

# BERKELEY TECHNOLOGY LAW JOURNAL

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# PATENT MISUSE THROUGH THE CAPTURE OF INDUSTRY STANDARDS

By Janice M. Mueller<sup>†</sup>

## ABSTRACT

The existence of a patent on a particular technology conveys the statutory right to exclude, but in no way guarantees economic power in the marketplace. When a patented technology is adopted as an industry standard, however, that equation can change radically. Because of competitive necessity to practice the patented standard, particularly in industries characterized by network effects, the power potentially conveyed by the patent is greatly amplified. Industry standards are subject to “capture” when firms that participate in formulating a standard have also obtained (or are seeking) patent or other proprietary rights in some aspect of the technical subject matter of the standard, without disclosing the existence of those rights to the standard-setting organization. Conflicts arise when a license under these patents is essential to practicing a standard and the patent owner refuses to license certain competitors, or grants licenses only at terms perceived by users as commercially unreasonable. Absent a mechanism to compel licensing, a hold-up problem ensues.

This Article contends that patents are not fundamentally incompatible with industry standards, but that the existence of patents on standards must be transparent and the licensing of such patents subject to appropriate controls so as to ensure widespread industry access. In order to make fully informed choices about technology under consideration for adoption as an industry standard, standards-setting organizations must be made aware of any relevant patent rights or pending patent applications owned by standards-setting participants. In cases of “abusive” standards capture, defined as the intentional or willful nondisclosure of patent rights by a standards-setting participant who thereafter refuses to license all users at reasonable

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<sup>†</sup> Associate Professor, The John Marshall Law School, Chicago, Illinois; Visiting Associate Professor, Santa Clara University School of Law, Spring 2002. Robert Barr, Erwin Basinski, Mark Lemley, and Alan MacPherson provided helpful comments. For additional information or comments, the author can be contacted via e-mail at [7mueller@jmls.edu](mailto:7mueller@jmls.edu). An earlier version of this article was published as *Patenting Industry Standards*, 34 J. MARSHALL L. REV. 897 (2001).

and nondiscriminatory terms, courts should refuse to enforce such patents altogether under a theory of patent misuse.

## I. INTRODUCTION

Air pollution caused by automobile tailpipe emissions plagues virtually every country in the world;<sup>1</sup> in the United States, no state suffers more than California.<sup>2</sup> In December 1990, the Union Oil Company of California (“Unocal”) filed a United States patent application directed to “clean fuels”—automotive gasoline compositions formulated to reduce tailpipe emissions.<sup>3</sup> While Unocal’s patent application was pending in secrecy in the Patent and Trademark Office (“USPTO”),<sup>4</sup> the California Air Resources Board (“CARB”) in November 1991 issued new regulations for clean-burning gasoline;<sup>5</sup> the regulations would go into effect in 1996<sup>6</sup> and

1. Cf. Keith Bradsher and Andrew C. Revkin, *A Pre-Emptive Strike on Global Warming*, N.Y. 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*, N.Y. TIMES, May 19, 1999, at G20 (reporting that although environmental initiatives have reduced the state’s air pollution to one-third the levels in the 1950s, California still has the dirtiest air in the United States). See also U.S. Patent No. 5,288,393 (issued Feb. 22, 1994), at col. 1, ll. 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.

3. Brief of Amicus Curiae United States at 2, *Union Oil Co. of Cal. v. Atl. 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.* at 2-3. 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. 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) (Supp. 2001). The law in effect at the time of Unocal’s application required that all pending patent applications be maintained in secrecy until issuance. 35 U.S.C. § 122 (1990).

5. News Release, California Environmental Protection Agency, California Air Resources Board Orders World’s Cleanest Burning Gasoline (Nov. 22, 1991), *available at* <http://www.arb.ca.gov/newsrel/nr112291.htm>; CAL. CODE REGS. tit. 13, §§ 2260-76 (2002).

6. CAL. CODE REGS. tit. 13, §§ 2261 (2002).

## CAPTURE OF INDUSTRY STANDARDS

be mandatory for all California gasoline producers.<sup>7</sup> The CARB had developed these regulations through consultation and technology-sharing with numerous interested refiners, including Unocal.<sup>8</sup> Unocal's application issued as U.S. Patent No. 5,288,393 in February 1994.<sup>9</sup> Notably, its claims "read on" the CARB standards, such that any unlicensed refiner selling gasoline in compliance with the state-mandated standards would literally infringe Unocal's '393 patent.

When Unocal later announced that it would initiate a licensing program seeking royalties from its competitors for the practice of its '393 patent, Atlantic Richfield, Chevron, Exxon, and a number of other major oil refiners ("the refiners") sued for declaratory judgment.<sup>10</sup> The refiners 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.<sup>11</sup> In other words, the refiners contended that the USPTO should not have granted Unocal a patent on gasoline formulation inventions that it had not possessed in 1990 when it filed its application. Unocal filed a counterclaim alleging willful infringement of the '393 patent by the refiners.<sup>12</sup>

The refiners' challenge failed. After a forty-nine day trial, a jury sustained the patent's validity.<sup>13</sup> A split panel of the United States Court of

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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, 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 of Amicus Curiae United States at 1-3, *Union Oil. Co. of Cal.* (No. 00-249).

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. *Union Oil. Co. of Cal.*, 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 ensures 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 omitted).

12. *Union Oil. Co. of Cal.*, 208 F.3d at 994.

13. *Id.* 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 41 asserted claims were not originally-

Appeals for the Federal Circuit affirmed.<sup>14</sup> The refiners petitioned the United States Supreme Court for *certiorari*, arguing primarily that Unocal had improperly participated in the CARB standards-setting process by never 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.<sup>15</sup> The refiners contended that after the CARB issued its regulations, Unocal cancelled its original patent claims and intentionally substituted amended claims to “resemble” the CARB regulations.<sup>16</sup> By manipulating United States patent law’s written description requirement,<sup>17</sup> the refiners urged, Unocal exploited the regulatory and patent processes, thereby placing the refiners in “a regulatory/patent law vise.”<sup>18</sup>

Public criticism of Unocal’s tactics 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 through increased gas prices.<sup>19</sup> California’s Attorney General Bill Lockyer joined the fray, accusing Unocal of seeking to “hijack and distort” the state regulatory process through its ac-

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filed claims, but they were added by amendment during prosecution of the ’393 patent. *Id.* at 1002.

14. *Id.* at 1002.

15. Petition for Writ of Certiorari at 13-14, *Union Oil Co. of Cal.* (No. 00-249).

16. *Id.* at 14.

17. A U.S. patent must 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 . . . .

35 U.S.C. § 112, ¶ 1 (1994). This statutory provision is thought to encompass two separate requirements: the “written description” requirement and the “enablement” requirement. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1561-62 (Fed. Cir. 1991). Compliance with the written description requirement is discussed in further detail at Part III.A *infra*.

18. Petition for Writ of Certiorari at 2, *Union Oil Co. of Cal.* (No. 00-249).

19. *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* Brief of Amici Curiae 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 at 2, *Union Oil Co. of Cal.* (No. 00-249) [hereinafter Brief of Amici Curiae States]; Barriounevo, *supra* note 8, at A1.

## CAPTURE OF INDUSTRY STANDARDS

quisition and enforcement of the '393 patent.<sup>20</sup> Lockyer and thirty-three other state attorneys general filed an *amicus curiae* brief in the Supreme Court, supporting the refiners' *certiorari* petition.<sup>21</sup> 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."<sup>22</sup>

Despite the outcry over *Unocal*, the Supreme Court denied *certiorari*.<sup>23</sup> 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<sup>24</sup> and a request for reexamination of Unocal's '393 patent is pending in the USPTO.<sup>25</sup> In January 2002, the Federal Circuit rejected an attempt by another oil refiner to initiate an interference proceeding under 35 U.S.C. § 291 between its patent and the '393 patent.<sup>26</sup>

The Unocal gasoline patent story is but one of a growing number of examples that illustrate the "capture"<sup>27</sup> of an industry standard by a firm holding intellectual property rights in the technical subject matter of that

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20. 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 (Sept. 14, 2000), available at <http://caag.state.ca.us/newsalerts/2000/00-122.htm> (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").

21. See Brief of Amici Curiae States, *supra* note 19.

22. *Id.* at 12.

23. *Atl. Richfield Co. v. Union Oil Co. of Cal.*, 531 U.S. 1183 (2001).

24. See *Exxon Mobil Seeks Probe of Unocal Patents*, L.A. TIMES, May 8, 2001, at C4 (reporting that "Unocal has received \$92 million for infringements over a five-month period in California from six major oil companies, including Exxon Mobil").

25. Reexamination U.S. Serial No. 90/005,942 (filed Mar. 1, 2001); see U.S. PAT. AND TRADEMARK OFF., OFFICIAL GAZETTE (Mar. 27, 2001), available at <http://www.uspto.gov/web/offices/com/sol/og/2001/week13/patrequ.htm> ("Requests for Reexamination Filed" listing, including '393 patent).

26. See *Talbert Fuel Sys. Patents Co. v. Unocal Corp.*, 275 F.3d 1371, 1377-78 (Fed. Cir. 2002) (affirming district court's dismissal of Talbert's requested interference proceeding under 35 U.S.C. § 291 on ground that claim 1 of Talbert's U.S. Patent No. 5,015,356 did not claim same subject matter as claim 81 of Unocal's '393 patent).

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

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,”<sup>28</sup> “gaming,”<sup>29</sup> or “hidden intellectual property rights.”<sup>30</sup>

Although previous standards disputes have implicated copyright law,<sup>31</sup> this Article focuses on standards capture through patent procurement. Conflicts arise when a patent license is essential<sup>32</sup> 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.<sup>33</sup> Absent a mechanism to compel licensing, a “hold-up” problem ensues.<sup>34</sup>

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28. See *In re Dell Computer Corp.*, 121 F.T.C. 616, 1996 FTC LEXIS 291, \*23 (1996) (Comm’r. Azcuenaga, dissenting) (describing the case as concerning “alleged abuse of the standards-setting process by a patent holder”).

29. Richard Karpinski, *Keep Patents Out of Standards, but Reward Innovation*, INTERNETWEEK, Nov. 16, 2001, at <http://www.internetweek.com/watercooler/cooler/111601.htm> (asserting that “[s]avvy vendors, from IBM to Microsoft to Sun, have been ‘gaming’ the standards process for years now”).

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

31. 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).

32. An “essential” patent is one that must be practiced in order to comply with the industry standard. See Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting*, at 19 (Soc. Sci. Research Network, Working Paper, Mar. 2001), at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=273550](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=273550) (noting that “once a standard is picked, any patents (or copyrights) necessary to comply with that standard become truly essential”).

33. See Jaap H. Spoor, *Standardization and Exclusivity in Intellectual Property*, in INFORMATION LAW TOWARDS THE 21ST CENTURY 374 (Willem F. Korthals Altes et al. eds., 1992) (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”).

34. See Shapiro, *supra* note 32, at 19-20 (observing that when an industry standard “becomes popular, each such patent [necessary to comply with the standard] can confer significant market power on its owner, and the standard itself is subject to ‘hold-up’ if these patent holders are not somehow obligated to license their patents on ‘reasonable’ terms”).

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As patent protection eclipses copyright and other forms of intellectual property as the protection mechanism of choice for many technologies,<sup>35</sup> these disputes at the intersection of patents and industry standards will arise with increasing frequency.<sup>36</sup> For example, the venerable World Wide Web Consortium (“W3C”) cites an increasing incidence of patent conflicts in the web development sphere as driving that group’s controversial August 2001 proposal allowing W3C standards to be based on patents licensed to standards users at “reasonable and nondiscriminatory” (“RAND”) terms, rather than on the “royalty-free” (“RF”) basis previously required by W3C.<sup>37</sup> As recently observed by former Chairman Robert Pi-

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35. For example, patenting of software-implemented business methods has virtually exploded in the United States in the wake of *State St. Bank & Trust Co. v. Signature Fin. 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 US Patent and Trademark Office has “tripled the number of examiners that examine [patent applications directed to] business methods” since *State Street* was decided).

36. 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 & HAL R. VARIAN, *INFORMATION RULES* 239 (1999). See also Timothy Baumann, *As Standards Proliferate, So Too a Rise in Defendants Asserting ‘Standards Abuse’*, 2 PAT. STRATEGY & MGMT. 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”).

37. See *W3C Patent Policy Framework* (Aug. 16, 2001), at <http://www.w3.org/TR/2001/WD-patent-policy-20010816/>. Section 1 of the W3C Patent Policy Framework states that:

[a]s Web technology has become more commercially critical and the impact of software and business process patents are felt more strongly in the Web development arena, W3C believes it is necessary to adopt a more comprehensive policy and process for addressing the relationship between the open technical Recommendations developed by W3C and patent rights held by both W3C Members and others.

*Id.*; see also *W3C Response to Public Comments on the W3C Patent Policy Framework Working Draft* (Oct. 2, 2001), at <http://www.w3.org/2001/10/patent-response> (citing conflict over patent rights raised by W3C specification for the Platform for Privacy Preferences Project (“P3P”) [see *infra* note 141], as well as “several similar situations in which fear, uncertainty, and doubt surrounding patents confused or derailed W3C work,” as basis for W3C’s position “that it would be irresponsible to act as if software patents didn’t exist”).

tofsky of the Federal Trade Commission: “Standard 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.”<sup>38</sup>

Part II surveys the rise of industry standards-setting. Part III describes how instability in several patent law doctrines facilitates standards capture through patenting. Contrary to the position taken by adherents of the “open standards” movement, Part IV contends that the assertion of patent rights over the subject matter of industry standards is not inherently improper. This Article argues, however, that patent owners should have a mandatory obligation to disclose the existence of any patents or pending patent applications that are material to the standard during their participation in the standards-setting process. Part V details this obligation, which parallels that borne by all U.S. patent applicants to disclose known information material to patentability to the USPTO.

If an industry standards-setting group ultimately adopts a standard that requires the practice of a patent that was *not* disclosed, a patent owner who participated in setting that standard but failed to disclose the patent’s existence should be subject to compulsory licensing, i.e., the patentee should be compelled to license 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

To provide a context in which to address several specific intersections between patent law doctrine and industry standards, this Part reviews 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.

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The August 2001 proposal of the W3C for RAND licensing met intense public criticism. See *Public Issues for Patent Policy Framework of 20010816* (archiving and summarizing public comments), at <http://www.w3.org/2001/11/PPF-Public-Issues>. In late February 2002, the W3C retracted the RAND proposal and substituted in its place a RF proposal. See <http://www.w3.org/TR/2002/WD-patent-policy-20020226/> (Feb. 26, 2002).

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

### A. The Industries Impacted by Standards-Setting

Industry standards are pervasive. For example, one or more hardware or software standards govern virtually every aspect of using a computer or connecting to the Internet.<sup>39</sup> Standards development is particularly critical for the digital economy.<sup>40</sup> The United States Government predicts that standards are needed in at least the following areas: electronic payments; security (confidentiality, authentication, data integrity, access control, nonrepudiation); 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.<sup>41</sup>

Beyond computing, standards exist in all industries, including “safety and health, telecommunications, information processing, petroleum, [and] medical devices.”<sup>42</sup> The standards mandated by the State of California’s Air Resources Board in *Unocal* cover gasoline formulations. Even biotechnology is undergoing standards development.<sup>43</sup> Arguably, the human genome has become a de facto standard. Myriad firms need access to the genome’s structure and sequence<sup>44</sup> in order to develop new drugs, therapies, and diagnostic tools based on that information. Conflicts no doubt

39. Larry Seltzer, *The Standards Industry: Corporate Consortia Are Supplanting Traditional Rule-Making Bodies*, INTERNET WORLD, Apr. 15, 2001, at 50, available at <http://www.internetworld.com/magazine.php?inc=041501/04.15.01internettech1.html>. A recent “essay”-type advertisement for Microsoft asserts that “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*, N.Y. TIMES, Apr. 11, 2001, at A12.

40. See, e.g., The White House, *A Framework for Global Economic Commerce*, N.Y. TIMES, Apr. 11, 2001, at A12, available at <http://www.ecommerce.gov/framework.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”).

41. *Id.*

42. 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. 1, 2002).

43. For example, “[b]ioinformatics.org is a nonprofit, 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> (last visited Mar. 12, 2002).

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

will arise as researchers seek licenses under the relevant genome patents.<sup>45</sup> Standards convergence is also likely for the software platforms used to sequence, manipulate, and view genetic data.<sup>46</sup>

Three primary factors are driving the rise of standards-setting: product interoperability,<sup>47</sup> public health and safety,<sup>48</sup> and global competitiveness.<sup>49</sup> Most compelling is product interoperability.<sup>50</sup> 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

45. 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).

46. 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.*

47. See Keith Lutsch et al., Compaq Computer Corp., *Standards Activities in the Computer Industry*, in 1998 INTELLECTUAL PROPERTY LAW INSTITUTE, SAN ANTONIO, TEX. (Mar. 20-21, 1998), at N-2 (noting that the "essence of a technology standard is the definition of a core product and a complimentary product, for example, a compact disc player and a compact disc. The definition allows any number of manufacturers to produce cross-compatible core and complementary products").

48. 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*, N.Y. TIMES, Mar. 20, 2001, at D1-D6.

49. 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). However, disparities in standards and conformity assessment practices between the United States and its trading partners may cause technical barriers to international trade. U.S. Department of Commerce Standards Experts, at <http://ts.nist.gov/ts/htdocs/210/216/sitdescr.htm> (last visited Mar. 31, 2001). "Standards also can be employed as de facto non-tariff trade barriers, to 'lock out' nonindigenous businesses from a particular national market." *Framework*, *supra* note 40, § 9 ("Technical Standards").

50. See Lemley, *supra* note 27, 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).

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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 de jure standards and de facto standards.<sup>51</sup> De facto standards are not promulgated by a particular body, but arise spontaneously due to marketplace success. Classic examples of de facto standards include the QWERTY typewriter keyboard layout<sup>52</sup> and the Microsoft Windows operating system for personal computers.

De facto standards commonly exist in markets characterized by network externalities (or network effects).<sup>53</sup> In such markets the value that consumers place on a good increases as more and more consumers use that good.<sup>54</sup> 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.<sup>55</sup> 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.<sup>56</sup>

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51. Seltzer, *supra* note 39, at 50-51.

52. 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 & VARIAN, *supra* note 36, 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.*

53. “Externalities arise when one market participant affects others without compensation being paid.” *Id.* at 183.

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

55. SHAPIRO & VARIAN, *supra* note 36, at 183. Examples of negative network externalities include pollution: one person’s sewage ruins the drinking or swimming water of many other individuals. *Id.*

56. See Pitofsky, *supra* note 38, 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 to-

This Article focuses primarily on de jure standards, which are rules for implementing a technology that are set by some official body, be it a government, an industry working group, or an academic consortium.<sup>57</sup> For example, 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”).<sup>58</sup>

De jure standards are further divisible into (1) mandatory de jure standards, such as the gasoline emissions standards set by a government agency in the *Unocal* case discussed *supra*, and (2) consensual de jure standards such as the World Wide Web language Hyper Text Markup Language (“HTML”),<sup>59</sup> which was developed by the World Wide Web Consortium (“W3C”).<sup>60</sup> 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 a de jure standard rather than develop their own alternative technology.

### C. Intellectual Property Policies

Many standards-setting bodies have implemented intellectual property policies outlining a spectrum of obligations for holders of patents and other intellectual property rights in the subject matter of the standard.<sup>61</sup>

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ward standardization due to network effects, threaten to diminish market competition”); see also Lemley & McGowan, *supra* note 54, at 481.

57. See Lutsch et al., *supra* note 47, at N-1 (defining de jure standards as those “set by some organized group,” which may be either an “established industry organization” such as the American National Standards Institute (ANSI) or the Institute of Electrical and Electronic Engineers (IEEE), or an “ad hoc consortia” such as those that developed the Extended Industry Standard Architecture (EISA) for personal computers or the Universal Serial Bus (USB) standard).

58. Seltzer, *supra* note 39, at 50-51. ANSI is a private, nonprofit organization that “administers and coordinates the U.S. voluntary standardization and conformity assessment system.” American National Standards Institute, *About ANSI*, at <http://www.org-public/about.html> (last visited May 26, 2001).

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

60. 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 39, at 52.

61. Professor Mark Lemley has conducted an exhaustive study of the intellectual property policies of twenty-nine different standards-setting organizations. See Mark A.

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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.<sup>62</sup> Other standards-setting bodies require that patent owners grant licenses under terms that are "reasonable and nondiscriminatory."<sup>63</sup> Still other bodies do not oblige

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Lemley, *Intellectual Property Rights and Standard Setting Organizations*, 90 CALIF. L. REV. \_\_ (forthcoming 2002).

