongue Labs., Inc. v. Univ. of Ill. Found., 402 U.S. 313, 343 (1971)).

267. *CSU*, 203 F.3d at 1328 n.2. The Federal Circuit in *CSU* did cite the patent misuse safe harbor for refusals to license under 35 U.S.C. § 271(d)(4), but only in the context of discussing whether Xerox had violated the antitrust laws. *Id.* at 1326. The *CSU* court's treatment of patent misuse as essentially subsumed in the resolution of the defendants' antitrust allegations reflects the overlap between the two areas of law and the analytical difficulties created thereby. Commentators have vigorously debated whether the continued existence of the patent misuse doctrine is justified in view of remedies available for similar conduct under the antitrust laws. *See* Note, *Is the Patent Misuse Doctrine Obsolete?*, 110 HARV. L. REV. 1922 (1997) (contending that patent misuse doctrine retains vitality, at least as applied by Federal Circuit in Mallinckrodt, Inc. v. Medipart, Inc., 976 F.2d 700 (Fed. Cir. 1992)); Lemley, *supra* note 234, at 1628 (characterizing as "untenable" Professor Merges' position that differences between patent misuse doctrine and antitrust laws justify the continued existence of patent misuse doctrine) (citing Merges, *supra* note 137, at 797); Merges, *supra* note 137, at 793 (arguing that patent misuse doctrine facilitates patent law's goal of limiting patent claims to legal and equitable boundaries of patent owner's invention, by punishing activities that may not have "anticompetitive" affect in the antitrust law sense); Calkins, *supra* note 215, at 187 (contending that patent misuse doctrine and antitrust laws are grounded on different underlying policy bases, and objecting to rejection of patent misuse defense in favor of antitrust-only framework because "[r]equiring extensive market analysis and expert testimony to prove nothing more than a simple misuse defense will unquestionably impair the public policy encompassed in the patent laws as pronounced by the Supreme Court for over seventy years").

268. *See supra* note 215 and accompanying text.

269. Pitofsky, *supra* note 32, at 545-46.

> unjustifiable conclusions that it can select among licensees or can condition a license to achieve an anticompetitive effect. . . . That approach . . . allow[s] intellectual property holders to extend their market power beyond the scope of the intellectual property right itself and sacrific[es] more competition than is necessary to provide appropriate incentives to innovate.[270]

Chairman Pitofsky's comments support the position that the section 271(d)(4) patent misuse safe harbor for refusals to license should not be interpreted so broadly as to permit any such refusals no matter what the context or how anticompetitive the impact.[271] Moreover, the prefatory "otherwise entitled to relief" qualifier of section 271(d) could indicate that Congress envisioned newly-arising factual scenarios where a patentee should be excluded from the section's protections for public policy reasons not envisioned at the time of passage of the 1952 Patent Act. The problem of standards capture by refusal to license a non-disclosed patent covering standards technology presents such a newly-arising scenario. Courts should carefully consider whether a patentee's refusal to license a patent on standards technology that the patentee intentionally did not disclose to the standards-setting body extends the anti-competitive effect of the refusal beyond the statutory patent grant and propels such acts into the realm of actionable patent misuse.[272]

VI. CONCLUSION

When government mandates a technology standard, particularly a standard pertaining to public health and safety, any entity holding patent rights in the subject matter of the standard should be required to license all users at reasonable commercial terms. If the patent owner fails to meet this requirement, the government should consider the exercise of eminent domain over the patent.

In the case of a technology standard promulgated by industry, the key inquiry should be whether the patentee disclosed the existence of its patent or patent application to the standards-

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270. *Id.* at 546.

271. *See* Image Tech. Servs., Inc. v. Eastman Kodak Co., 125 F.3d 1195, 1215 n.7 (9th Cir. 1997) (disagreeing with suggestion that 1988 amendment of 35 U.S.C. § 271(d) to add sub-section (4) "may even herald the prohibition of all antitrust claims . . . premised on a refusal to license a patent," (quoting Data Gen. v. Grumman Sys. Support Corp., 36 F.3d 1147, 1187 (1st Cir. 1994), citing Calkins, *supra* note 215, at 192-97), because in Ninth Circuit's view "the amended statutory language does not compel this result" and "§ 271(d)(4) merely codified existing law.")

272. Alternatively, Congress could amend the § 271(d) patent misuse exceptions to make clear that those protections would not extend so far as to shield patent misuse based on standards capture that involves the intentional non-disclosure of patent rights to a standards-setting body.

setting body while that body had an opportunity to select an alternate, non-proprietary standard. Where the patentee failed to disclose a patent but that failure was not intentional, and the standard ultimately adopted by industry requires use of the subject matter of the patent, compulsory licensing at reasonable commercial terms should be imposed if the patent owner refuses to license all users of the standard. If the patentee's non-disclosure of its intellectual property rights to the standards-setting body was intentional, however, courts should refuse to enforce the patent altogether under the patent misuse doctrine, thus depriving the patentee of any remedy, injunctive or monetary, for use of the patented invention.