62. For example, the W3C Working Groups that develop standards "have traditionally operated with the tacit assumption that the Recommendations they produce could be implemented without payment of patent license fees." *W3C Backgrounder for W3C Patent Policy Framework* (Aug. 20, 2001), at <http://www.w3.org/2001/08/patentnews>. As of August 2001, the W3C "has not been aware of any non-free patent that is essential to the implementation of any existing W3C Recommendation." *Id.*

63. For example, the Internet Engineering Task Force (IETF) requires that owners of Intellectual Property Rights (IPRs) in adopted standards agree to license them at openly-specified, reasonable, nondiscriminatory terms. See Internet Engineering Task Force, *The Internet Standards Process* ¶ 10.3.2(C) (1996), at <http://www.ietf.org/rfc/rfc2026.txt>. IETF guidelines provide 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 works when implementing, using or distributing technology based upon the specific specification(s) under openly specified, reasonable, nondiscriminatory 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*, 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).

patent owners to license under any particular terms, requiring only that standards-setting participants disclose any patents or pending patent applications that are related to the subject matter of the standard.<sup>64</sup> 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*.<sup>65</sup>

### 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. This Part demonstrates that instability in these doctrines contributes to the issuance of patents on the technology of industry 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 Unocal story illustrates the manner in which disparate interpretations of patent law’s written description requirement are prominently contributing to standards capture. The declaratory plaintiff refiners in *Unocal*<sup>66</sup> 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.”<sup>67</sup> The refiners specifically criticized Unocal’s conceded

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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*, at Annex F42, at <http://www.jedec.org/Home/manuals/jm21k.pdf> [hereinafter *JEDEC Manual*].

64. For example, JEDEC has a policy requiring all participants in standards-setting discussions to disclose any intellectual property they hold that might be involved in the standard at issue. *See JEDEC Manual*, *supra* note 63, at Annex F42, (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”).

65. *Cf.* Tamaki, *supra* note 20, 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”).

66. *Union Oil Co. of Cal. v. Atl. Richfield Co.*, 208 F.3d 989 (Fed. Cir. 2000); *see* discussion *supra* Part I.

67. *Id.* at 994. See section 112 which requires that a 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

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amendment of its pending patent claims to “resemble” the CARB regulations.<sup>68</sup> Disagreement between Federal Circuit judges as to what is required for compliance with the written description requirement ultimately permitted Unocal to capture the CARB clean-burning gasoline regulation by obtaining patent coverage that mirrored the regulation and withstood the refiners’ attack.

Issues of compliance with the written description requirement frequently arise when, as in *Unocal*, new patent claims are added to a pending patent application,<sup>69</sup> or when existing claims are substantively amended.<sup>70</sup> United States 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” into the application.<sup>71</sup>

When patents issue with new or amended claims that are inadequately supported by the originally filed written description, the patent applicant is not entitled to those claims,<sup>72</sup> and they may be held invalid in subsequent

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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 . . . .  
35 U.S.C. § 112 (1994).

68. 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’”).

69. See *Union Oil. Co. of Cal.*, 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). The court in *In re Smith* explained 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.*

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

71. 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 disclosure of the invention”). “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.” 1 DONALD S. CHISUM, CHISUM ON PATENTS G1 (2001) (Glossary entry for “new matter”).

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

litigation.<sup>73</sup> Imposition of the written description requirement in this manner guards against “overreaching” by inventors.<sup>74</sup> 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.<sup>75</sup> 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 originally filed contribution.<sup>76</sup> If not, those claims may be rejected by the USPTO examiner, or if allowed, held invalid in subsequent litigation.

The Federal Circuit panel majority in *Unocal* concluded that Unocal’s ’393 patent complied with the written description requirement.<sup>77</sup> 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.<sup>78</sup> 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 one discrete description of a claimed composition.<sup>79</sup>

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73. 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).

74. 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”).

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

76. *Id.* at 621.

77. *Union Oil Co. of Cal. v. Atl. Richfield Co.*, 208 F.3d 989, 1001 (Fed. Cir. 2000).

78. *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”).

79. 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”).

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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,<sup>80</sup> no doubt influenced the result.<sup>81</sup> 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.<sup>82</sup> 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*,<sup>83</sup> authored by the dissenting judge on the *Unocal* panel.<sup>84</sup> 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.<sup>85</sup> 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.<sup>86</sup>

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80. *In re Wilder*, 736 F.2d 1516, 1520 (Fed. Cir. 1984) (stating that “[t]he inquiry into whether the description requirement is met is a question of fact”).

81. *See Union Oil. Co. of Cal.*, 208 F.3d 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”).

82. *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).

83. *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).

84. *See Union Oil. Co. of Cal.*, 208 F.3d at 1002 (Lourie, J., dissenting in part).

85. *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).

86. *See Regents of the Univ. of Cal. v. Eli Lilly and Co.*, 39 U.S.P.Q.2d 1225 (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 nonenablement as a defense to Regents’ ’525 patent).

The *Unocal* majority's reliance on what persons of ordinary skill in the art would have understood from Unocal's 1990 disclosure, supplemented by those persons' pre-existing knowledge of that art, echoes the perspective taken in *Vas-Cath v. Mahurkar*.<sup>87</sup> In that 1991 decision the Federal Circuit signaled the appropriateness of importing the knowledge of the art worker into the written description analysis.<sup>88</sup> The *Vas-Cath* "skill in the art" analysis was largely abandoned in an intervening line of stringent inventor-centric written description decisions exemplified by *Lilly*,<sup>89</sup> *Lockwood v. American Airlines*,<sup>90</sup> and *Gentry Gallery v. Berkline*.<sup>91</sup> These decisions focused exclusively on subject matter that the written description explicitly revealed was in the possession of the inventor, without consideration of how that subject matter would be understood when viewed through the lens of an ordinarily skilled reader of the written description.

While the *Unocal* decision returns the Federal Circuit to a more liberal *Vas-Cath*-like construction of written description compliance, it also facilitates standards capture by inviting 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.<sup>92</sup> The majority in *Unocal* concluded that, based on a jury verdict, the

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87. 935 F.2d 1555, 1561 (Fed. Cir. 1991).

88. *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).

89. 119 F.3d 1559.

90. 107 F.3d 1565 (Fed. Cir. 1997). The Federal Circuit held 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.* at 1572.

91. 134 F.3d 1473 (Fed. Cir. 1998).

92. *See* 35 U.S.C. § 132(a) (1994) (providing that applicant can amend claims, so long as no new matter is thereby introduced); *Kingsdown Med. Consultants, Ltd. v. Hollister, Inc.*, 863 F.2d 867 (Fed. Cir. 1988). In *Kingsdown*, the court noted that:

there is nothing improper, illegal or inequitable in filing a patent application for the purpose of obtaining a right to exclude a known competitor's product from the market; nor is it in any manner improper to amend or insert claims intended to cover a competitor's product the applicant's attorney has learned about during the prosecution of a patent application. Any such amendment or insertion must comply with all

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requisite support was present; a different Federal Circuit panel might not have been so generous.

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 amendments aligning their patent claim coverage with industry standards specifications. Because the support question is one of fact, owners of standards patents will be particularly motivated to place the question of written description validity before a jury.

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.<sup>93</sup> 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 required by industry standards would inject an unacceptable degree of uncertainty into an already unstable area of patent jurisprudence. Other tools are more appropriate.<sup>94</sup> Rather than modifying written description rules to invalidate 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. In extreme cases, nonenforcement may be justified under a theory of patent misuse, as discussed below.<sup>95</sup>

### **B. Nonavailability of Industry Standards as Prior Art**

Unlike the patent law of other nations, U.S. patent law is a first-to-invent regime.<sup>96</sup> 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 appli-

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statutes and regulations, of course, but, if it does, its genesis in the marketplace is simply irrelevant . . . .  
*Id.* at 874.

93. See Brief of Amici Curiae States, *supra* note 19, at 8-9.

94. See Brief of Amicus Curiae United States at 13 n.4, *Union Oil. Co. of Cal.* (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”).

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

96. See generally 3 CHISUM, *supra* note 71, § 10.01 (contrasting first-to-file systems with first-to-invent systems).

cant's invention date.<sup>97</sup> Elsewhere, a disclosure need only pre-date the patent application's filing date to operate as prior art.<sup>98</sup> Standards capture is accordingly facilitated by the U.S. first-to-invent regime, because standards-setting activity such as oral communications or documentation that might have been available as prior art under foreign patent regimes is often not available to invalidate a U.S. patent.

When a particular disclosure is available as prior art, however, U.S. law does not necessarily require such disclosure to have been publicly available in order to invalidate a patent. For example, in *OddzOn Products, Inc. v. Just Toys, Inc.*,<sup>99</sup> 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) and 103.<sup>100</sup> Thus, a disclosure of standards technology made in confidence by member A of a standards-setting body to member B could potentially operate as anticipatory or obviating prior art with respect to patent claims later obtained by member B (so long as the disclosure antedates B's asserted invention date). In addition, disclosures of standards technology in the U.S. patent application of another, filed before the invention date of the asserted patent, are also potentially available as prior art as of the other's U.S. filing date, even though the patentee could not have known of the information at that time.<sup>101</sup> The use

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97. See 35 U.S.C. §§ 102(a), (e), (g) (1994) (requiring that novelty-destroying events occurred "before the invention" by the patent applicant); *id.* § 103 (requiring that invention be nonobvious "at the time the invention was made"). Under the arcane rules of the U.S. regime, a patentee's "invention date" may extend back in time to the date of conception, the mental part of the act of inventing, provided that the patentee was sufficiently diligent in working towards a reduction to practice. See *Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1577 (Fed. Cir. 1996) (citing *Christie v. Seybold*, 55 F. 69, 76 (6th Cir. 1893) (Taft, J.)); cf. Paul M. Janicke, *Do We Really Need So Many Mental and Emotional States in United States Patent Law?*, 8 TEX. INTEL. PROP. L.J. 279, 290 (2000) (questioning whether "it make[s] sense to define the invention date in terms of what someone thought and when").

98. These countries operate under 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., Convention on the Grant of European Patents, Oct 5, 1973, art. 54, 13 I.L.M. 271, 286 [hereinafter EPC], available at <http://www.european-patent-office.org/legal/epc/e/ar54.html> (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").

99. 122 F.3d 1396 (Fed. Cir. 1997).

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

101. 35 U.S.C. § 102(e) (1994). Before it is available as a § 102(e) reference, the earlier-filed application must either be published under § 122(b) or issue as a patent. See *id.* § 102(e)(1)-(2).

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of this type of “secret” prior art is also permitted in the case where another person has independently made the same invention before the patentee’s invention date, so long as the other person has not abandoned, suppressed or concealed her invention.<sup>102</sup>

The patent owner in *Unocal* asserted an invention date of March 1990.<sup>103</sup> Assuming that this assertion is correct, Unocal’s invention date was prior to Unocal’s participation in the CARB deliberations that led to the clean gasoline standards at issue in that case.<sup>104</sup> Thus, any disclosures subsequently made by Unocal, or by the other refiners to Unocal, either in verbal or written form, during those deliberations could not operate as prior art to anticipate or render obvious the gasoline composition inventions claimed in Unocal’s ’393 patent.

Whether Unocal’s asserted invention date of March 1990 was correct as a matter of U.S. patent law involves fact-bound issues of conception and reduction to practice that the Federal Circuit did not consider because they were not raised on appeal.<sup>105</sup> The district court had previously denied the defendant refiners’ motion for judgment as a matter of law (JMOL) on the invention date issue, rejecting the refiners’ contention that Unocal’s evidence of its date of conception was inadequate to support the jury’s verdict.<sup>106</sup> The district court acknowledged that “reasonable people could disagree over the conclusion to be drawn from the evidence,” but in view of Unocal’s “contemporaneous computer records which supported the March 30, 1990 invention date,” refused to upset the jury’s determination.<sup>107</sup>

The *Unocal* district court’s denial of JMOL glossed over the more difficult issue of whether Unocal’s evidence established a March 1990 con-

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102. *Id.* § 102(g).

103. *See* *Union Oil Co. of Cal. v. Atl. Richfield Co.*, 34 F. Supp. 2d 1208, 1214 (C.D. Cal. 1998) (stating that Unocal’s invention date was March 30, 1990). *See also* Brief of Amicus Curiae United States at 2, *Union Oil Co. of Cal.* (No. 00-249) (stating that Unocal’s patent application was filed on December 13, 1990, and asserted an invention date of March 1990).

104. *See* Brief of Amicus Curiae United States at 2 n.1, *Union Oil Co. of Cal.* (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).

105. *See* *Union Oil Co. of Cal. v. Atl. Richfield Co.*, 208 F.3d 989, 991 (Fed. Cir. 2000) (affirming district court’s denial of defendant-appellant refiners’ motion for judgement as a matter of law on § 102 (anticipation) and § 112 (written description) validity issues, and affirming district court’s judgment of no inequitable conduct).

106. *See* *Union Oil of Cal. v. Atl. Richfield Co.*, No. CV-95-2379-KMW, 1998 U.S. Dist. LEXIS 22847, at \*6-\*8 (C.D. Cal. Mar. 10, 1998).

107. *Id.* at \*8.

ception date for the subject matter of each of the 41 asserted claims of the '393 patent. In the refiners' view, the evidence of record was "inadequate to support the verdict because it did not disclose the combination of property ranges required by any [asserted] claim,"<sup>108</sup> an issue very much bound up with the adequacy of the written description support for those claims.<sup>109</sup>

Because the United States evaluates novelty and nonobviousness as of the earlier invention date, rather than the later patent application filing date, the universe of what counts as potentially invalidating prior art is comparatively smaller than it is under the patent rules of other countries. Thus, under the United States regime it is relatively more likely that the content of industry standards will not be available as prior art to defeat patents on the technology involved in those standards. Owners of U.S. patent applications will retain the advantage of potentially antedating such standards and removing them as prior art references,<sup>110</sup> a strategy not available in foreign patent systems. Outside the U.S., all disclosures of technology prior to a patent application's filing date, even those made through purely oral divulcation, count as prior art, at least for anticipation purposes.<sup>111</sup> Unless and until the U.S. migrates to a first-to-file system in which novelty is evaluated as of the filing date, attempts to capture industry standards through antedating the standards-setting activity remain a viable strategy for U.S. patent owners.

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108. *Id.* at \*7.

109. *See Fiers v. Revel*, 984 F.2d 1164, 1169-71 (Fed. Cir. 1993) (affirming Board's conclusion that Revel was not entitled to the benefit of his earlier-filed Israeli application that failed to provide an adequate written description of the beta-interferon DNA recited by interference count, in view of Board's determination that Revel's description was insufficient to evidence conception of the DNA and Board's reasoning that "one cannot describe what one has not conceived").

110. *See* 37 C.F.R. § 1.131 (2001) (USPTO regulation governing procedures for antedating prior art).

111. EPC, *supra* note 98, art. 54 (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").

Some commentators have proposed that any global patent system should eliminate the use of purely oral divulcations as prior art. *See* Michael N. Meller, *Principles of Patentability and Some Other Basics for a Global Patent System*, 83 J. PAT. & TRADE-MARK OFF. SOC'Y 359, 364 (2001). However, this approach would tend to exacerbate the standards capture problem because oral communications between participants at standards-setting meetings would be rendered unavailable as prior art.

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

Standards capture is further facilitated through imprecise rules for naming inventors in U.S. patents. 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.”<sup>112</sup> However, new statutory provisions were added in the 1952 Patent Act that allow the correction of inventorship in many cases.<sup>113</sup> 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.<sup>114</sup>

Determining the person(s) that should be named as inventor of a particular invention is a rather indeterminate task under U.S. patent law. The key criterion is contribution to the conception of the invention. Conception has been described as the “touchstone of inventorship.”<sup>115</sup> 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.<sup>116</sup>

The question of who should be named an inventor under U.S. law also depends on how the invention is claimed. Most patents contain multiple

112. 35 U.S.C. § 102(f) (1994).

113. See 35 U.S.C. § 256 (1994) (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 (1994). 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. 35 U.S.C. § 256, ¶ 2 (1994); *MCV*, 870 F.2d at 1570.

114. *Chou v. Univ. of Chicago*, 254 F.3d 1347 (Fed. Cir. 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 1359. In dicta, the Federal Circuit suggested that even “reputational interest alone” (i.e., one’s interest in being named as an inventor to enhance professional prestige) might be enough to confer standing to sue for correction of inventorship. *Id.*

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

116. *Id.* at 1228.

claims. Even if a person's inventive contribution was limited to the subject matter of only one out of many claims, she must be named as a co-inventor.<sup>117</sup> In the absence of an agreement to the contrary, current Federal Circuit law provides that a person who is a co-inventor with respect to even a single claim is presumptively a co-owner of the entire patent.<sup>118</sup> As such, that individual retains the power to grant a license to a third party to practice the invention of any of the claims of the patent, without the consent of the other inventors.<sup>119</sup> This power to license may permit the co-inventor of only one claim to effectively shut down a patent infringement suit brought by the other co-owners against the licensee.<sup>120</sup>

The Federal Circuit's currently expansive view of co-ownership thus suggests a defense strategy for users of industry standards. If the target of an infringement suit on a standards patent can establish that its employee should have been named co-inventor on even a single claim, or that an employee of another firm should have been so named, the target firm may avoid liability by either asserting co-ownership in the standards patent or by obtaining a license from the other firm.

A corollary to the proper naming of inventors is the patent law concept of derivation.<sup>121</sup> 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."<sup>122</sup> 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).<sup>123</sup>

The *Unocal* trial court flatly rejected an assertion by the refiners that Unocal had derived its inventions by "cop[ying] the invention from

117. 35 U.S.C. § 116 (1994).

118. *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1465 (Fed. Cir. 1998) (stating that "in the context of joint inventorship, each co-inventor presumptively owns a pro rata undivided interest in the entire patent, no matter what their respective contributions. . . . Thus, a joint inventor as to even one claim enjoys a presumption of ownership in the entire patent.").

119. *Id.* at 1468; DONALD S. CHISUM ET AL., *PRINCIPLES OF PATENT LAW* 486 (2d ed. 2001).

120. *See Ethicon*, 135 F.3d at 1468 (directing district court to order dismissal of lawsuit).

121. *See* 1 CHISUM, *supra* note 71, § 2.03 (characterizing rule of proper joinder of inventors as "corollary" to derivation rule).

122. *Id.*

123. *See, e.g., Campbell v. Spectrum Automation Co.*, 513 F.2d 932 (6th Cir. 1975) (affirming district court's determination that patent in suit was invalid on ground that named inventor had derived invention from another under 35 U.S.C. § 102(f)).

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CARB,”<sup>124</sup> 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 1999.<sup>125</sup> As amended by the AIPA, the U.S. Patent Act now requires publication of most pending U.S. patent applications<sup>126</sup> eighteen months after the earliest priority date claimed by the applicant.<sup>127</sup> Competitors possessing prior art that appears to contravene an applicant’s assertion of novelty and nonobviousness may submit that art to the USPTO while the application is still pending.<sup>128</sup>

Patent applicants who file only in the United States may opt out of eighteen-month publication, however.<sup>129</sup> Given the size and dominance of the U.S. technology market, particularly in the computer and software sector,<sup>130</sup> it is not improbable that the adoption of a U.S. industry standard

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124. *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”).

125. 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).

126. Sabra Chartrand, *Patents: A New Law Removes Some Secrecy from the Applications*, N.Y. TIMES, Dec. 4, 2000, at C6 (reporting that USPTO is “preparing to publish 80 percent of all applications” under the new law).

127. 35 U.S.C. § 122(b)(1)(A) (1994).

128. 37 C.F.R. § 1.99(a) (2001) provides 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.

129. 35 U.S.C. § 122(b)(1) (1994).

130. See Office of Information Technologies, *Size of the U.S. Computer Software Industry*, at <http://exportit.ita.doc.gov/ocbe/USIndust.nsf/806cbc35babba9838525695100784a38/538b5d24b610208985256962006c91c8!OpenDocument> (last updated Sept. 22, 2000) (reporting that from 1992 to 1997, total employment in the U.S. computer software industry increased by 75% totaling 1,457,405, and that estimated receipts rose from \$95

that requires the use of an applicant's invention might be far more valuable to some applicants than the possibility of multinational 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 independently guarantee that all pending patent applications pertinent to the ongoing development of industry standards will be revealed in a timely fashion, other disclosure-forcing mechanisms are required. Part V *infra* proposes the sanctions of compulsory licensing and unenforceability for patent misuse for certain failures to disclose patent rights during an industry standards-setting process.<sup>131</sup>

#### IV. PATENT RIGHTS ARE NOT INCOMPATIBLE WITH INDUSTRY STANDARDS

Industry standards often encompass proprietary technology, including technology already patented or the subject of pending patent applications.<sup>132</sup> This is not surprising because one would expect an industry standard to be built upon novel and nonobvious advances in technology rather than upon whatever is available in the public domain.<sup>133</sup> This view is reflected in the position of leading trade associations that: "Standards 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

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billion to \$231 billion). *See generally* J. Thomas McCarthy, *Intellectual Property—America's Overlooked Export*, 20 U. DAYTON L. REV. 809 (1995) (explaining how the rapidly growing computer and software industry and the emphasis on intellectual property is helping to change the face of American business).

131. *See infra* Part V.

132. *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. 2, 2002) (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"); *JEDEC Manual*, *supra* note 63, § 7.3 (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 33, at 374 (contending that "many standards are partly or entirely covered by patents").

133. For example, 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." *JEDEC Manual*, *supra* note 63, at Annex G43.

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available information.”<sup>134</sup> Even the W3C, a leading proponent of the Open Source movement, proposed major changes to its patent policy that would permit W3C standards to incorporate patented technology.<sup>135</sup>

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 nonregulatory federal agency within the U.S. Department of Commerce,<sup>136</sup> announced its selection of the new cryptographic standard that would replace the prior Digital Encryption Standard (“DES”).<sup>137</sup> The new standard was based on the Rijmen algorithm, named after the algorithm’s designer.<sup>138</sup> Notably, the Rijmen algorithm was the only algorithm among the five finalists that would not potentially infringe patents owned by Hitachi Corporation.<sup>139</sup> These patents, issued to Hitachi earlier in 2000, claimed an array of mathematical techniques used by ciphers.<sup>140</sup> 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.<sup>141</sup>

Proprietary rights such as patent ownership appear inconsistent, at least facially,<sup>142</sup> with the concept of “open standards,” or consensus-based, transparent standards that all are free to adopt and use, meant to ensure

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134. 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.

135. *See supra* note 37 and accompanying text.

136. National Institute of Standards and Technology, *General Information*, at [http://www.nist.gov/public\\_affairs/general2.htm](http://www.nist.gov/public_affairs/general2.htm) (last visited Mar. 2, 2002).

137. Charles Seife & David Malakoff, *Science Scope*, 290 SCI. 25 (2000).

138. *Id.*

139. *Id.*

140. *Id.*

141. 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 noninfringement 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*, at <http://www.w3.org/TR/P3P-analysis> (Oct. 27, 1999).

142. *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”).

interoperability of competing products.<sup>143</sup> Some standards proponents contend that consensus-based industry standards are antithetical to proprietary rights of individual firms, and would not permit any patenting of industry standards. Adherents of the “Open Source”<sup>144</sup> and “Free Software”<sup>145</sup> movements<sup>146</sup> support this view, pointing to classic, successful open source efforts developed in the absence of intellectual property rights, such as the computer operating system Linux, the scripting and programming language Perl, and the web server Apache.<sup>147</sup> Some legal scholars suggest that Congress could altogether forbid patenting in standards technology.<sup>148</sup>

Contrary to these views, any per se exclusion from 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.<sup>149</sup> Such exclu-

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143. See Paul Festa, *Why Open Standards Are a Myth* (Aug. 6, 1999), at <http://news.com.com/2102-1023-229217.html>. See also Lutsch et al., *supra* note 47, at N-1 (describing open standards as those that allow “anyone that will agree to follow the collective rules [to] participate in the standard”).

144. See Open Source.Org, *The Open Source Initiative: Home Page*, at <http://www.opensource.org> (last visited Mar. 2, 2002) (summarizing open source movement).

145. See GNU’s Not Unix!, at <http://www.fsf.org> (last visited Mar. 2, 2002) (summarizing Free Software Foundation’s mission). The Free Software Foundation’s objections to proprietary rights in software are set forth by Richard Stallman, *Why Software Should Not Have Owners*, at <http://www.fsf.org/philosophy/why-free.html> (last visited May 16, 2001).

146. See M. Craig Tyler & 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).

147. See Seltzer, *supra* note 39, 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. See, e.g., 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. COMM. L. & POL’Y 1, 2 (Winter 2000/2001).

148. See, e.g., Lemley, *supra* note 142, 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)).

149. 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 (1994) (authorizing withholding of patent grants on inven-

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sions would also likely run afoul of U.S. international trade obligations.<sup>150</sup> More importantly, without patenting's promise of time-limited exclusionary control to permit recouping of innovation costs,<sup>151</sup> 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 depend on the reward provided, or not provided, by intellectual property law."<sup>152</sup> 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.<sup>153</sup>

The availability of patent protection may be especially important where the standard is a de facto standard. 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 partici-

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tions "detrimental to the national security"); 42 U.S.C. § 2181(a) (1994) ("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.").

150. See General Agreement on Tariffs and Trade—Multilateral Trade Negotiations (The Uruguay Round): Agreement on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods, Dec. 15, 1993, art. 27(1), 33 I.L.M. 81, 93-94 [hereinafter TRIPS] (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").

151. This article proposes 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, nonpatented technology. See *infra* Part V.

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

153. See SHAPIRO & VARIAN, *supra* note 36, at 271 (noting that the patent portfolios of Sony and Philips were their "core assets" in the areas of CD and 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), available at [http://www.usdoj.gov/atr/public/press\\_releases/1998/2120.htm](http://www.usdoj.gov/atr/public/press_releases/1998/2120.htm) (approving pooling of patents on DVD technology by Philips, Sony, and Pioneer)

pants.<sup>154</sup> If the product is not protected by patent or other intellectual property regime 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 to the industry.<sup>155</sup> As profit incentives decline, so too will the impetus to create innovative products capable of capturing the marketplace's attention and becoming de facto standards.

In contrast, it is more difficult to rationalize the need for patent rights that intersect with government-mandated health and safety standards.<sup>156</sup> The government can force compliance with its standards through imposition of fines or other penalties for noncompliance, while adherence to standards generated by industry consortia, at least in theory, is optional.<sup>157</sup> The potential for unfair exploitation of users of government-mandated standards is significant, for these users *must* employ the patented technology and will be required to pay whatever the patentee demands in terms of royalties. Rather than creating a distinct set 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. The next Part suggests 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.

## V. REMEDYING 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

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154. 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 39, at 51.

155. *See* Spoor, *supra* note 33, 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.*

156. *See* Press Release, Attorney General of California, Attorney General Bill Lockyer Files "Friend of the Court" Brief Over Unocal Gasoline Patent (Sept. 14, 2000), <http://caag.state.ca.us/newsalerts/2000/00-122.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").

157. 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.

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those standards. This Part briefly discusses several nonpatent law remedies 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, this Part proposes the application of the patent law-derived remedies of mandatory disclosure, compulsory licensing, and patent misuse-based nonenforcement to target certain cases of standards abuse by patent owners.

### A. Antitrust Law

Past efforts to target the capture of industry standards through patenting have proceeded via governmental antitrust enforcement action, such as that culminating with the FTC's controversial consent decree in *In re Dell Computer Corp.*<sup>158</sup> In addition to such actions based on the Federal Trade Commission Act, the Sherman Act also provides authority for government antitrust enforcement as well as for private party antitrust lawsuits.<sup>159</sup> These actions are generally brought under Section 2 of the Sherman Act, which prohibits acquisition or maintenance of monopoly power through anticompetitive conduct.<sup>160</sup> The party asserting a Section 2 violation must show that the patentee has monopoly power in the relevant market, and that it has acquired or is maintaining that power in an anticompetitive manner.<sup>161</sup>

In practice, the requirement for a showing of market power excludes much of typical patent owner behavior from antitrust prosecution.<sup>162</sup> The

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158. 121 F.T.C. 616, 1996 FTC LEXIS 291 (1996). *See generally infra* notes 218-226 and accompanying text.

159. *See* Sherman Act, 15 U.S.C. § 2 (1994) (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 . . . .”); Clayton Act, 15 U.S.C. § 15(a) (1994) (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 . . . .”).

160. *See* 15 U.S.C. § 2 (1994).

161. *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.

*Id.*

162. *See* Robert P. Merges, *Reflections on Current Legislation Affecting Patent Misuse*, 70 J. PAT. & TRADEMARK OFF. SOC'Y 793, 793 (1988) (noting that “the often very

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 noninfringing substitutes for the patented technology.<sup>163</sup> Moreover, 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. As applied by the Federal Circuit,<sup>164</sup> antitrust doctrine preserves a patentee's immunity from antitrust liability for enforcing its patent rights unless the accused infringer 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 & Chemical Corp.*,<sup>165</sup> 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."<sup>166</sup> 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 nonlicensed user of the standard enjoys presumptive immunity from liability under an antitrust counterclaim, even if maintenance of the infringement suit would have an anticompetitive effect.<sup>167</sup>

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limited (or 'thin') markets for patented technology make it difficult to apply antitrust law's consumer-demand definition of the relevant market"); *see also* Richard Calkins, *Patent Law: The Impact of the 1988 Patent Misuse Reform Act and Noerr-Pennington Doctrine on Misuse Defenses and Antitrust Counterclaims*, 38 DRAKE L. REV. 175, 187 (1988-89) (noting that "[a]s a practical matter, requiring proof of an antitrust violation to check a patentee's economic extension of his patent monopoly may mean that such violations will go unchecked because excessive costs and uncertainty are inherent in proving a rule of reason violation or monopolization charge").

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

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

165. 382 U.S. 172, 177 (1965).

166. *See In re Indep. Serv. Orgs. Antitrust Litig.*, 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 Prof'l 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).

167. *Cf.* James R. Atwood, *Securing and Enforcing Patents: The Role of Noerr/Pennington*, 83 J. PAT. & TRADEMARK OFF. SOC'Y 651, 659 (2001) (noting that in view of the heightened requirements of *Professional Real Estate Investors* for claiming

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Several commentators have proposed that these impediments to anti-trust enforcement against patent owners could be circumvented by treating industry standards as “essential facilities” under U.S. antitrust doctrine.<sup>168</sup> The essential facilities 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.<sup>169</sup> Courts have held that a local electricity monopoly and a stadium are essential facilities.<sup>170</sup> In the classic essential facilities case, *United States v. Terminal R.R. Association of St. Louis*, 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.<sup>171</sup>

Despite the seeming attractiveness of the essential facilities doctrine as an antidote to the capture of industry standards through patenting, courts have routinely rejected its application.<sup>172</sup> For example, in *Alaska Airlines*

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an exception to *Noerr*, “absent classic *Walker Process* facts—few [patent] infringement suits will fail to qualify for *Noerr* immunity”).

168. Lemley, *supra* note 27, at 1084; Wendy Milanese, *The Tension Must Break: The Irreconcilable Interplay Between Antitrust, Defenses to Infringement and Protection of Standardized 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”); E. Robert Yoches, *Licensing Patents For Software and Computer Technology*, INTELL. PROP. 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”).

169. *See* Milanese, *supra* note 168, 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.”).

170. *See* Milanese, *supra* note 168, 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”)); *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).

171. 224 U.S. 383, 411-12 (1912); *see* Lemley, *supra* note 27, at 1084 (discussing the doctrine of “essential facilities”).

172. *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, 376-77 (7th Cir. 1986) (holding that the facts did not raise an essential facility case because defendant did not deny access to its telex services).

*v. United Airlines*,<sup>173</sup> the Ninth Circuit held that 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.<sup>174</sup> The same rationale could be applied to preclude application of the essential facilities doctrine in the case of standards promulgated by industry consortia, with which compliance is technically voluntary.

Although significant difficulties may arise in proceedings against the owners of patents on industry standards 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 condemning "abuse of a dominant position,"<sup>175</sup> 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.<sup>176</sup> The Commission noted that the refusal to license an intellectual property right is not normally considered to be an abuse of a dominant position.<sup>177</sup> 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.<sup>178</sup>

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Legal scholars have also criticized the essential facilities doctrine, which Professor Areeda has termed "an epithet in need of limiting principles." 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 & JEFFREY L. HARRISON, UNDERSTANDING ANTITRUST LAW AND ITS ECONOMIC IMPLICATIONS 306 (3d ed. 1998) (describing essential facilities doctrine as "fairly dormant").

173. 948 F.2d 536 (9th Cir. 1991).

174. *Id.* at 545-46.

175. See TREATY ESTABLISHING THE EUROPEAN COMMUNITY, Oct. 2, 1997, O.J. (C 340) 173, 209, art. 82, available at [http://www.europa.eu.int/eur-lex/en/treaties/dat/ec\\_cons\\_treaty\\_en.pdf](http://www.europa.eu.int/eur-lex/en/treaties/dat/ec_cons_treaty_en.pdf) (listing examples of "abuse by one or more undertakings of a dominant position within the common market").

176. 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?p\\_action.gettxt=gt&doc=IP/01/941|0|AGED&lg=EN&display=](http://www.europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=IP/01/941|0|AGED&lg=EN&display=).

177. *Id.*

178. *Id.*

## B. Fraud

Besides antitrust action, allegations of fraud have been leveled in private party litigation against those who participated in standards-setting while failing to disclose pertinent patent rights. In a pivotal case for the semiconductor industry,<sup>179</sup> a Virginia jury recently 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.<sup>180</sup> Asserted by defendant Infineon Technologies AG as a counterclaim to Rambus's charges of patent infringement,<sup>181</sup> the fraud allegations were based on Rambus's nondisclosure 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").<sup>182</sup> 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."<sup>183</sup>

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179. See Ariana Eunjung Cha, *Rambus Must Pay Damages*, WASH. POST, May 10, 2001, at E1 (describing Rambus litigation against Infineon, one of a number of suits pending that involves the Rambus patents on SDRAM technology, as "pivotal" for the industry).

180. See *id.*; Verdict Form, *Rambus Inc. v. Infineon Tech., Inc.*, CIV.A. 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 ST. J., May 10, 2001, at B8; George Leopold, *Update: Jury Awards Infineon \$3.5M on Fraud Charges*, EETIMES.COM, May 9, 2001, at <http://www.eetimes.com/story/OEG20010509S0053>.

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

182. Goodin, *supra* note 180. 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 nondisclosed patents. See Defendants' Answer and Counterclaims, *supra* note 181, at 33-34 (Count 7 alleging "Actual Fraud") and 34-35 (Count 8 alleging "Constructive Fraud"); Leopold, *supra* note 180.

183. Therese Poletti, *California-Based Chip Designer Rambus Found Guilty of Fraud in Patent Case*, SAN JOSE MERCURY NEWS, May 10, 2001, at 2 (quoting statement by Rambus Chief Executive Geoff Tate), available at 2001 WL 20964426 KRTBN.

### C. Equitable Estoppel/Implied License

In certain circumstances, the doctrines of equitable estoppel and implied license may also operate 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 Laboratories v. Mitsubishi*.<sup>184</sup> Wang developed Single In-Line Memory Modules (“SIMMs”) in the 1980s and encouraged Mitsubishi to make 256K chips incorporating the SIMMs.<sup>185</sup> Wang succeeded in its campaign to have JEDEC adopt SIMMs as a standard, without informing JEDEC that it was seeking to patent the SIMMs technology.<sup>186</sup>

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.<sup>187</sup> Although Wang did not itself make SIMMs and had to buy them from other manufacturers such as Mitsubishi, Wang benefited from Mitsubishi’s reliance in the form of lowered prices as the market for SIMMs grew.<sup>188</sup> 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,<sup>189</sup>

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

185. *Id.* at 1575.

186. *Id.*

187. *Id.* at 1581-82.

188. *Id.* at 1579-80.

189. *Id.* at 1582; *see* *A.C. Aukerman Co. v. R.L. Chaides Constr.*, 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).

The federal district courts have recognized the equitable estoppel defense in two cases involving patents on industry standards. In *Stambler v. Diebold, Inc.*, 1988 U.S. Dist. LEXIS 10132, 11 U.S.P.Q.2d (BNA) 1709 (E.D.N.Y. 1988), *aff’d*, 878 F.2d 1445 (Fed. Cir. 1989) (Table), the district court upheld an equitable estoppel defense where the patentee participated on an ANSI standards committee that adopted standards for card validation for ATM machines, without disclosing the existence of his patent which read on the proposed standards. *See id.* at \*18-21. In the court’s view, the patentee “could not remain silent while an entire industry implemented the proposed standard and then when the standards were adopted assert that his patent covered what manufacturers believed to be an open and available standard.” *Id.* at \*20. In *Potter Instrument Co. v. Storage Tech. Corp.*, 1980 U.S. Dist. LEXIS 14348, 207 U.S.P.Q. (BNA) 763 (E.D. Va. 1980), the district court held that the owner of a patent on the Group Coded Recording (GCR) recording and information storage technique was estopped from bringing an infringement action under the patent, where the patentee “actively participated with the ANSI Subcommittee in developing GCR as the industry standard” and “intentionally failed to bring

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but determined that “a formal finding of equitable estoppel [was not required] as a prerequisite to a legal conclusion of implied license.”<sup>190</sup>

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 to enforce its patent, as a matter of public policy, regardless of the degree of prior contact between the patentee and the ultimate users of the standard. Patent law-based doctrines such as compulsory licensing and patent misuse, discussed *infra*, permit this approach.

### D. Eminent Domain

Standards developed by the government rather than industry merit separate treatment. The assertion of private patent rights in the subject matter of government-mandated technology standards represents a uniquely difficult clash of policy concerns—protecting the public’s welfare by enforcement of the standards, versus maintaining sufficient incentives through availability of patents 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 rights of intellectual property owners. When the government mandates a standard, particularly one related to public health or safety, it

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its ownership of the [ ] patent to the committee’s attention, notwithstanding the committee’s policy to the contrary.” *Id.* at \*18. On appeal, the Fourth Circuit limited its affirmation of the *Potter* decision to an alternative ground of laches, and on procedural grounds did not decide the merits of the equitable estoppel defense beyond indicating that the appeals court “would be inclined to uphold this ground of decision on the facts of this case . . . .” *Potter Instrument Co. v. Storage Tech. Corp.*, 641 F.2d 190, 192 (4th Cir. 1981).

190. *Wang Labs., Inc. v. Mitsubishi Elecs. Am., Inc.*, 103 F.3d 1571, 1581 (Fed. Cir. 1997). 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.* (citing *Spindelfabrik v. Schubert*, 829 F.2d 1075, 1080 (Fed. Cir. 1987)).

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 effectively having revoked any conflicting intellectual property rights. In the copyright case of *SmithKline Beecham Consumer Healthcare, L.P. v. Watson Pharmaceuticals, Inc.*,<sup>191</sup> 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<sup>192</sup> 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.<sup>193</sup> When defendant Watson Pharmaceuticals 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.<sup>194</sup> 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<sup>195</sup> as that approved for the sale of the corresponding pioneer drug.<sup>196</sup> The court found that, “[b]ecause [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.”<sup>197</sup>

The *SmithKline* case illustrates the imposition of a government-mandated standard that required infringement of the plaintiff’s intellectual property. The court considered the fulfillment of the pro-consumer, pro-generic drug policies underlying the Hatch-Waxman Act to be of such importance that it denied all remedies, injunctive and monetary, for copyright

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191. 211 F.3d 21 (2d Cir. 2000), *cert. denied*, 121 S. Ct. 173 (2000).

192. *Id.* at 23.

193. *Id.*

194. *Id.*

195. *See id.* (citing 21 U.S.C. § 355(j)(2)(A)(v) (1994) and 21 C.F.R. § 314.127(a)(7)) (2000)).

196. *Id.* at 24-25.

197. *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 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, nonexclusive license purportedly granted to the FDA by SmithKline when it submitted the original label for approval. *Id.* at 25.

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infringement. Similarly, public health and welfare concerns have led other courts to refuse to enforce infringed patents.<sup>198</sup> In these rare 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.”<sup>199</sup> A paradigm case is *Vitamin Technologists, Inc. v. Wisconsin Alumni Research Foundation*,<sup>200</sup> 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.<sup>201</sup>

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 or other governmental purposes. When the U.S. federal government needs to procure technology such as a weapons system that is covered by a third party’s patent, federal law provides that the government can acquire and use that system from a nonlicensed supplier without fear of injunction.<sup>202</sup> Thus, the grant of a U.S. patent is always subject to a nonexclusive but 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

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198. See *Vitamin Technologists, Inc. v. Wis. Alumni Research 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”).

199. *Merges*, *supra* note 162, at 796.

200. 146 F.2d 941 (9th Cir. 1945).

201. *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.

202. See 28 U.S.C. § 1498(a) (1994). The statute provides 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”).

clauses in its procurement contracts.<sup>203</sup> If the procured system is found to infringe, the government will pay a reasonable royalty to the patent owner.<sup>204</sup> This statutory scheme represents 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.<sup>205</sup>

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*. A better approach from the standpoint of preserving incentives for innovation would permit the government to initiate eminent domain proceedings against the standards patent owner, along the lines of the statutory scheme found at 28 U.S.C. § 1498.<sup>206</sup> Significant legislative amendment would be

203. 28 U.S.C. § 1498(a) (1994) provides 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.

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

205. 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.*

206. *Contra CCC Info. Servs. v. MacLean Hunter Mkt. Reports, Inc.*, 44 F.3d 61, 74 (2d Cir. 1994). The CCC Info court stated that it 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.

*Id.*

required, however, to extend the existing statutory framework to all 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 federal government-mandated standard.<sup>207</sup> Because it is based on the federal Constitution, this eminent domain proposal does not address the problem of capture of standards mandated by state governments, such as the CARB clean gasoline formulations in the *Unocal* case.<sup>208</sup>

**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 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.<sup>209</sup> Compulsory licensing should be required in this context only as a penalty for failure to timely disclose patent rights relevant to the standard. In order to avoid this penalty, this section proposes that any firm which participates<sup>210</sup> in creating an industry standard while owning or seeking to obtain patent rights in some aspect of

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207. Currently the statutory scheme only covers infringements that are specifically authorized or consented to by the U.S. government, e.g., by a government contractor. 28 U.S.C. § 1498(a) (1994) provides 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.

208. Whether those entities obligated to comply with state government-mandated standards might claim an Eleventh Amendment shield from liability for patent infringement as instrumentalities of a state, *see Fla. Prepaid Postsecondary Educ. Expense Bd. v. Coll. Sav. Bank*, 527 U.S. 627 (1999), is beyond the scope of this article.

209. *See supra* note 157 and accompanying text.

210. 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 179. Rambus filed its parent patent application on SDRAM technology before joining the Joint Electronic Devices Engineering Council (JEDEC) and the patents issued after Rambus withdrew from JEDEC. Michael Kanellos, *Infineon Fights On With Rambus Countersuit*, NEWS.COM (May 7, 2001), at <http://news.com.com/2100-1001-257157.html?legacy=cnet>. Rambus contends that it was a passive member of JEDEC, attending meetings but never advocating or voting on standards related to its patent. *Id.* According to Infineon, however, Rambus amended its secretly pending patent applications while participating in JEDEC, in order to obtain patent claims that encompassed the technology being adopted as the JEDEC standard. *See Cha, supra* note 179.

the standard must disclose the existence of any such patents or pending patent applications.<sup>211</sup>

The proposed disclosure obligation for standards-setting participants would parallel that created by the existing body of inequitable conduct case law<sup>212</sup> and the USPTO regulations placing a duty of candor on all patent applicants in their dealings with the agency.<sup>213</sup> The duty of candor requires disclosure to the USPTO of any information known to the applicant that is material to patentability.<sup>214</sup> The penalty for nondisclosure is

211. Some commentators question whether patent *applications*, as opposed to issued patents, should be subject to a disclosure obligation. *See, e.g.*, Baumann, *supra* note 36, 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 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 under development justifies requiring that all standards-setting participants make full and immediate disclosure of pending patent applications. *Cf. JEDEC Manual, supra* note 63, at Annex F42 (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 nonproprietary 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”).

212. *See generally* 6 CHISUM, *supra* note 71, § 19.03 (“Fraudulent Procurement—Inequitable Conduct”) (citing inequitable conduct case law and a “vast” body of inequitable conduct literature).

213. 37 C.F.R. § 1.56 (2001).

214. The USPTO regulations provide 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.* § 1.56(a). The 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:

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severe in order to motivate compliance: all claims of an inequitably procured patent are rendered unenforceable.<sup>215</sup> The serious nature of this disclosure obligation is familiar to all patent applicants and their patent counsel. Thus, compliance with parallel disclosure 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 because such a requirement 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.<sup>216</sup> Imposing the threat of compulsory licensing for failure to comply with the disclosure requirement will help to ensure (though not guarantee<sup>217</sup>) compliance, in much the same

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(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.

*Id.* § 1.56(b).

215. See *Kingsdown Med. Consultants, Ltd. v. Hollister, Inc.*, 863 F.2d 867, 877 (Fed. Cir. 1988) (en banc).

216. Hyundai, a party to the ongoing Rambus patent litigation, contends that JEDEC was also denied this option when it developed the SDRAM standard. See Kanellos, *supra* note 210, 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”).

217. Compulsory licensing is generally understood to provide some form of royalty payment to the patentee, although abrogating the patentee’s right to exclude all others from practicing the invention. See, e.g., TRIPS, *supra* note 150, art. 31(h), at 95 (providing that patent holder “shall be paid adequate remuneration in the circumstances of each case, taking into account the economic value of the authorization”). It is possible that a patentee might withhold information on its patent rights while participating in standards-setting activity, on the basis that having its patented technology adopted as the standard and facing the sanction of being required to license the patent at a particular royalty rate is still economically preferable to the adoption of an industry standard that would avoid the patent altogether. In such a case, however, the withholding of information about patent rights would most likely be seen by courts as intentional or willful. This Article proposes that if a nondisclosure of patent rights is found to be intentional or willful, the more severe penalty of holding the patent unenforceable (which does not entitle the patentee to receive any royalties) should apply. See *infra* Part V.F.

manner as the threat that patents procured through intentional withholding of material prior art from the USPTO will be rendered unenforceable. If an industry standard is ultimately adopted that requires the use of a patent which was not timely disclosed during the standard-setting activity, the imposition of compulsory licensing will ensure that all users of the standard can practice the patent without fear of injunction.

The Federal Trade Commission ("FTC") imposed compulsory licensing, without any remuneration for the patentee, as the remedy in *In re Dell Computer Corporation*,<sup>218</sup> 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),<sup>219</sup> without disclosing that it owned a patent on an aspect of the VL-Bus design.<sup>220</sup> The FTC cited evidence indicating that had VESA been aware of Dell's patent, it would have implemented a different, nonproprietary design.<sup>221</sup> 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,<sup>222</sup> 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.<sup>223</sup> 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.<sup>224</sup>

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218. 121 F.T.C. 616, 1996 FTC LEXIS 291 (1996).

219. *Id.* at \*2.

220. *Id.* at \*2-\*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.* 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.

221. *Id.* at \*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," and that this market power "was not inevitable." *Id.* at \*15 n.2. 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.

222. *See generally* 15 U.S.C. §§ 45(a)(1) (1994).

223. *In re Dell Computer*, 1996 FTC LEXIS 291, at \*8.

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

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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.”<sup>225</sup> She pointed out that simply being aware of the existence of a patent does not equate with an awareness that it reads on a given standard,<sup>226</sup> a point well-taken in view of the uncertainty of determining patent infringement under current Federal Circuit case law.<sup>227</sup> 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.<sup>228</sup> Because many firms that participate in standards-setting have extensive patent portfolios,<sup>229</sup> standards-setting 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.<sup>230</sup>

Such concerns are likely overstated. Many standards-setting organizations already require that their participants make full disclosure of any relevant intellectual property rights.<sup>231</sup> Moreover, firms with large patent

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225. *Id.* at \*29 (Commissioner Azcuenaga, dissenting).

226. *Id.* at \*29 n.5.

227. *Cf.* *Cybor Corp. v. FAS Techs., 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 in whole or in part on appeal to the Federal Circuit).

228. *See In re 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”).

229. *See* Letter from Dan Bart, Vice President, Electronic Industries Association (EIA)/Telecommunications Industry Association (TIA), 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”).

230. *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 In re 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”).

231. *See supra* Part II.C, “Intellectual Property Policies,” notes 62-64 and accompanying text.

portfolios must already address the resource problems engendered by ensuring compliance with their duty to disclose information material to patentability to the USPTO.<sup>232</sup> 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.<sup>233</sup> 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.”<sup>234</sup>

If compulsory licensing is imposed as a remedy for nondisclosure of patent rights pertinent to industry standards as proposed herein, some competent authority must set a licensing fee structure that will determine the patentee’s remuneration.<sup>235</sup> The perceived difficulty of quantifying a commercially reasonable royalty “has long been a leading argument against adoption of compulsory licensing in the U.S.”<sup>236</sup> 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

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232. In fact, large firms are less likely to be negatively impacted by a standards-setting disclosure obligation than small firms. *See* Baumann, *supra* note 36, 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”).

233. *Cf.* Sage Prods. v. Devon Indus., 126 F.3d 1420, 1425 (Fed. Cir. 1997). The *Sage Products* court stated that, in the context of a doctrine of equivalents analysis, [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.*

234. *In re Dell Computer Corp.*, 121 F.T.C. 616, 1996 FTC LEXIS 291, \*46 n.18 (1996) (Commissioner Azcuenaga, dissenting) (citing four of the eleven public comments received in response to FTC’s Federal Register notice of proposed consent order).

235. *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”).

236. *See* Mueller, *supra* note 45, 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)).

particular industries, rather than delegating the task to a government official or agency possessing less familiarity with the industry standard in question.<sup>237</sup>

#### F. Patent Misuse

Thus far, few courts have even considered the applicability of the patent misuse doctrine to the problem of industry standards capture via patenting, and no court has yet found patent misuse in this context.

In one recent case alleging infringement of patents covering an industry standard for 56K modems, the district court in *Townshend v. Rockwell International Corp.* rejected the patent misuse defense.<sup>238</sup> Townshend obtained several patents on 56K modem technology and licensed them to 3Com Corporation.<sup>239</sup> 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.<sup>240</sup> Accused infringers Rockwell and Conexant Systems, Inc. alleged that Townshend refused to license the patented technology to them 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.”<sup>241</sup> They charged that Townshend’s licensing tactics amounted to patent misuse, as well as antitrust violations, unfair competition under state law, and inequitable conduct.<sup>242</sup>

Having rejected the antitrust challenge on the ground that the defendants had failed to establish any anticompetitive conduct by Townshend, the district court summarily rejected the patent misuse defense on the same basis.<sup>243</sup> Because “a complete refusal to license does not constitute patent misuse,”<sup>244</sup> the court asserted, Townshend’s lesser act of proposing

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237. See Milanese, *supra* note 168, 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).

238. See generally *Townshend v. Rockwell Int’l Corp.*, 2000 U.S. Dist. LEXIS 5070, 55 U.S.P.Q.2d (BNA) 1011 (N.D. Cal. 2000).

239. *Id.* at \*3-\*4.

240. *Id.* at \*6-\*7.

241. *Id.* at \*22.

242. *Id.* at \*5.

243. *Id.* at \*46-47.

244. *Id.* at \*47 (stating that “[p]ursuant to 35 U.S.C. § 271(d), a patentee is not deemed guilty of misuse or illegal extension of the patent right by refusing to license or use any rights to the patent”).

a set of licensing terms (even though perceived by the defendants as commercially unreasonable) “cannot constitute patent misuse.”<sup>245</sup>

*Townshend* illustrates that the most prominent obstacle to application of the patent misuse defense in the standards capture context is the statutory limitation imposed by the Patent Misuse Reform Act of 1988. Section 271(d)(4) provides that when “otherwise entitled to relief for infringement or contributory infringement of a patent,” a patent owner shall not be deemed guilty of patent misuse by reason of his having “refused to license or use any rights to the patent . . . .”<sup>246</sup>

Below, I examine the development of the section 271(d)(4) exemption and conclude that it should not prevent courts from applying the patent misuse doctrine in appropriate cases to curb standards abuse by patent owners. Nonenforcement of patent rights based on patent misuse should be limited, however, to the narrow class of cases in which the patent owner participated in the standards-setting activity and intentionally or willfully failed to disclose its relevant patent or pending patent application. Although I disagree with the *Townshend* court’s blanket assessment of section 271(d)(4), I believe it was correct in refusing to find patent misuse on the facts before it. In contrast to *Dell Computer*, the patent owner in *Townshend* disclosed his pending patent applications as well as his proposed licensing terms to the ITU during its standards-setting deliberations.<sup>247</sup> The district court found that the ITU thereafter adopted *Townshend*’s technology as the standard with full knowledge of the patents and proposed licensing terms.<sup>248</sup> When a patent owner makes full disclosure of its relevant patent holdings to the standard-setting body, and the body adopts a standard requiring the patented technology with advance knowledge of the licensing terms sought by the patentee, patent misuse is avoided.

### 1. *Development of the Patent Misuse Doctrine*

Patent misuse is a rather amorphous doctrine,<sup>249</sup> generally understood as “a method of limiting abuse of patent rights separate from the antitrust

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245. *Id.* Former FTC Chairman Pitofsky has criticized *Townshend* as “illustrating the way *CSU v. Xerox* may be misused.” Pitofsky, *supra* note 38, at 546 n.27 (citing *Townshend* court’s dismissal of antitrust counterclaims on ground that patentee had legal right to refuse to license on any terms).

246. 35 U.S.C. § 271(d)(4) (1994).

247. *Townshend*, 2000 U.S. Dist LEXIS at \*33, \*47.

248. *Id.* at \*47.

249. 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.” 6 CHISUM, *supra* note 71,

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laws.”<sup>250</sup> Procedurally, patent misuse is asserted as an affirmative defense to an allegation of patent infringement.<sup>251</sup> The misuse doctrine has its genesis in judicial decisions that predate any significant development of U.S. antitrust law.<sup>252</sup>

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.<sup>253</sup> Although the same conduct may form the basis for both a patent misuse defense and an antitrust allegation, establishing that the patentee violated the antitrust laws requires “much more”—in addition to the fact of the misuse, showings of power in the relevant market and anticompetitive effect.<sup>254</sup>

As with the parallel doctrine of copyright misuse,<sup>255</sup> the roots of patent misuse lie in the equitable doctrine of unclean hands,<sup>256</sup> “whereby a court

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§ 19.04. But given that misuse is a doctrine based in equity, the lack of clarity is hardly surprising. *See Merges, supra* note 162, at 796 (noting that “[t]he nature of equity is that it is somewhat ‘messy’”).

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

251. *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).

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

253. *Calkins, supra* note 162, at 187 (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.*, 468 F.2d 225, 231 (7th Cir. 1972)).

254. Marina Lao, *Unilateral Refusals to Sell or License Intellectual Property and the Antitrust Duty to Deal*, 9 CORNELL J. L. & PUB. POL’Y 193, 207 (1999).

255. *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

of equity will not lend its support to enforcement of a patent that has been misused.”<sup>257</sup> Application of the misuse doctrine seeks to restrain practices that generate “anticompetitive effect” from the patent right.<sup>258</sup>

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.<sup>259</sup> In practice, determinations of patent misuse have been based upon a fairly narrow range of specific acts or practices of the patent owner,<sup>260</sup> often (but not exclusively) in the context of patent licensing.<sup>261</sup> 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.”<sup>262</sup>

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 nonpatented, staple good. In *Morton Salt v. Suppiger*, the U.S.

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 anti-trust 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).

256. 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. Jun. 14, 2000) (declaring patent in suit unenforceable based on inventor/CEO’s fabrication of invention date evidence after commencement of infringement suit).

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

258. *Windsurfing Int’l, Inc. v. AMF, Inc.*, 782 F.2d 995, 1001-02 (Fed. Cir. 1986).

259. *See USM Corp. v. SPS Techs., Inc.*, 694 F.2d 505, 510 (7th Cir. 1982) (asserting that such a vague formulation, if “taken seriously . . . would put all patent rights at hazard”).

260. *Id.*

261. *See generally* 6 CHISUM, *supra* note 71, § 19.04[3] (“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).

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

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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.<sup>263</sup> The Court held that it was "unnecessary to decide whether [Suppiger] violated the Clayton Act" because allowing Suppiger to maintain its present patent infringement suit was "contrary to public policy."<sup>264</sup> The Court, however, did not hold the misused patent permanently unenforceable, because misuse can be "purged" by alleviating a challenged condition.<sup>265</sup>

Notably, the defendant/accused infringer in *Morton Salt* was not itself a victim of the misuse, because it was not a licensee.<sup>266</sup> 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.<sup>267</sup>

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.<sup>268</sup> 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. In contrast with contract-based defenses such as equitable estoppel and implied license, the patent

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263. 314 U.S. 488, 489-90, 494 (1942).

264. *Id.* at 494; *see also* Calkins, *supra* note 162, 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 as suggested by the court of appeals").

265. *Id.* at 493. The Court stated 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 abandoned and that the consequences of the misuse of the patent have been dissipated."

*Id.*; *see generally* 6 CHISUM, *supra* note 71, § 19.04[4] ("Purging and Dissipation of Misuse").

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

267. *Id.* at 492.

268. 6 CHISUM, *supra* note 71, § 19.04[5].

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 nondisclosure of its patent holdings.<sup>269</sup>

## 2. *The Section 271(d) Exceptions to Patent Misuse*

As detailed below, the 1988 Patent Misuse Reform Act limitations on patent misuse focused on the problematic intersection of that doctrine and the doctrine of contributory infringement.<sup>270</sup> An assertion of contributory infringement challenges a defendant's supply of one or more components that make up less than the entirety of the claimed invention.<sup>271</sup> 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.<sup>272</sup> Examining the history of the patent misuse limitations or safe harbors of section 271(d) demonstrates that they have developed primarily 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 *Mercoïd* decisions,<sup>273</sup> some courts viewed the very act of bringing a lawsuit that alleged contributory in-

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269. *But see* Mark A. Lemley, *The Economic Irrationality of the Patent Misuse Doctrine*, 78 CALIF. 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").

270. 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 (C.C. Conn. 1871) (No. 17,100). Under a theory of joint tortfeasance, 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 also* Tom Arnold & 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 *Mercoïd* "the mere act of bringing a contributory infringement action was patent misuse").

271. *See* 35 U.S.C. § 271(c) (1994) (defining contributory infringement).

272. *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").

273. *See generally* *Mercoïd Corp. v. Mid-Continent Inv. Co.*, 320 U.S. 661 (1944) (holding that patent owner had misused patent by asserting contributory infringement

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fringement as an act of patent misuse.<sup>274</sup> 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.<sup>275</sup> 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.<sup>276</sup>

Attorney (later Judge) Giles S. Rich and others successfully lobbied for the inclusion of the section 271(d) safe harbor provisions as a necessary counterbalance to the contributory infringement provision that had been contemporaneously enacted as section 271(c). In view of the Supreme Court's *Mercoïd* 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<sup>277</sup> should not be regarded as patent misuse.<sup>278</sup> Congress ulti-

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against accused supplier of unpatented combustion stoker switch, even though switch had no use other than in patented combination); *Mercoïd Corp. v. Minneapolis-Honeywell Regulator Co.*, 320 U.S. 680 (1944) (companion case).

274. See Arnold and Riley, *supra* note 270, at 365 (citing *Stroco Prods., Inc. v. Mullenbach*, 67 U.S.P.Q. (BNA) 168, 171 (S.D. Cal. 1944)).

275. 35 U.S.C. § 271(d)(1)-(3) (1994).

276. 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)).

277. 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.

mately agreed, enacting sections 271(d) (1)-(3) as part of the 1952 Patent Act.<sup>279</sup>

The Supreme Court did not have occasion to scrutinize the patent misuse safe harbors of section 271(d) until 1980.<sup>280</sup> In *Dawson Chemical Co. v. Rohm and Haas Co.*,<sup>281</sup> the Court considered the propriety of a patent owner's refusal to license the defendant and other producers of the non-staple but unpatented chemical propanil<sup>282</sup> 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 patented method based on the farmers' purchase of propanil from the patentee, rather than from its competitors who also manufactured the un-patented propanil.<sup>283</sup> 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.<sup>284</sup> 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).<sup>285</sup>

By a 5-4 vote, the *Dawson* majority rejected the defendant's 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 section 271(d)."<sup>286</sup> 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."<sup>287</sup> The majority's opinion ultimately focused much

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*Id.*

278. See generally Arnold & Riley, *supra* note 270, at 366-70.

279. 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").

280. *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)).

281. 448 U.S. 176 (1980).

282. *Id.* at 181-82.

283. *Id.* at 183, 186.

284. *Id.* at 186.

285. *Id.* at 187.

286. *Id.* at 202, 223.

287. *Id.* at 202 (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. Be-

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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 nonstaple good, one that had "no use except through practice of the patented method."<sup>288</sup> 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 non-staple goods."<sup>289</sup>

In 1988, Congress codified the holdings of *Dawson* by adding new subsections (4) and (5) to the three then-existing patent misuse safe harbors of 35 U.S.C. § 271(d).<sup>290</sup> Of particular interest in the industry standards context is subsection (4), which provides that when "otherwise entitled to relief for infringement or contributory infringement of a patent," a patent owner shall not be deemed guilty of patent misuse by reason of his having "refused to license or use any rights to the patent . . . ."<sup>291</sup> Read literally, this broad safe harbor would appear to permit the owner of a patent on standards technology to refuse to license any competitor who must practice the patent in order to conform with the pertinent industry standard. For the reasons set forth below, I contend that section 271(d)(4) should not be read so broadly as to prevent courts from applying the patent misuse doctrine in appropriate cases of standards capture through patenting.

The legislative history directly pertinent to the enactment of section 271(d)(4) is extremely limited<sup>292</sup> and indicates only that the provision

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cause 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).

288. *Id.* at 199.

289. *Id.* at 201.

290. Act of Nov. 19, 1988, Title II, Pub. No. 100-703, § 201, 102 Stat. 4674; *see also* Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 914 n.347 (1990) (describing legislation as "built on" *Dawson*). For a detailed description of the passage of the Act, see Calkins, *supra* note 162, at 192-200.

291. 35 U.S.C. § 271(d)(4) (1994).

292. The entirety of the pertinent legislative history for 35 U.S.C. § 271(d)(4) is found at 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.

was intended to codify existing case law.<sup>293</sup> Oddly, the legislative history does not mention the Supreme Court's *Dawson* decision—clearly the most pertinent authority—but rather relies chiefly on the Ninth Circuit's decision in *SCM Corp. v. Xerox Corp.*<sup>294</sup> There, the appellate court upheld Xerox's refusal to license its portfolio of plain-paper copying patents under the antitrust laws, but did not discuss whether that conduct constituted patent misuse.<sup>295</sup>

The only other authority cited in the legislative history of section 271(d)(4), the Supreme Court's 1908 decision in *Continental Paper Bag Co. v. Eastern Paper Bag Co.*,<sup>296</sup> likewise fails to support the creation of a wholesale shield from patent misuse for refusals to license, regardless of the context. The *Continental Paper Bag* Court rejected an accused infringer's argument that a court of equity could not enjoin infringement of a patent on a machine for making paper bags when the patent had never been practiced because the nonmanufacturing patent owner refused to license it.<sup>297</sup> Excluding competitors from the use of a patented invention

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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 "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.<sup>4</sup> [Footnote 4:] *See SCM Corp. v. Xerox*, 645 F.2d 1195 (2d Cir. 1981); *see generally* *Cont'l Paper Bag Co. v. E. Paper Bag Co.*, 210 U.S. 405, 426-430 (1908).

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

293. *See* Calkins, *supra* note 162, at 197 (contending that "[b]ecause little controversy exists over the right of a patent owner to refuse to use a patent or to license others, the codification adds little to existing law").

294. 645 F.2d 1195 (2d Cir. 1981).

295. *See SCM Corp.*, 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)). In support of its decision, the Ninth Circuit noted that "[n]o court has ever held that the antitrust laws require a patent holder to forfeit the exclusionary power inherent in his patent the instant his patent monopoly affords him monopoly power over a relevant product market." *Id.* at 1204.

296. 210 U.S. 405 (1908).

297. *Id.* at 422-30.

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“may be said to have been of the very essence of the right conferred by the patent,”<sup>298</sup> the Court opined, emphasizing that unlike many foreign countries, the U.S. had never (with one minor exception for aliens) imposed working requirements on patent owners.<sup>299</sup> The Court also rejected the accused infringer’s contention that the nature of the patent owner’s nonuse was “unreasonable or that the rights of the public were involved,”<sup>300</sup> pointing to evidence that the nonuse was simply a matter of economic savings for the patentee and that there was “no question of a diminished supply or of increase in prices.”<sup>301</sup> Notably, however, the Court left open the possibility that injunctive relief against infringement might be withheld in a different case involving a truly unreasonable refusal to license that harmed the public’s welfare: “Whether, however, a 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.”<sup>302</sup>

Some scholars have suggested that the enactment of section 271(d)(4) as a safe harbor for refusals to license precludes any assertion of a patent misuse defense in the standards capture context.<sup>303</sup> The patent misuse defense should not be so circumscribed. The section 271(d)(4) legislative history’s reliance on *Continental Paper Bag*, coupled with that section’s prefatory qualifying language of “otherwise entitled to relief,” suggests that a patent misuse defense can still be raised in cases of truly unreasonable refusals to license that harm the public’s welfare.<sup>304</sup> Refusal to license a standards patent that the patentee intentionally kept secret while partici-

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298. *Id.* at 429.

299. *Id.*

300. *Id.*

301. *Id.*

302. *Id.* at 430. The Ninth Circuit relied on this language in its 1945 *Vitamin Technologists* decision, refusing to enjoin infringement of a patent that the Wisconsin Alumni Research Foundation (WARF) was unwilling to license to increase the vitamin D content of margarine, a treatment for the disease of rickets. *See Vitamin Technologists, Inc. v. Wis. Alumni Research Found.*, 146 F.2d 941, 946 (9th Cir. 1945) (quoting *Continental Paper Bag*, 210 U.S. at 430).

303. *See, e.g.,* Lemley, *supra* note 27, at 1061 n.69. Lemley notes:

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.*

304. *Cf. Cont'l Paper Bag v. E. Paper Bag*, 210 U.S. 405, 430 (1908).

pating in the standards-setting deliberations represents such a case. The sensitivity of the patent misuse doctrine to the public policy concerns alluded to in *Continental Paper Bag*, which look beyond the marketplace impact-focus of antitrust analysis, makes the misuse doctrine a viable and important tool to remedy abusive standards capture by patent owners.

### 3. *CSU v. Xerox*

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. Nevertheless, they are pertinent for illustrating how courts have improperly conflated patent misuse and antitrust analysis.

In the recent *CSU v. Xerox* litigation,<sup>305</sup> the Federal Circuit summarily rejected an accused infringer's assertion that a patent owner's refusal to license or sell its 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 its Xerox-patented replacement parts. CSU also alleged patent misuse as well as antitrust violation.<sup>306</sup> The district court granted Xerox summary judgment, and the Federal Circuit affirmed,<sup>307</sup> 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.<sup>308</sup>

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.<sup>2</sup> [Footnote 2: Having concluded that Xerox's actions fell within the statutory patent grant, we need not separately con-

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

306. *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").

307. *CSU*, 203 F.3d at 1324.

308. *Id.* at 1327-28.

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sider CSU's allegations of patent misuse and they are rejected.]  
Therefore, our inquiry is at an end. . . .<sup>309</sup>

Regrettably, the Federal Circuit in *CSU* provided no analytical measure by which to determine the key patent misuse inquiry of when an anti-competitive effect “illegally extend[s] beyond the statutory patent grant.”<sup>310</sup> The court summarily concluded that Xerox had not misused its patent, because it found no antitrust violation.<sup>311</sup> Its conclusion that Xerox's acts did not “extend beyond” the scope of Xerox's patent grant was dispositive of both the antitrust<sup>312</sup> and patent misuse<sup>313</sup> defenses. The Federal Circuit treated the patent misuse claim as subsumed within the antitrust finding. By conflating the two doctrines, the court's approach ig-

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309. *Id.* at 1328.

310. *Id.* at 1328.

311. *Id.* 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 Calkins, supra* note 162, 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”); Lemley, *supra* note 269, 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 162, at 797); Merges, *supra* note 162, 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); 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)).

312. *CSU*, 203 F.3d 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”)).

313. *See Windsurfing Int'l, Inc. v. AMF, Inc.*, 782 F.2d 995, 1001 (Fed. Cir. 1986) (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)).

nores the fundamental policy differences between patent misuse and anti-trust.<sup>314</sup>

Former 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."<sup>315</sup> 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 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.<sup>316</sup>

Chairman Pitofsky's comments support the position that the section 271(d)(4) safe harbor for refusals to license should not be interpreted so broadly as to exempt any such refusals from patent misuse scrutiny, no matter what the context or how anticompetitive the impact.<sup>317</sup> In a November 2001 address to the American Bar Association, Chairman Pitofsky's successor, FTC Chairman Timothy J. Muris, echoed Pitofsky's concerns when he noted that the *CSU* decision continues to provoke debate on whether any limits should be placed on a patent owner's right to refuse to deal.<sup>318</sup> Muris went so far as to explicitly pose the question whether section 271(d)(4) should "be changed or reinterpreted to reflect competition considerations."<sup>319</sup>

314. See *supra* note 253 and accompanying text.

315. Pitofsky, *supra* note 38, at 545.

316. *Id.* at 546.

317. 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 162, 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").

318. See Timothy J. Muris, *Competition and Intellectual Property Policy: The Way Ahead*, presented to the American Bar Association's Antitrust Section Fall Forum, Washington, D.C. (Nov. 15, 2001), at 5, available at <http://www.ftc.gov/speeches/muris/intellectual.htm>.

319. *Id.*

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Moreover, the prefatory “otherwise entitled to relief” qualifier of section 271(d) indicates 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 standards technology patent presents exactly this type of newly-arising scenario. The sensitivity of the patent misuse doctrine to these public policy concerns permits courts to consider whether a patentee’s refusal to license a patent on standards technology extends the anti-competitive effect of the refusal beyond the statutory patent grant and propels the refusal into the realm of actionable patent misuse.<sup>320</sup>

### 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-setting body while that body had an opportunity to select an alternate, nonproprietary 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 nondisclosure 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.

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320. 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 nondisclosure of patent rights to a standards-setting body.

# HARMONY AND DIVERSITY IN GLOBAL PATENT LAW

*By John F. Duffy<sup>†</sup>*

## ABSTRACT

The second half of the twentieth century saw the rise of a broad movement to harmonize patent laws across nation-states. The most recent, and most significant, manifestation of this movement is the 1994 TRIPS Agreement, which requires signatory nations to adopt uniform rules on many major issues of patent law. The TRIPS Agreement has now been implemented by well over one hundred countries, including almost all major industrial nations, and it heralds a new level of international uniformity in patent law.

This Article, while acknowledging the value of some harmonization of national law, explores the possible costs of the harmonization movement. Patent law itself owes its very birth not to harmony but to diversity of national law. The fifteenth-century Venetian patent statute was an experiment in law and a departure from the classical hostility to monopoly. Throughout the history of patent law, individual nations have varied their law and practice, and the results of these experiments have strengthened and improved patent practice. Diversity and experimentation continue today. As case studies of such experimentation, this Article examines business method patents and law governing the experimental use defense to patent infringement, an area in which both commentators and nations have split as to the proper approach for the law.

This Article concludes that the patent law of the twenty-first century would be enriched if national and international policymakers learn to value variety.

## I. INTRODUCTION

Uniformity of law has an undeniable intellectual appeal. It simplifies the law, makes it easier to learn and describe, and reduces administrative costs. Yet uniformity has its costs too. It makes the law unresponsive to local variations, eliminates interjurisdictional competition and decreases the possibilities for legal experimentation. The choice between uniformity

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and diversity is difficult and has, not surprisingly, generated great debate in numerous areas of law and social policy, including such diverse matters as corporate law, international antitrust law, local and international taxation, tort law, securities regulation, and environmental law.<sup>1</sup> The literature in these areas frequently focuses on whether competing legal regimes will produce inefficient and socially destructive competition (“races to the bottom”) or wealth maximizing competition (“races to the top”). But jurisdictional competition is only one of a number of relevant considerations; the debate encompasses a more general and fundamental inquiry into the social efficiency of harmonized law.

Curiously, the implications of this debate have generally not been considered in the area of patent law. With few exceptions, the international patent community has taken as a given the value of creating uniform patent law on a global scale. For example, in remarks concerning the future of patent law, the former head of the U.S. Patent and Trademark Office, Q. Todd Dickinson, simply presumed a consensus on the need for a global patent system:

I think most of us here [at the annual Fordham Conference on International Intellectual Property Law and Policy] would say that there definitely should be a global patent system of some sort by

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1. For some of the leading articles, see the following: In corporate law, see Lucian Arye Bebchuck, *Federalism and the Corporation: The Desirable Limits on State Competition in Corporate Law*, 105 HARV. L. REV. 1435 (1992); Roberta Romano, *The State Competition Debate in Corporate Law*, 8 CARDOZO L. REV. 709 (1987); Ralph K. Winter, Jr., *State Law, Shareholder Protection, and the Theory of the Corporation*, 6 J. LEGAL STUD. 251 (1977); William L. Cary, *Federalism and Corporate Law: Reflections upon Delaware*, 83 YALE L.J. 663 (1974). In environmental law, see Richard L. Revesz, *Federalism and Environmental Regulation: A Public Choice Analysis*, 115 HARV. L. REV. 553 (2001); Richard L. Revesz, *Rehabilitating Interstate Competition: Rethinking the “Race-to-the-Bottom” Rationale for Federal Environmental Regulation*, 67 N.Y.U. L. REV. 1210 (1992); Richard B. Stewart, *Pyramids of Sacrifice? Problems of Federalism in Mandating State Implementation of National Environmental Policy*, 86 YALE L.J. 1196 (1977). In tax law, see Julie Roin, *Competition and Evasion: Another Perspective on International Tax Competition*, 89 GEO. L.J. 543 (2001); Reuven S. Avi-Yonah, *Globalization, Tax Competition, and the Fiscal Crisis of the Welfare State*, 113 HARV. L. REV. 1573 (2000). In tort law, see Bruce L. Hay, *Conflicts of Law and State Competition in the Product Liability System*, 80 GEO. L.J. 617 (1992). In antitrust law, see generally Spencer Weber Waller, *An Internationalization of Antitrust Enforcement*, 77 B.U. L. REV. 343 (1997); Frank H. Easterbrook, *Antitrust and the Economics of Federalism*, 26 J.L. & ECON. 23 (1983). In the theory of federalism, see Barry Friedman, *Valuing Federalism*, 82 MINN. L. REV. 317 (1997); Michael W. McConnell, *Federalism: Evaluating the Founders’ Design*, 54 U. CHI. L. REV. 1484 (1987). For a general theory concerning local provision of public goods, see Charles M. Tiebout, *A Pure Theory of Local Expenditures*, 64 J. POL. ECON. 416 (1956).

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2010. I think we can all list probable benefits of such a system: reduced costs for inventors and for their assignees, dramatically simpler protection, and uniformity of that protection throughout the world.<sup>2</sup>

Mr. Dickinson's sense of his audience seems correct. The "profound public policy need for this global system" is a generally accepted postulate, and the task for policymakers is limited to sorting through the "diversity of the existing systems and the current proposals" and to "achieving a consensus on the nature of the global patent" system that should be created.<sup>3</sup>

This attitude has produced concrete changes. The second half of the twentieth century saw the rise of a broad movement to harmonize patent laws across nation-states. The most recent, and most significant, manifestation of this movement is the 1994 Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS), which requires signatory nations to conform their patent laws to a uniform framework of international standards.<sup>4</sup> The TRIPS Agreement has now been implemented by well over

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2. Hon. Q. Todd Dickinson, *The Long-Term International View of Patents and Trademarks*, in 4 INTERNATIONAL INTELLECTUAL PROPERTY LAW & POLICY 14-1 to 14-2 (Hugh C. Hansen, ed. 2000).

3. *Id.* at 14-2 to 14-3; see also *Computer Program Product/IBM*, T 1173/97-3.5.1, ¶ 2.6 (EPO Bd. of App. July 1, 1998), <http://www.european-patent-office.org/dg3/pdf/t971173ex1.pdf> (describing the "(world-wide) harmonisation of patent law" as "highly desirable"); Robert M. Sherwood, *Why a Uniform Intellectual Property System Makes Sense for the World*, in GLOBAL DIMENSIONS OF INTELLECTUAL PROPERTY RIGHT IN SCIENCE AND TECHNOLOGY 68, 68 (1993) (arguing that "a uniform intellectual property system makes sense for the world"); Marshall A. Leaffer, *Protecting United States Intellectual Property Abroad: Toward a New Multilateralism*, 76 IOWA L. REV. 273, 278 (1991) (stating a "general thesis" that "the ultimate goal of the United States . . . should be the adequate protection of intellectual property based on international standards," but acknowledging that some flexibility may be needed to accommodate "the countervailing interests of the developing nations whose exigent economic interests differ from those of the West"); Gerald J. Mossinghoff & Vivian S. Kuo, *World Patent System Circa 20XX, A.D.*, 38 IDEA 529, 530 (1998) (arguing that the current national patent search system has a debilitating and "unnecessary redundancy [that] drives up the costs of obtaining and enforcing worldwide patent protection to a level that can only be afforded by the largest multinational corporations [and] also adversely impacts the governments themselves"); Kate H. Murashige, *Harmonization of Patent Laws*, 16 HOUS. J. INT'L L. 591, 591-92 (1994) (beginning from the premise that "[h]armonization of patent systems would eliminate unnecessary complexity in patent law and benefit international trade and multinational ownership interests" and then investigating "the means to achieve harmonization"); Robert W. Pritchard, *The Future is Now—The Case for Patent Harmonization*, 20 N.C. J. INT'L L. & COM. REG. 291 (1995) (arguing that patent harmonization is in the best interests of the United States).

4. See Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, 33 I.L.M. 81 [hereinafter TRIPS Agreement].

100 countries, including almost all major industrial nations, and heralds a new level of international uniformity in patent law. In the post-TRIPS world, harmonization continues to be a shibboleth in patent circles, and diversity a flaw to be remedied.<sup>5</sup>

Further harmonization on a global scale would, of course, provide certain benefits. As Mr. Dickinson notes, it could reduce administrative costs and provide simplicity and uniformity in application. But it would also preclude interjurisdictional competition and experimentation in patent law, among other things. The relevant policy question is to what extent interjurisdictional diversity and competition should be sacrificed to achieve global uniformity. This question is important not only for determining the optimal amount of harmonization to be pursued in the future, but also for understanding the proper limitations of the steps already taken toward global harmonization of patent law, particularly the TRIPS agreement. If jurisdictional diversity retains some merit, then the provisions in TRIPS permitting variance should be interpreted much more broadly than if harmonization were an unqualified good.

To investigate the relative values of harmony and diversity, this Article draws on the rich literature concerning interjurisdictional legal diversity and competition that has developed in other areas. The law of patents can profit from this literature because it provides valuable insights into the forces driving patent harmonization and the potential costs of uniformity. Yet the benefits also flow in the other direction. Not only can patent law borrow from general theories of interjurisdictional diversity and competition, it can also enrich those theories.

Scholars studying interjurisdictional legal diversity tend to agree that such diversity has at least two potential values: First, it can help match the level of public goods to the tastes and resources of the local population. Second, under certain conditions, it can lead to interjurisdictional competition that checks inefficient government behavior. A third potential value of diversity—that it can breed desirable experimentation and innovation in law—has proven more controversial. On the one hand, legal scholars have acknowledged the possibility of legal experimentation and innovation.<sup>6</sup> Indeed, this tradition dates back at least to the time of Justice Brandeis, who in 1932 famously analogized the states in our federal system to “labo-

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5. This attitude extends beyond patent law into other areas of intellectual property. In the words of Professor Dinwoodie, “it is a truism that contemporary problems in copyright law demand international solutions.” Graeme B. Dinwoodie, *A New Copyright Order: Why National Courts Should Create Global Norms*, 149 U. PA. L. REV. 469, 471 (2000). This Article will, however, focus on the demands and history of patent law.

6. See, e.g., Friedman, *supra* note 1, at 399; McConnell, *supra* note 1, at 1498.

rator[ies]” that could experiment with new social and legal innovations.<sup>7</sup> Nevertheless, formal economic models of interjurisdictional legal diversity and competition often do not account for the possibility of legal innovation,<sup>8</sup> and some law and economics scholars have questioned the validity of Justice Brandeis’s insight.<sup>9</sup> Indeed, one scholar, Frank Easterbrook, discounts Brandeis’s views on legal experimentation as based on “Panglossian assumptions.”<sup>10</sup>

Moreover, even among scholars who study the process of legal innovation, the long-term value of legal innovation remains open to question. Legal innovation might be merely a product of ideological swings, with today’s regulatory innovation being undone by tomorrow’s deregulatory innovation.<sup>11</sup> If so, the long-term value of innovation might be slight. Alternatively, legal innovation might be thought necessary to adapt law to the unique conditions of a particular time and culture. Legal innovations would then have a significant value—much in the way that a new phone-

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7. *New State Ice Co. v. Liebmann*, 285 U.S. 262, 311 (1932) (Brandeis, J., dissenting).

8. *See, e.g.*, Wallace E. Oates & Robert M. Schwab, *Economic Competition Among Jurisdictions: Efficiency Enhancing or Distortion Inducing?*, 35 J. PUB. ECON. 333 (1988); Tiebout, *supra* note 1. In the legal literature too, some analyses of jurisdictional diversity do not consider the possible value of legal innovation. *See, e.g.*, Avi-Yonah, *supra* note 1; Revesz, *Rehabilitating Interstate Competition*, *supra* note 1; Roin, *supra* note 1.

9. *See, e.g.*, Susan Rose-Ackerman, *Risk Taking and Reflection: Does Federalism Promote Innovation?*, 9 J. LEG. STUD. 593 (1980).

10. Easterbrook, *supra* note 1, at 50 n.58. Judge Easterbrook still values legal diversity, but he focuses on the check that interjurisdictional competition imposes on the governmental “monopoly of lawmaking.” *Id.* at 50. Such a view need not acknowledge the possibility of legal innovation and progress.

11. *See, e.g.*, Bradley C. Canon & Lawrence Baum, *Patterns of Adoption of Tort Law Innovations: An Application of Diffusion Theory to Judicial Doctrines*, 75 AM. POL. SCI. REV. 975, 976 (1981) (noting that legal innovations in tort law during the nineteenth century tended to be “defendant-oriented,” but thereafter innovations tended to favor plaintiffs as “courts—along with other agencies—became more concerned with the social cost of the industrial revolution for injured workers and consumers”); Robert L. Savage, *Diffusion Research Traditions and the Spread of Policy Innovations in a Federal System*, PUBLIUS: J. FEDERALISM, Fall 1985, at 1, 26 (comparing the process of policy innovations to “the constant fluctuations associated with the ebb and flow of cultural ideas” and suggesting that the process may exhibit some “circularity”); *see also* Roberto Romano, *Law as a Product: Some Pieces of the Incorporation Puzzle*, 1 J.L. ECON. & ORG. 225, 235 n.10 (1985) (noting that, “[a]lthough the direction of state corporation law has been toward deregulation, this is not always the case: antitakeover statutes, for instance, diffused rapidly among the states”).

book is more valuable than an old one—but there would not necessarily be any sense of *progress*, any sense that the law is getting *better* with time.<sup>12</sup>

Legal innovation would be most valuable, however, if it were like technical innovation—i.e., if it were a permanent, nonobvious addition to the storehouse of useful knowledge. Under this view, a diverse legal system has positive externalities for other legal jurisdictions precisely because it provides information to the other jurisdictions about the value of different legal rules. When that information shows the efficacy of a particular legal rule, other jurisdictions may change their laws to adopt the new rule. In this way, the other jurisdictions benefit from the mere fact of difference, and the technology of law advances.

It is here that patent law can enrich the general theoretical discussion, for the history of patent law demonstrates not only the reality and value of progress in legal technology, but also the necessity of legal diversity in fostering that progress. Indeed, the entire field of patent law owes its birth not to harmony but to diversity of law. The fifteenth century Venetian statute that pioneered patent law was an experiment in law, and a departure from the classical hostility to government-sanctioned exclusive rights.<sup>13</sup> Since then, individual nations have varied their patent law and practice, with other jurisdictions following where the experiment was deemed successful. At least some of these innovations resulted in permanent legal advances. This process of experimentation and innovation continues today. For example, business methods patents and the experimental use defense have generated great differences of opinion among courts and legal commentators, and a diversity of approaches among nations.<sup>14</sup> These past and current experiments in law invigorate and strengthen patent law with new innovations.

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12. See, e.g., Romano, *Law as Product*, *supra* note 11, at 280 (describing state efforts at corporate law reform as a process of continual “updat[ing]” of the law needed to “service its corporate clientele”); G. Alan Tarr, *Models and Fashions in State Constitutionalism*, 1998 WISC. L. REV. 729, 735-36 (suggesting that changes in state constitutions occur because “constitutional models appropriate at one point in time may become outdated”). A slight variation of this view would be that legal variation occurs largely in “rules that either (a) do not matter much, or (b) raise issues about which reasonable people (even in the same culture) could disagree.” Saul Levmore, *Variety and Uniformity in the Treatment of the Good-Faith Purchaser*, 16 J. LEG. STUD. 43, 44 (1987). Under this view, legal variation and “innovation” may occur, but the law itself would not develop much—we would observe that “many of the legal problems we grapple with today are precisely those confronted—with ingenuity at least equal to our own—by civilizations long ago,” and modern legal solutions would be “not necessarily superior to others.” *Id.* at 65.

13. See *infra* note 72 and accompanying text.

14. See *infra* Part III.B.

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None of this denies that consistency has merit too. For example, the United States has maintained a uniform, national patent system since 1790. Accepting the value of diversity does not lead to the conclusion that each of the fifty states should administer its own patent system. Nor does it even suggest that each nation-state should maintain its own patent system. Just as in private industry, a certain amount of consolidation may increase not only social welfare, but also competition. Thus, having four or five competing patent systems may be better than having one hundred.

But a complete international harmonization of patent laws—particularly, the institution of a single, integrated global patent system—would eliminate interjurisdictional competition and substantially stifle innovation in patent law. While the loss of competition occurs by definition, the reduction of innovation follows from several effects. First, in a unified global system, experimentation in law could take place only successively, with the entire world serving as the “laboratory” for a particular period of time. Because experiments would be spread out temporally, not geographically, the pace of innovation would necessarily be slower. Second, the resulting “data” from any particular experiment may be much harder to interpret because the experiment lacks a good “control.” Thus, for example, the apparent success or failure of an experiment might be attributable to then-prevailing world conditions; an innovation adopted at the beginning of a worldwide economic recession may appear to be less successful than it actually is. For this reason, experiments conducted on a global scale may produce inconclusive results and slow the rate at which innovations are adopted. Third and finally, conducting experiments on a global scale may be much more difficult than doing so within nation-states or groups of nation-states. Where a global regime is established by multilateral treaty, the process for modifying the agreement may require a worldwide consensus, a significant political barrier to legal experimentation.<sup>15</sup>

Aficionados of the patent system—a system built to reward risky experimentation—are particularly well-suited to appreciate the costs that such a development would entail. It would be both ironic and unfortunate if a legal system that owes its existence to experimentation, and that is designed to foster experimentation in technical areas, were modified to pre-

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15. For example, amendments to the TRIPS agreement can generally be accomplished only with the support of a two-thirds majority of WTO Members. Moreover, such amendments must be both approved by the WTO’s Ministerial Council (which is composed of representatives from the WTO Members) *and* adopted at the national level by the individual Members. See Agreement Establishing the World Trade Organization, art. X, para. 1, 3, *available at* [http://www.wto.org/english/docs\\_e/legal\\_e/04-wto.pdf](http://www.wto.org/english/docs_e/legal_e/04-wto.pdf).

clude substantial experimentation and further development of its own norms.

Part II of this Article provides a theoretical analysis of harmony and diversity in patent law. While this analysis finds strong reasons favoring a certain degree of harmonization, it also uncovers significant justifications for maintaining some diversity in patent law. At least one of these justifications for diversity—the value of diverse laws to match local preferences—has previously been mentioned by other patent law scholars. The value of diversity in fostering legal innovation has not. Part III explores this innovation rationale from a historical perspective and demonstrates that many valuable features of modern patent law began as controversial experiments in local systems. As shown in Part III.B, such experimentation continues today, with individual patent systems taking different approaches on controversial topics in the field. Part IV details the implications of these theoretical and historical analyses. If patent law's tradition of innovation is to continue, global patent law must maintain a degree of jurisdictional diversity. Part IV.A suggests ways to interpret TRIPS to achieve that goal, while Part IV.B suggests future steps in which a certain degree of additional patent harmonization can occur without compromising the value of diversity. Finally, Part V offers some concluding thoughts.

## **VII. THEORETICAL REASONS FOR HARMONY AND DIVERSITY**

Finding the optimal balance between legal uniformity and diversity requires an analysis of the factors favoring each side. The analysis here is necessarily limited to qualitative assessments because, as is often true in other areas of law, quantitative measures of the costs and benefits of legal diversity are currently not possible. Nevertheless, even a qualitative analysis is valuable because it can explain the impulses for harmonization and identify circumstances in which the need for diversity is particularly great.

### **A. The Case for Harmonization**

Legal harmonization—whether accomplished by consolidation of previously independent regimes or by less dramatic measures—is usually viewed as an appropriate response to three problems: jurisdictional externalities, economies of scale in governance, and destructive protectionism. The case for harmonization in patent law rests mainly on the first two of these.

1. *Jurisdictional Externalities*

The most compelling justification for harmonization in patent law mirrors the justification for creating a patent system in the first place, for both are efforts to account for the positive externalities associated with the creation of technical information. In a market economy, free competition between firms is thought to produce efficient outcomes provided that, among other things, each firm internalizes all the social costs and benefits of its own activities.<sup>16</sup> In the absence of a patent system, however, that condition does not hold because the production of easily appropriated knowledge will have positive external benefits.

Consider, for example, the situation in which one firm produces a valuable, innovative product that can be easily reverse-engineered. Once it is marketed, the innovation will be quickly copied by the firm's competitors, and the price will be driven down to the marginal cost of manufacturing copies. Accordingly, the innovating firm will be unable to capture the full social benefit of its innovation—innovation will have positive externalities—and the incentives to invest in research and development will be inefficiently low. The patent system can be accurately described as a regulatory mechanism that attempts to correct this externality by more closely aligning the private and social value of producing new information.<sup>17</sup>

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16. This point is generally known as the “First Fundamental Theorem of Welfare Economics.” See ANINDYA SEN, *MICROECONOMICS: THEORY AND APPLICATIONS* 372-75 (1999). In the text, the concept of “efficient outcomes” is used in the pareto sense: The outcome is pareto efficient if no individual can be made better off without making another individual worse off. Also the concept of an externality implicitly assumes that transactions costs are not zero. As Ronald Coase demonstrated, in a world with zero transaction costs (i.e., a world with a perfectly functioning price mechanism), all “externalities” are internalized because actors causing externalities bear the opportunity cost of forgoing activity and receiving payments from those negatively affected by the externality. See Ronald Coase, *The Problem of Social Cost*, 3 *J.L. & ECON.* 1, 13 (1960) (“It is one of the beauties of a smoothly operating pricing system that . . . the fall in the production due to the harmful effect would be a cost for both parties.”). For the remainder of this article, any discussion of externalities includes an assumption of nonnegligible transaction costs.

17. If this description of the patent system is correct, one might rightly question why patent terms are not infinite, for an infinite patent term would, at first blush, seem to provide a perfect alignment of private and social values. One good answer is that the social value of the innovation at any given time encompasses not only all future benefits associated with the innovation, but also the opportunity cost of “mining out” the innovation at that particular time. See generally Yoram Barzel, *Optimal Timing of Innovations*, 50 *REV. ECON. & STAT.* 348 (1968). In a system of free competition for infinite patents, each competing firm will not internalize the social opportunity cost and will thus have too great an incentive to innovate. The limited patent term attempts to account for this effect.

Just as the externalities provide a justification for the existence of a patent system, so too do they provide a reason for harmonization. Consider, for example, the situation in which one country maintains a patent system but its neighbor does not. Because of the incentives of the patent system in the first country, firms will invest resources in developing patentable innovations. Consumers in the first country will pay above-marginal-cost prices for those innovations and will thus bear the cost of the information necessary to develop the innovations. By contrast, consumers in the second country will, if competitive conditions prevail, pay only the marginal cost of reproducing the innovation; they will free-ride off the investments of their neighbors. The legal regime in the first country thus has a positive externality for the second country.

As the literature on jurisdictional competition consistently demonstrates, such an externality provides a good reason to distrust the body of law produced by diverse jurisdictions,<sup>18</sup> and also a justification for some form of transjurisdictional regulation. For example, in a seminal article on the competition between local jurisdictions to provide public goods, Charles Tiebout acknowledges that where “external economies and diseconomies are of sufficient importance, some form of integration [of the competing jurisdictions] may be indicated.”<sup>19</sup> Numerous other articles reach similar conclusions.<sup>20</sup>

In an era characterized by inexpensive communications and the free flow of information, externalities provide a particularly powerful justification for transnational patent harmonization because one nation’s patent law can create a global externality. By comparison, the externality problem with most environmental controls is limited to some extent by geography; in many cases, stringent environmental laws benefit only neighboring or downwind jurisdictions.<sup>21</sup> In contrast, the disclosure of new techni-

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18. See, e.g., Hay, *supra* note 1, at 617 (“When states can pass laws whose costs are borne by outsiders, self-interested behavior by each makes all worse off.”).

19. Tiebout, *supra* note 1, at 423. Tiebout gives as an example the case in which one community sprays its trees to prevent Dutch elm disease and thereby provides an external benefit to neighboring jurisdictions.

20. See, e.g., Revesz, *Rehabilitating Interstate Competition*, *supra* note 1, at 1222 (noting that in the context of pollution regulation, “[t]he presence of interstate externalities is a powerful reason for intervention at the federal level: because some of the benefits of a state’s pollution control policies accrue to downwind states, states have an incentive to underregulate”).

21. See *id.* at 1222-23 (noting that the concern over pollution externalities can be addressed merely by “‘showing’ upwind states the costs that they impose on downwind states”).

cal information in Europe or the United States can travel to the other side of the planet almost instantaneously.<sup>22</sup>

The externalities argument in fact explains much of the most significant step in patent harmonization, the TRIPS agreement. The negotiations leading to TRIPS were essentially negotiations between industrially developed and less-developed countries.<sup>23</sup> Developed countries entered the negotiations with much stronger patent and intellectual property (IP) systems than those in the developing nations. In other words, the patent systems of the developed countries created positive externalities for the developing nations, which were free-riding on the technological information produced in more developed countries.<sup>24</sup> The goal of the developed nations (led by the U.S.) was to increase IP protections in developing countries. In exchange, developing countries obtained more open markets for their textile and agricultural products in developed nations.<sup>25</sup> In effect, the TRIPS negotiations may be viewed as a form of Coasian bargain, with developing countries accepting valuable consideration in exchange for their agreement to adopt a legal system addressing the positive externalities problem.

The positive externalities associated with the IP systems also explain the overarching structure of the TRIPS agreement. If positive externalities were the chief concern of the parties in negotiating TRIPS, then the parties should be concerned only that a country may be providing *too little*, not *too much*, IP protection. A nation that decides to depart from an international norm and provide greater IP protection would only provide a benefit to other nations. In other words, the resulting treaty should mandate only *minimum* standards and, in fact, that is precisely what TRIPS does.<sup>26</sup> It provides only a harmonized floor; countries remain free to experiment

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22. For example, both U.S. and European patents and patent applications are available worldwide on the Internet through governmental and private services. *See, e.g.*, <http://www.uspto.gov/patft/index.html> (US patents available from governmental service); <http://ep.espacenet.com> (European patents available through private service); <http://www.delphion.com> (US patents available through private service).

23. *See, e.g.*, JAYASHREE WATAL, INTELLECTUAL PROPERTY RIGHTS IN THE WTO AND DEVELOPING COUNTRIES 9-47 (2001) (detailing the negotiation process).

24. *See id.* at 12 (noting that some developing countries “ha[ve] entrenched domestic interests producing and profiting from credible equivalents of products protected by IP elsewhere” and that, “[i]n some cases, like India, the interests of these powerful lobbies coincided with those of the consuming public”).

25. *See id.* at 20, 44-45.

26. *See* TRIPS Agreement, *supra* note 4, art. 1.1 (“Members may, but shall not be obligated to, implement in their law more extensive protection than is required by this Agreement, provided that such protection does not contravene the provisions of this Agreement.”).

with more stringent patent rights. For example, TRIPS Article 33 provides that the term of patents “shall not end before the expiration of a period of twenty years counted from the filing date.”<sup>27</sup> Countries remain free to experiment with longer terms and, in fact, the United States recently exercised that option by providing patentees with certain patent term “adjustments” that extend the term where the PTO has failed to meet certain statutory goals during the prosecution of the application.<sup>28</sup>

TRIPS also provides little harmonization in areas where the laws of major industrialized countries diverge. For example, TRIPS makes disclosure of a “best mode” optional, does not require or forbid administrative opposition procedures, leaves nations free to choose a first-to-invent or a first-to-file patent priority rule, and imposes no obligation for countries to grant a “grace period” within which inventors can disclose their inventions without destroying their own novelty.<sup>29</sup> These unaddressed points represent areas where the laws of other developed countries differ but, more importantly, they are also areas where the externalities associated with choosing one approach or the other are indeterminate or insignificant: It is simply not clear whether nations with first-to-file rules create positive externalities for nations with first-to-invent rules, or vice-versa. Since TRIPS was designed primarily to address an externality problem, it does not harmonize law on such matters. Similarly, TRIPS imposes only minimal regulation on the patent application process. It demands only that Member nations grant rights using “reasonable procedures and formalities” and that they do so “within a reasonable period of time so as to avoid unwarranted curtailment of the period of protection.”<sup>30</sup> Thus, TRIPS produces no substantial savings on the administrative costs of obtaining worldwide patent rights. This approach is consistent, however, with the view that TRIPS is directed mainly to the pre-existing externalities created by the divergent substantive patent laws.<sup>31</sup>

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27. *Id.* art. 33.

28. *See* 35 U.S.C. § 154 (Supp. 2001), *amended by* The Intellectual Property and Communications Omnibus Reform Act of 1999, Pub. L. 106-113, 113 Stat. 1536 (1999).

29. *See* TRIPS Agreement, *supra* note 4, art. 29.1 (permitting but not requiring best mode disclosures); *id.* art. 62.4 (permitting but not requiring opposition procedures).

30. *Id.* art 62.1 & 62.2.

31. The externalities argument assumes that the patent system is designed to encourage the production of useful public information. By contrast, early patent systems were designed around a mercantilist theory; the underlying idea then was “to lure emigrants with desirable skills and know-how with the promise of an exclusive privilege.” ROBERT P. MERGES, *PATENT LAW AND POLICY* 5 (2d ed. 1997). This conception of a patent system explains, for example, the early practice of allowing so-called “patents of importation”—patent rights granted on technologies new to the country granting the pat-

## DIVERSITY IN GLOBAL PATENT LAW

Despite its theoretical strength and its power in explaining the TRIPS agreement, the externalities argument has significant limitations as a justification for comprehensive global patent harmonization. Most importantly, while positive externalities can lead regimes to free-ride by adopting sub-optimal patent protection, externalities do not necessarily lead to a race to the bottom where each jurisdiction progressively reduces patent protection down to nothing. Even assuming that technical knowledge produced by a patent system benefits all individuals in the world equally (an extreme assumption), each country still has an incentive to adopt a patent system because its citizenry will benefit from the incremental increase in technical progress fostered by its patent system. Where the country is sufficiently large (in terms of population, wealth, and inventive capacity), that benefit may outweigh the value of free-riding on other systems.

For example, consider a world consisting of only two countries: one large—say, the United States—and the other small—say, Monaco. For the United States, the incentives to adopt a patent system are almost identical to those that would exist if there were no externalities. The external effects of the system on Monaco are sufficiently small so as to be ignored. The reverse, of course, is not true. Assuming that competition will drive price to marginal cost where no patent protection exists, the residents of Monaco will reap enormous benefits by free-riding on the inventions produced by the U.S. patent system. However, they would gain little by adopting their own patent system because Monaco's patent system would increase world technical progress only a small amount.

The historical development of patent law reflects the limited effect of externalities; many nations adopted patent systems even prior to any significant international cooperation. By the early nineteenth century, patent systems existed in the United States, England, France, Russia, Austria,

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ent, but previously known in other countries. *See id.* (discussing patents of importation); *see also* EDITH TILTON PENROSE, THE ECONOMICS OF THE INTERNATIONAL PATENT SYSTEM 89 (1951) (noting that patent law “grew up in an environment of protectionism” and “[e]conomic provincialism,” with patent systems designed according to then current ideas “regarding the most effective methods of stimulating the growth of national industry”). Under a mercantilist view, jurisdictions with patent systems do not necessarily produce positive externalities for other jurisdictions. Indeed, they may be seen as imposing *negative* externalities (by luring away skilled artisans from elsewhere). The history and structure of TRIPS—with developed nations bargaining to *raise* world patent standards to a certain *floor*—seems to confirm that nations with strong patent systems perceive those systems as valuable for generating technical information, not for luring desirable individuals or industries from other nations.

Prussia, the Netherlands, and a number of the German states.<sup>32</sup> In some jurisdictions, most notably Venice, England and France, rudimentary patent systems date back to the sixteenth century.<sup>33</sup>

Other effects also curb the positive externalities associated with a patent system. Many modern inventions involve technologies that exhibit significant economies of scale. For those technologies, patents in a few large markets may be sufficient to confer a de facto worldwide monopoly because the market not covered by exclusive rights is too small to support an effective competitor.<sup>34</sup> In such circumstances, consumers in countries without patent systems are not able to free-ride on innovations created elsewhere. Another important limitation on patent externalities is that the technical knowledge developed by a patent system does not benefit everyone in the world equally. Faster computer chips likely have less value to consumers in Bangladesh than in the U.S. and European Union.<sup>35</sup> Indeed, some innovations may be highly specific to a particular region. For example, a new composition of cleaner-burning gasoline may have high value to a single region plagued by automobile air pollution—say, California—but little value in other countries, or even in other regions of the same country.<sup>36</sup>

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32. See Fritz Machlup & Edith Penrose, *The Patent Controversy in the Nineteenth Century*, 10 J. ECON. HIST. 1, 3 (1950).

33. See WILLIAM HYDE PRICE, *THE ENGLISH PATENTS OF MONOPOLY* 7-8 (1906) (dating English patent policy back to the middle of the sixteenth century); *id.* at 5 (concluding that “the earliest systemic use of patents in France dates from the closing years of the sixteenth century”); Frank D. Prager, *A History of Intellectual Property from 1545 to 1787*, 26 J. PAT. OFF. SOC’Y 711, 724 (1944) (noting that between 1550 and 1600 England was granting about one patent per year, while France was granting about one every two years). These early systems were not entirely stable. For example, abuse of the English patents at the end of the sixteenth century made the system hardly recognizable as structure for rewarding innovation. See PRICE, *supra*, at 8-9 (noting that the English system began issuing patents without regard to novelty). Early patent law was also very rudimentary. See Prager, *History of Intellectual Property*, *supra*, at 725 (noting that France adopted the first recognizable patent examination procedure by royal decree in 1699).

34. Thus, a car manufacturer need not obtain patent rights in Monaco because the country’s market is too small to support a car manufacturer.

35. Because of this effect, even where a firm does have worldwide exclusive rights, it will engage in price discrimination and sell the patented product at a lower price in those areas where demand is lower.

36. See, e.g., *Union Oil Co. of Cal. v. Atl. Richfield Co.*, 208 F.3d 989 (Fed. Cir. 2000) (sustaining the validity of a patent on clean burning fuels that were expected to be used in California). The patent sustained in the *Union Oil* case is controversial because it covers gasoline formulations mandated by state regulation. See Janice M. Mueller, *Patenting Industry Standards*, 34 J. MARSHALL L. REV. 897, 897-901 (2001) (detailing the

A more fundamental objection to using patent externalities to justify comprehensive harmonization is that externalities can be addressed as effectively by more limited measures.<sup>37</sup> The simplest way to prove this point is to imagine a world with fully harmonized patent standards across all jurisdictions. Now assume one jurisdiction changes its patent law by (1) narrowing the scope of patent rights somewhat, but also (2) expanding the patent term to compensate. If the legal modifications do not change the net expected value of rents from patents (*ex ante*), then the modified patent system will provide inventors the same incentives to innovate and will address the externalities problem as well as the harmonized system despite the difference in legal systems. Of course, the assumption here—that two patent systems could be said to generate the same net rents—may seem unrealistic because of the extraordinary difficulty of determining what incentives are actually created by any particular patent system. But in fact, that informational difficulty actually helps the argument because, *ex ante*, inventors will view the incentives created by two patent systems as identical provided that discerning any differences is sufficiently costly.

Again, the structure of TRIPS seems consistent with this limitation on the externalities argument. TRIPS generally mandates that signatory countries provide broadly *similar* patent systems. It does not delve much into the details of systems in part because the precise effects of those details are not known with certainty. Thus, as previously mentioned, it remains uncertain which of the various technical differences between the patent systems of industrialized nations produces the better incentives to invent. TRIPS rightly leaves those matters open for each country's choice.

## 2. *Economies of Scale in Governance*

Patent systems exhibit economies of scale in certain respects—most obviously in the administrative examination of patent applications. The cost of examining each application does not change whether the patent office serves a jurisdiction covering six million or six billion people. In this respect, the administrative function of a patent office resembles a classic natural monopoly, with its average cost of service continuously declining as its jurisdiction expands. Thus, the efficient solution is monopoly—consolidation of the diverse patent offices into one. Indeed, the argument

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controversy). Yet even in the absence of the government regulatory intervention, patents on environmental technologies would have greater value in some regions than in others.

37. See, e.g., Revesz, *Rehabilitating Interstate Competition*, *supra* note 1, at 1222-23 (noting that the externalities associated with environmental regulation do not necessarily justify nationalized environmental standards because externalities can be addressed by more limited steps that eliminate externalities).

for consolidation here is much stronger than it is in private markets. Since existing patent offices are already government monopolies within their respective jurisdictions, consolidation will not have any efficiency losses associated with eliminating existing competition.

Like the externalities point, this economies of scale argument has a great deal of force. Indeed, it provides a good basis for former PTO Commissioner Dickinson's promise that a global patent system will deliver "reduced costs for inventors and for their assignees."<sup>38</sup> Because patentees pay filing fees to support the currently duplicative national examination system, they would benefit most from the reduction in administrative costs that would accompany global consolidation of patent offices.

Economies of scale also explain a number of developments in international patent law, including the European Patent Convention (EPC), Patent Cooperation Treaty (PCT) and even the nineteenth century Paris Convention. The EPC, which created the European Patent Office (EPO) and authorized it to serve as an examination office for all EPC member countries,<sup>39</sup> is the most obvious example of a reform motivated by the economies of scale associated with examination. The treaty allows patent applicants to prosecute their application through a consolidated patent office with jurisdiction over most countries in Europe. The PCT also provides a very limited administrative consolidation, as it streamlines the early stages of patent prosecution on virtually a global scale, because all major industrialized nations are signatories to the treaty.<sup>40</sup> Even the Paris Convention effectively provides a very limited form of patent office consolidation by permitting applicants to file in any signatory country and thereby obtain a priority date in all countries.<sup>41</sup>

Like the externalities argument, however, an argument based on economies of scale has significant limitations as a justification for harmonization. First, the argument does not necessarily provide a reason to harmonize substantive law. While some substantive patent rules might be relevant to the examination process—e.g., the rules governing priority and grace periods (because they govern the universe of prior art used in ex-

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38. See Dickinson, *supra* note 2, at 14-2; see also Mossinghoff & Kuo, *supra* note 3, at 530.

39. See European Patent Convention, art. 4, available at <http://www.european-patent-office.org/legal/epc/e/ar4.html>.

40. See Patent Cooperation Treaty Signatory Parties, available at <http://www.wipo.int/treaties/docs/english/m-pct.doc> (providing a list of the 115 PCT signatory nations) (last updated Jan. 15, 2002).

41. Paris Convention for the Protection of Industrial Property, Mar. 20, 1883, art. 4, 828 U.N.T.S. 305 [hereinafter Paris Convention].

aminations)—others are not. Most obviously, no administrative economy is realized by having patents run for a uniform term. Indeed, the point is demonstrated by the EPC, which authorized a unified examination system but *not* a unified patent right. Thus, a patent issued by the EPO is said to be a “bundle” of national patents, with the precise contours of the substantive rights governed by diverse national laws.

Second, the economies of scale argument explains few of the TRIPS reforms. The TRIPS agreement achieves no degree of administrative consolidation among patent jurisdictions. Moreover, TRIPS did nothing on the substantive issues that could assist in administrative consolidation (priority rules and grace periods), yet did require some degree of harmonization on an issue like patent terms, which cannot be justified by economies of scale.

Third, and perhaps most importantly, administrative examination systems exhibit economies of scale only in limited respects. While the administrative costs of examination do not increase where the jurisdiction gains additional *people subject to the resulting patents*, the costs do rise where the examination system processes additional *applications*. Indeed, in terms of processing applications, examination systems probably exhibit only limited economies of scale. Examining patent applications is a labor-intensive enterprise. Each additional application takes a certain number of examiner-hours, and the price of labor remains relatively constant.

For such an administrative task, a single entity is probably not the optimal solution. A number of competing patent offices with overlapping, worldwide jurisdiction would be better. Patent applicants could choose a patent office for prosecution, and patent offices could compete with each other based on the level of their fees and the quality of their examinations.<sup>42</sup> To a very limited extent, we can already see the glimmerings of such a system. The jurisdiction of the EPO overlaps with that of national patent offices, and the EPO competes to attract patent applicants. Similarly, the Paris Convention permits any country to establish a world-wide priority date, and at least one nation has begun overtly advertising the efficiency of its patent office in providing this service.<sup>43</sup> A system of internationally competing patent offices would demand a certain degree of international cooperation. But it need not demand complete harmonization of patent laws, and it would preserve diversity of administrative approaches.

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42. See Part IV.B *infra*.

43. See, e.g., [http://www.european\\_patent\\_office.org/patlib/country/monaco/pr\\_indus.htm](http://www.european_patent_office.org/patlib/country/monaco/pr_indus.htm) (touting the virtues of filing a patent application in Monaco, which can provide a Paris Convention filing date for less than 500 French Francs, or about \$70).

### 3. *Preventing Destructive Protectionism*

A final reason to favor some form of transjurisdictional arrangement is to restrain protectionist impulses. The reason is based on the view, supported by empirical data, that protectionism reduces overall social welfare.<sup>44</sup> However, this reason justifies only very limited transjurisdictional regulations that preclude discrimination against free trade.<sup>45</sup>

The desire to restrain welfare-decreasing protectionism can be seen in the contemporary American jurisprudence regarding the dormant Commerce Clause, which generally precludes state discrimination against interstate free trade and is justified as a means to achieve the desirable goal of a national common market.<sup>46</sup> It also accounts for the overarching structures of the General Agreement on Tariffs and Trade (GATT), which generally precludes discrimination against international trade between member nations but otherwise leaves nations free to have diverse sets of regulatory laws.<sup>47</sup>

The anti-discrimination justification explains only a few parts of TRIPS—e.g., Article 27’s requirement that patent rights be “available and . . . enjoyable without discrimination as to the place of invention . . . and whether products are imported or locally produced,”<sup>48</sup> and the more general requirement in Article 3 that “[e]ach [WTO] Member shall accord to the nationals of other Members treatment no less favourable than it accords to its own nationals with regard to the protection of intellectual property.”<sup>49</sup> Some of the anti-discrimination rules in TRIPS were already

44. See John O. McGinnis & Mark L. Movsesian, *The World Trade Constitution*, 114 HARV. L. REV. 511, 524-26 (2000) (reviewing the evidence that protectionism decreases social welfare).

45. See *id.* at 549-72.

46. *Reeves, Inc. v. Stake*, 447 U.S. 429, 436-37 (1980) (“the Commerce Clause responds principally to state taxes and regulatory measures impeding free private trade in the national marketplace”); *Hunt v. Wash. State Apple Adver. Comm’n*, 432 U.S. 333, 350 (1977) (justifying dormant Commerce Clause jurisprudence by reference to “the Commerce Clause’s overriding requirement of a national ‘common market’”).

47. See McGinnis & Movsesian, *supra* note 44, at 516-17 (stating general thesis that the GATT and World Trade Organization structures are designed to restrain protectionism through an “antidiscrimination model” of regulation).

48. TRIPS Agreement, *supra* note 4, art. 27.1.

49. *Id.* art. 3. See also *id.* art. 1.3 (“Members shall accord that treatment provided for in this Agreement to the nationals of other Members.”); *id.* art. 4 (“With regard to the protection of intellectual property, any advantage, favour, privilege or immunity granted by a Member to the nationals of any other country shall be accorded immediately and unconditionally to the nationals of all other Members.”)

imposed throughout much of the world by the Paris Convention.<sup>50</sup> But in any event, given the existence of the anti-discrimination norms in TRIPS, few if any additional transnational regulations could be justified as measures to preclude destructive protectionism.

## B. The Case for Diversity

A review of the justifications for harmonization shows that, while no clear reason exists for a comprehensive integration of global patent law, there are reasons for supporting particular forms of transnational regulation. Yet these justifications for harmony must be balanced against the costs of harmonization—or, otherwise stated, the values of diversity.

### 1. Matching Local Preferences

The theoretical literature on jurisdictional legal variation posits that the primary reason for such variation is to permit each jurisdiction to match its laws to the unique tastes and preferences of its population.<sup>51</sup> The argument has strong and weak versions. The strong version assumes individuals are free to move between jurisdictions and concludes that, under certain assumptions, the resulting diversity of laws between jurisdictions reflects an *optimal* provision of public goods.<sup>52</sup> While this version of the argument is important for diversity in local and state jurisdictions, it has little force in the international setting because changing nationality is relatively expensive for individuals.

More relevant in the international context is a weaker version of the argument, which assumes a stable set of preferences within each jurisdiction and concludes that the diverse laws of each jurisdiction *more closely match* the individual preferences within the jurisdiction than would a uniform set of laws imposed across all jurisdictions. Professors McGinnis and Movsesian rely on this argument in explaining why the GATT/WTO structure does not attempt to harmonize worldwide regulatory law:

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50. See Paris Convention, *supra* note 41, art. 2 (mandating that “[n]ationals of any country of the Union shall, as regards the protection of industrial property, enjoy in all the other countries of the Union the advantages that their respective laws now grant, or may hereafter grant, to nationals”).

51. See, e.g., Daniel B. Rodriguez, *Turning Federalism Inside Out: Intrastate Aspects of Interstate Regulatory Competition*, 14 YALE L. & POL’Y REV. & YALE J. ON REG. (Symposium Issue) 149, 154 (1996) (“The essential insight of classic economic arguments for state variation . . . is that communities are different, and these differences are essential and reasonably impervious to efforts at homogenization.”).

52. See, e.g., Tiebout, *supra* note 1.

Uniform health, labor, safety, and environmental regulations are unlikely to be appropriate for all members of the world trading community, as members of the WTO vary widely in their levels of development. As a result, they will rationally choose different regulatory standards. It is wrong to assume, for example, that Indian and American regulations on water purity should necessarily be the same. Indians may not be able to afford American water safety standards, just as they unfortunately cannot afford many other goods that Americans can.<sup>53</sup>

A similar point is made in the patent context by Professors Dreyfuss and Lowenfeld, who advance the following argument for flexibility in the application of TRIPS:

More fundamentally, we are skeptical that there will always be a “best” rule for every problem that will arise under the TRIPS Agreement. Promoting innovation requires that care be taken not to raise the cost of knowledge to so high a level that it impedes further inventiveness. How that problem is best solved can depend on a country’s intellectual and industrial development, its culture, and the types of creative work in which its citizens are engaged. Thus, the nature (and advantage) of a minimum standards regime is that where there is no “best” rule that will work in every economy, each country can tailor the law to its own needs.<sup>54</sup>

Like McGinnis and Movsesian, Dreyfuss and Lowenfeld suggest that one obvious example of inappropriate uniformity would be applying rules from “highly developed countries” in the less-developed world. The concern here is consistent with the general theory, for the widest divergence of preferences might well be found between developed and less-developed countries.

TRIPS expressly recognizes the value of local diversity. Its very first article guarantees that “Members shall be free to determine the appropriate method of implementing the provisions of this Agreement within their

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53. McGinnis & Movsesian, *supra* note 44, at 552-53.

54. See Rochelle Cooper Dreyfuss & Andreas F. Lowenfeld, *Two Achievements of the Uruguay Round: Putting TRIPS and Dispute Settlement Together*, 37 VA. J. INT’L L. 275, 296 (1997); see also Claudio R. Frischtak, *Harmonization Versus Differentiation in Intellectual Property Regimes*, in GLOBAL DIMENSIONS OF INTELLECTUAL PROPERTY RIGHT IN SCIENCE AND TECHNOLOGY 89, 90 (Mitchel B. Wellerstein et al. eds. 1993) (arguing that intellectual property regimes should be “differentiated according to the level of technological and productive competence, so as to support a country’s ability to absorb, adapt, and generate technology”).

own legal system and practice.”<sup>55</sup> Similarly, Article 27, which generally mandates that patents shall be available in all fields of technologies, allows countries to create exceptions from patentability “necessary to protect *ordre public* or morality”<sup>56</sup>—a standard understood to “depend[] to a certain degree on the particular culture of a country or region.”<sup>57</sup> Consistent with theory, the TRIPS Preamble explicitly recognizes “the special needs of the least-developed country Members in respect of maximum flexibility in the domestic implementation of laws and regulations in order to enable them to create a sound and viable technological base.”<sup>58</sup> Special provision is also made for countries and nations “in the process of transformation from a centrally-planned into a market, free-enterprise economy,” both of which are likely to have preferences that widely diverge from those in developed, free-market nations.<sup>59</sup>

There are two significant limitations on this local preferences argument. First, harmonized patent law does not result in the same degree of uniformity that, for example, a harmonized minimum wage law does. The patent right does not mandate any particular price for an innovation. Patentees are free to sell their inventions and license their rights on different terms in different areas. In fact, the available evidence demonstrates that patentees often do engage in price discrimination—for example, by lowering the prices of patented drugs in poorer countries.<sup>60</sup>

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55. TRIPS Agreement, *supra* note 4, art. 1.1; *see also id.* Preamble (stating as a goal of the agreement establishing “new rules and disciplines concerning . . . the provision of effective and appropriate means for the enforcement of trade-related intellectual property rights, taking into account differences in national legal systems”).

56. *Id.* art. 27.2.

57. DANIEL GERVAIS, *THE TRIPS AGREEMENT: DRAFTING HISTORY AND ANALYSIS* ¶ 2.134, at 149 (1998) (referring specifically to the morality standard and describing the *ordre public* standard by reference to the principles necessary to sustain the institutions of a “given society”).

58. TRIPS Agreement, *supra* note 4, Preamble; *see also id.* art. 66 (granting certain exceptions to accommodate the “special needs and requirements of least-developed country Members, their economic, financial and administrative constraints, and their need for flexibility to create a viable technological base”).

59. *See id.* art. 65.

60. *See, e.g.,* Robert Weissman, *A Long, Strange Trips: The Pharmaceutical Industry Drive to Harmonize Global Intellectual Property Rules, and the Remaining WTO Legal Alternatives Available to Third World Countries*, 17 U. PA. J. INT’L ECON. L. 1069, 1116-17 (1996) (noting that “drug prices vary substantially across borders” because, among other reasons, “pharmaceutical companies will charge what the ‘market will bear’”) (quoting Frederick T. Schut & Peter A.G. Van Bergeijk, *International Price Discrimination: The Pharmaceutical Industry*, 14 WORLD DEV. 1141, 1147 (1986)); *see also* John H. Barton, *The Economics Of Trips: International Trade In Information-Intensive Products*, 33 GEO. WASH. INT’L L. REV. 473, 481-82 (2001) (noting that, for information-

Second, and more importantly for purposes of this Article, the local preferences argument is less compelling where the diversity occurs between nations having seemingly similar preferences (e.g., between two well-developed nations) than where preferences are likely to be widely divergent (e.g., between developed and developing nations).<sup>61</sup> If local preferences were the sole reason for maintaining legal diversity, a general harmonization of law among similarly situated nations, e.g., among developed nations, might be desirable. But the case for legal diversity does rest wholly on the local preferences argument.

## 2. *Competition as a Check on Government*

Another common justification for permitting jurisdictional legal variation is that tolerating variation will breed jurisdictional competition, which checks governmental inefficiency and abuse. This is sometimes referred to as the “Leviathan” argument because the competition checks otherwise harmful tendencies of monopolistic governmental power.<sup>62</sup>

This argument is not, however, a very powerful reason for resisting global patent harmonization. The general limitation on the argument is that, even where harmonization is pursued in a number of legal issues, competition on other points can still provide an effective check on government. The point here is familiar to regulated industries scholars: Even where regulation constrains competition along one axis (e.g., by fixing price), firms can still compete with each other along other axes (e.g., by improving quality). Thus, harmonizing law in one particular area (e.g., IP) would leave jurisdictions free to compete for capital and, to a lesser extent, labor, through jurisdictional differences in other areas of law (e.g., tax policy, environmental standards, etc.).

A more specific problem with this argument is that, in the area of patent law, the current diversity of law is not imposing any significant check on government inefficiency. With few exceptions, the government of each nation still holds a monopoly on the power to issue patents within its borders, and thus government patent offices are not subject to any significant

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intensive products protected by intellectual property rights, price discrimination both within and between nations is common and likely to continue).

61. Of course, a broad version of the local preferences argument might presume that any difference in laws should be taken as good evidence of different preferences. With this presumption, however, the argument provides no way to distinguish between those differences that will be respected and those that will not. Since harmonization of law is being pursued in some instances, some means is needed to distinguish between those instances where case for diversity is stronger and those where it is weaker.

62. See Avi-Yonah, *supra* note 1, at 1614; see generally Stefan Sinn, *The Taming of Leviathan: Competition Among Governments*, 3 CONST. POL. ECON. 172 (1992).

competition under the current state of affairs. To the extent that a patent office has incentives to be lazy or abusive, those incentives will not be checked by competition from other jurisdictions. Therefore, consolidation of national offices into a single world patent office would not necessarily have any significant costs in terms of sacrificing competitive checks on bureaucrats.<sup>63</sup>

3. *Permitting Experimentation and Innovation in the Law*

Tolerating legal diversity may also permit legal innovation to occur more rapidly. The point was made famous by Justice Brandeis, who observed that “[i]t is one of the happy incidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory, and try novel social and economic experiments without risk to the rest of the country.”<sup>64</sup> Legal experimentation and innovation can be valuable not only to the jurisdiction that conducts the experiment, but also to other jurisdictions, which benefit from the information produced by the experiment. Thus, legal diversity has its own externality, which weighs against harmonization.

The innovation rationale has quite different implications than the other reasons supporting diversity. It provides a more substantial basis to oppose patent harmonization than does the Leviathan argument because, as previously explained, enforcing uniformity in one area of law may still permit significant legal competition to check government inefficiency. But *any* degree of harmonization necessarily removes the harmonized point from parallel experimentation by different jurisdictions and is thus likely to significantly retard further development as to that aspect of the law.

An experimentation rationale for opposing harmonization also has different implications than a rationale based on matching local preferences. Effective legal experimentation may occur in nations that have highly similar preferences. Indeed, a nation’s experiment with a legal innovation provides the most direct benefits to nations with similar cultures and preferences, because such nations are likely to have similar experiences with the innovation. Moreover, legal innovations in an area such as patent law

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63. However, if national (or private) patent offices were allowed to compete in issuing presumptively valid worldwide patents, subsequent consolidation would destroy a competitive check on patent office efficiency. Such a system would be superior to a single harmonized world patent office. *See supra* note 38 and accompanying text (discussing the alleged economies of scale benefits of a single harmonized world patent office); *see also* Part IV.B *infra*.

64. *New State Ice Co. v. Liebmann*, 285 U.S. 262, 311 (1932) (Brandeis, J., dissenting).

are probably more likely to occur in developed nations, which already possess a sophisticated understanding of the area, than in less-developed nations, which do not have long experience with patent systems. It may also be unwise for less-developed nations to undertake risky experiments with their embryonic patent systems, which may not be able to weather a failure. Thus, an experimentation rationale provides a reason for tolerating diversity between developed nations. Indeed, it may be sensible to tolerate more diversity between developed nations than between developed and less-developed nations.

The value of jurisdictional diversity in encouraging legal innovation has remained controversial in the literature. In one leading article, Professor Susan Rose-Ackerman reached “pessimistic” conclusions after analyzing the incentives of politicians in a federal system to take on risky projects and finding that “low-level governments remain flawed mechanisms to rely on in the search for new ideas.”<sup>65</sup> But even if the incentives are flawed, experimentation and innovation are still possible; harmonization imposes a still greater constraint. Other commentators have been more sanguine than Rose-Ackerman about the contribution of jurisdictional diversity to legal innovation.<sup>66</sup> The history of patent law provides a valuable lesson here, for it shows that experimentation—even experimentation conducted by large nation-states—can produce significant new ideas in law.

### VIII. DIVERSITY AND INNOVATION IN PATENT LAW: A CASE STUDY

The desirability of a harmonized patent law cannot be fairly assessed without some understanding of the important role that legal diversity has played in the history of the field. As demonstrated in Part III.A *infra*, legal experimentation and subsequent change in prevailing legal norms have

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65. Rose-Ackerman, *supra* note 9, at 594.

66. *See, e.g.*, Freidman, *supra* note 1, at 399 (listing various examples of innovative state programs and noting that “[c]ommon intuition suggests that the vast majority of techniques used today to govern were developed at the state and local level”); McConnell, *supra* note 1, at 1498 (“A final reason why federalism has been thought to advance the public good is that state and local governmental units will have greater opportunity and incentive to pioneer useful changes. . . . Elementary statistical theory holds that a greater number of independent observations will produce more instances of deviation from the mean. If innovation is desirable, it follows that decentralization is desirable.”); *see also* William W. Bratton & Joseph A. McCahery, *The New Economics of Jurisdictional Competition: Devolutionary Federalism in a Second-Best World*, 86 GEO. L.J. 201, 262 n.246 (1997); Deborah J. Merritt, *The Guarantee Clause and State Autonomy: Federalism for a Third Century*, 88 COLUM. L. REV. 1, 9 n.47 (1988).

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been continuing themes throughout the history of patent law. This process is responsible not only for building essential features of the modern law, but for creating the very subject of patent law. The process of experimentation and innovation continues today and, as shown in Part III.B, it extends to fundamental issues such as the range of patentable subject matter and the scope of exclusionary rights granted by the patent.

The point here is not that significant changes have occurred in patent law; mere change could represent random shifts in fashion, with little permanent value. The point is that legal knowledge has *progressed* through these changes—that the process of local diversity and experimentation has produced permanent, valuable advances in our understanding of legal technology. Moreover, the experiments leading to these advances have been controversial. Though many of these legal variations were eventually adopted universally, they often went against prevailing norms and generated significant opposition in some nations. In other words, if the law had been globally harmonized at the time of these experiments, it would have been harmonized *against* the experiments. And if a global consensus were needed to engage in the experiments, that consensus may not have emerged for a very long time, if ever. Global harmonization threatens to retard this process of innovation; indeed, the threat is already being realized.

### A. Historical Examples of Innovation in Patent Law

The relative youth of patent law cannot be overstated. The law of contract, tort, crime, marriage and other areas can find antecedents dating back at least to Roman and Greek law. While specific doctrines and rules in these areas have evolved since antiquity, the fields have nonetheless been recognized for more than two thousand years. The same is not true of patent law. Legal protection of inventions (or, for that matter, other categories of intellectual property) simply did not exist in Roman or Hellenistic law.<sup>67</sup> Even in its most embryonic form, patent law can be traced back little more than five hundred years, and for all but the last two hundred years the area was so rudimentary as to be barely recognizable. As late as 1850, a structure central to modern law—the patent claim—was so unimportant that the leading treatise of the day did not include the subject in its

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67. See BRUCE W. BUGBEE, *GENESIS OF AMERICAN PATENT AND COPYRIGHT LAW* 12 (1967). (“The legal safeguarding of rights in the products of creative thought was virtually ignored in ancient times.”); Edward C. Walterscheid, *The Early Evolution of the United States Patent Law: Antecedents*, 76 J. PAT. & TRADEMARK OFF. SOC’Y 697, 702 (1994) (“Despite occasional argument to the contrary, ancient law failed completely to recognize the concept of intellectual property.”).

index.<sup>68</sup> In a comparatively short period of time, patent systems have developed a complex body of law that defines property rights in many diverse fields of human creativity. The development of this law provides a case study in legal innovations pioneered by one jurisdiction and then copied by others.

### 1. *The Invention of Patent Law*

The most obvious example of innovation is the creation of patent law itself, which occurred in Renaissance Italy. Perhaps as early as the fourteenth century, isolated monopolies on industrial developments may have been granted in other European states, but these older grants were most likely made as matters of discretion rather than of right.<sup>69</sup> They seem little more than exercises in industrial protectionism, rather than a considered policy of encouraging or rewarding technical prowess or innovation. Scholars typically trace the true origins of modern patent law to the fifteenth century Venetian Republic.<sup>70</sup> In the latter half of the fifteenth century, Venice granted monopoly privileges with increasing frequency for

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68. See GEORGE TICKNOR CURTIS, *THE LAW OF PATENTS* 581-604 (1849) (showing no entry covering claims in extensive index to a comprehensive American patent law treatise); William Redin Woodward, *Definiteness and Particularity in Patent Claims*, 46 MICH. L. REV. 755, 760 (1948) (observing that “the courts for a long time did not regard [the claim] as the definitive measure of the scope of the patent” but rather looked to “the whole patent document, including the claims as a guide . . . to ascertain the scope and nature of the invention”).

69. For example, the Duke of Saxony granted what F.D. Prager terms a “quasi-patent” issued to a papermill in 1398. F.D. Prager, *The Early Growth and Influence of Intellectual Property*, 34 J. PAT. OFF. SOC’Y 106, 123 (1952). The recitation in the grant mentions only that the mill is “newly started” and has obtained the Duke’s “grace and favor.” *Id.* at 123-24. The grant, which protected the mill from any competition that might be damaging in any manner, is thus consistent with a policy of industrial protection. See also Hansjoerg Pohlmann, *The Inventor’s Right in Early German Law*, 43 J. PAT. OFF. SOC’Y 121, 122 (1961) (noting that “proto-patents” had been issued in Saxony as early as 1378). Monopoly privileges in glassmaking were also granted in France during the fourteenth century. See Prager, *supra*, at 124. But again, whether these grants were meant to promote technical development, they were also designed to serve other ends of industrial policy. See BUGBEE, *supra* note 67, at 169 n.30 (noting that French privileges “sought to restrict—not stimulate—French glassmaking in order to conserve the forests which provided wood and charcoal for this industry”).

70. See, e.g., BUGBEE, *supra* note 67, at 23 (crediting Venetian Republic with “the world’s first patent system”); Prager, *supra* note 69, at 107-08 (noting that the system of patent monopolies was perfected in Italy, mainly in Venice during the fifteenth century); Walterscheid, *supra* note 67, at 706 (same). Venice’s claim to priority in the development of the first true patent law is based on the work of Giulo Mandich. See Giulo Mandich, *Venetian Patents (1450-1550)*, 30 J. PAT. OFF. SOC’Y 166, 169 (1948) (“We can now claim the priority of Venice in recognizing the *right* of inventors.”).

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allegedly improved industrial devices and processes brought about by the applicant's "skill and experience," "pertinent thoughts and labors," or "efforts, study and ingenuity."<sup>71</sup> This practice was confirmed in a statute of March 19, 1474, which is the first known legislative statement of generally applicable patent principles.<sup>72</sup>

The concept of patent law quickly spread from Venice to Germany, France and England.<sup>73</sup> In Germany, patents on inventions began about ten years after enactment of the general Venetian statute, and some historical evidence suggests that the Venetian patent idea was imported by traveling German businessmen and immigrant Venetian glassmakers.<sup>74</sup> The idea first appeared in France in 1551 and, tellingly, the first French patent was granted to an Italian.<sup>75</sup> Similarly, in 1559, an Italian inventor familiar with the Venetian system seems to have been responsible for introducing the concept of patents into England.<sup>76</sup> Modern evidence of borrowing patent law from other jurisdictions is even stronger. For example, many provisions of Japanese patent law are simply translations of their German counterparts.<sup>77</sup>

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71. Mandich, *supra* note 70, at 173-74 (quoting, respectively, Venetian monopoly grants made in 1460 for an improved stove and for a device for raising water, and in 1469 for the newly imported art of printing).

72. *Id.* at 176-77 (setting forth translation of the 1474 statute).

73. The early Venetian statute recognized the concepts of novelty, operability, utility, and an actual reduction to practice. *See* Walterscheid, *supra* note 67, at 709.

74. *Id.* at 711 n.50.

75. Prager, *supra* note 33, at 723.

76. Jeremy Phillips traces the English importation of the patent idea back to Jacobus Acontius, who articulated the concept of patents as a reward for innovation in a petition to Queen Elizabeth I. Acontius was born in Trent, an area dominated by the Venetian republic at the time, and may even have had first-hand knowledge of the Venetian patent system as a patentee under that system. Jeremy Phillips, *The English Patent as a Reward for Invention: The Importation of an Idea*, 3 J. LEG. HIST. 71, 75-77 (1982); *see also* PRICE, *supra* note 33, at 7 (tracing the English concept of patents back to the petition filed by Acontius).

77. Toshiko Takenaka, *Harmonizing the Japanese Patent System with its U.S. Counterpart Through Judge-made Law: Interaction Between Japanese and U.S. Case Law Developments*, 7 PAC. RIM L. & POL'Y 249, 250 (1998). Though its patent code resembles German law, Japan also looked to the patent experience of United States. The Japanese patent system was created in 1899, after a special delegation visited the U.S. Patent Office. One envoy was said to have remarked: "[W]e have looked about us to see what nations are the greatest, so that we could be like them; . . . and we said, 'What is it that makes the United States such a great nation? and we investigated and we found it was patents, and we will have patents.'" B. Zorina Khan, *Property Rights and Patent Litigation in Early Nineteenth-Century America*, 55 J. ECON. HIST. 58, 59 n.4 (1995) (quoting account provided in STORY LADD, PATENTS IN RELATION TO MANUFACTURES (1900)).

The creation of patent law was not, however, free from controversy. In fact, the possibility of providing some legal reward for innovation had been raised long before the Italian Renaissance, but the reaction recorded in Aristotle's *Politics* is typical of the classical hostility to the idea.<sup>78</sup> Aristotle considered the proposal by Hippodamus of Miletus that "some honour ought to be conferred on those who suggest an improvement which is of benefit to the city," but concluded that it "cannot be safely enacted, and has only a specious sound."<sup>79</sup> In detailing his objections to Hippodamus's proposal, Aristotle focused on providing rewards for improved laws, which he considered dangerous because "[t]he law has no other source of strength through which to secure obedience apart from habit."<sup>80</sup> Even if Aristotle meant to criticize Hippodamus' proposal only in so far as it would encourage innovations in law,<sup>81</sup> the criticism still created a barrier to the development of patent law and intellectual property law in general. Intellectual property law would be a significant legal innovation and, under Aristotle's view, legal "change is a matter which needs great caution."<sup>82</sup> Caution in intellectual property would mean more than one and a half millennia without significant legal innovation in the field. The creation of the patent law would occur only after the dissolution of classical societies and the rise of numerous, advanced, competing jurisdictions, some of which were willing to try the unconventional idea.

The controversy surrounding patent law continued even as the idea spread throughout Europe. Indeed, in the nineteenth century (shortly after many European nations first adopted patent laws), a wave of opposition stopped the spread of law and, in Holland's case led to its repeal.<sup>83</sup> This tide of patent opposition did not finally recede until 1910, when Holland reenacted a patent statute.<sup>84</sup> Thus, even though the concept of patents had been pioneered in fifteenth century Venice, at no time before the twentieth

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78. TREVOR J. SAUNDERS, *ARISTOTLE'S POLITICS TRANSLATED WITH A COMMENTARY* 145 (1995) (noting that "Greek literature on rewards and honours, on social and technical progress, and on the merits and demerits of making changes to laws and customs, is full of echoes of the points made here").

79. *ARISTOTLE, POLITICS*, pt. II.8, at 65 (Ernest Barker trans., 1995).

80. *Id.* at 66. Aristotle also believed that changes in law were undesirable, as people sought change merely for the reward. *See id.* at 65; SAUNDERS, *supra* note 78, at 145-46.

81. Curiously, Aristotle noted that "[c]ertainly in other branches of knowledge change has proved benefits," and gave examples of improvements "in medicine, in physical training, and generally in all kinds of craft and skill." *ARISTOTLE, supra* note 79, at 65. He does not consider the possibility of limiting Hippodamus' suggestion to those skills, perhaps because even adopting that proposal would be a legal innovation.

82. *ARISTOTLE, supra* note 79, at 66.

83. *See Machlup & Penrose, supra* note 32, at 1-6.

84. *See id.* at 6.

century did all major European nations even have patent laws.<sup>85</sup> If legal change had required global consensus, patent law might have been delayed even longer.

## 2. *Technical Examination*

The modern patent examination system is another idea that appeared in one jurisdiction and migrated, haltingly, to the rest of the world. Many early patent systems included no regularized system for evaluating the technical merits of the asserted invention over the existing art. The early English patent law, for example, was based on a registration system, with the technical merits of the invention reviewed later in infringement suits.<sup>86</sup> Institutional review of novelty and utility was first developed in the French patent system, which in 1699 authorized the French Academy of Science to examine patent applications and certify the novelty and utility of the inventions<sup>87</sup>

The French idea of patent examination spread to the United States when Congress enacted the Patent Act of 1790. Congress rejected the English registration system in favor of an examination process similar to the French model.<sup>88</sup> Congress broke with the French system by having government officials rather than a private organization (or learned society) conduct the examination.<sup>89</sup> The early U.S. system failed, however, because it imposed the examination duty on high-level government officials who had too little time to discharge this duty effectively.<sup>90</sup> Accordingly, Con-

85. In 1882, Switzerland became the last industrialized European country to adopt a patent law, but by then Holland had repealed its patent law. *See id.* at 4 (noting that in 1868 “Switzerland was the only industrial country in Europe that had failed to adopt a patent system”); *id.* at 6 (noting that the Swiss adopted a patent law in 1882 but that Holland had no patent law from 1869 to 1910).

86. H.I. DUTTON, *THE PATENT SYSTEM AND INVENTIVE ACTIVITY DURING THE INDUSTRIAL REVOLUTION 1750-1852*, at 60 (1984) (discussing the survival of the English registration system into the mid-nineteenth century); *see also* Mandich, *supra* note 70, at 185-90 (noting that many early Venetian patents contained clauses stating “assuming without deciding that this is a new invention” or similar clauses).

87. *See* Frank D. Prager, *Examination of Inventions from the Middle Ages to 1836*, 46 J. PAT. OFF. SOC’Y 268, 273 (1964) (attributing the French examination system to the mathematician and lawyer Stephen Pascal); *see also* Prager, *supra* note 33, at 752 (quoting the 1699 royal edict that authorized examinations by the Academy).

88. Prager, *supra* note 87, at 289.

89. The U.S. law imposed the examination duty on patent board consisting of the Secretary of State, the Secretary of War and the Attorney General. *See Operation of the Patent Act of 1790*, 18 No. 7 J. PAT. OFF. SOC’Y 63, 64 (1936).

90. *See id.* at 76 (noting that “the most important cause [of the demise of the 1790 Patent Act] was the high position of the administrators, who were occupied with many important affairs of state and could not devote sufficient time to patent matters”). In par-

gress abandoned the system in favor of the English registration model within three years.<sup>91</sup> Still, the early American experience and the French examination system provided precedents, and as dissatisfaction with the American registration system grew in the early nineteenth century, leading figures such as Thomas Jefferson considered the examination system as a remedy.<sup>92</sup> When the U.S. returned to an examination system in 1836, the development drew upon earlier experiences but also created a specialized bureaucracy to perform the task.<sup>93</sup>

The English moved toward an examination system slowly and, as they did so, looked to the experience of other nations that already had patent examination. Prior to the 1851 reform of English patent laws, “several Experts provided information on the various patent examination systems in Europe.”<sup>94</sup> The movement toward a full examination model was delayed due to the English belief that the U.S. examination system was a failure; this belief generated “vigorous and well-organized opposition to examination on the United States model.”<sup>95</sup> As the examination system became more entrenched in other nations, English opposition to the idea waned. In 1883, in order to deal with an increased number of patents with little or no validity, the English adopted a limited examination system. The English instituted further extensions of examination reforms in 1902 and 1932 and eventually the English system mirrored the examination system found in the U.S. and other countries.<sup>96</sup> The extended English opposition to the ex-

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ticular, Thomas Jefferson, a member of the early patent board by virtue of his office as Secretary of State, worried that time pressures were forcing him “give under & uninformed opinions” on patent applications. Letter from Thomas Jefferson to Hugh Williamson (Apr. 1, 1792), *reprinted in* 6 THE WORKS OF THOMAS JEFFERSON 459 (Paul Leicester Ford ed., 1904).

91. *See Operation of the Patent Act of 1793, supra* note 89, at 76 (noting that “the most important difference” between the 1790 and 1793 acts was the elimination of any process for examining applications).

92. *See* Thomas Cooper, *On Patents*, in 2 EMPORIUM ARTS & SCI. (n.s.) 431, 452 (Thomas Cooper ed., 1814) (quoting a letter from Thomas Jefferson dated August 13, 1813, which recalled the early U.S. patent board and suggested requiring patent applications to be reviewed by “a board of academical [sic] professors”).

93. *See* John F. Duffy, *The FCC and the Patent System: Progressive Ideals, Jacksonian Realism, and the Technology of Regulation*, 71 COLO. L. REV. 1071, 1124-34 (2000) (detailing the origins of the 1836 law creating the modern patent bureaucracy).

94. DUTTON, *supra* note 86, at 60.

95. Edward Armitage, *Two Hundred Years of English Patent Law*, in AMERICAN BAR ASSOCIATION, TWO HUNDRED YEARS OF ENGLISH & AMERICAN PATENT, TRADE-MARK, AND COPYRIGHT LAW 16 (1977).

96. *Id.* at 16-18.

amination system demonstrates once again that legal diversity allowed some jurisdictions to pioneer an experiment that others thought foolish.

### 3. *Early Publication of Patent Applications*

The history of one of the more recent developments in patent law—publication of pending patent applications eighteen months after filing—is relatively easy to trace. Prior to the 1960s, most countries kept pending applications secret.<sup>97</sup> In 1964, the Netherlands began publishing applications eighteen months after filing; Germany, Japan, and then almost every other industrialized nation soon followed.<sup>98</sup> As with other legal innovations in patent law, nations did not just happen to adopt the same idea in sequence. Rather, jurisdictions were following the leader by embracing new ideas successfully introduced elsewhere.<sup>99</sup>

Once again, this idea also had its detractors and, in this case, the United States was the laggard. As late as 1998, opponents of the proposed change were decrying eighteen-month publication as “a disincentive to the inventive process,” “an assault on the small inventor” and a repudiation of fundamental contractual bargain between inventors and the public that “sends shivers down my back.”<sup>100</sup> The United States did not adopt the rule until 1999, and the U.S. version still provides an exemption where the inventor does not intend to file for a patent in any other country.<sup>101</sup>

## B. **Ongoing Experiments**

Innovation in patent law is not limited to historical examples. Though there are other examples of ongoing experiments with new innovations,<sup>102</sup>

97. See Public Hearing and Request for Public Comment on Issues Associated with Implementation of Eighteen-Month Publication of Patent Applications, Patent and Trademark Office 31 (Feb. 15, 1995) (testimony of Professor Harold C. Wegner).

98. See *id.* at 26-27; see also Paul A. Ragusa, Note, *Eighteen Months to Publication: Should the United States Join Europe and Japan by Promptly Publishing Patent Applications?*, 26 GEO. WASH. J. INT’L L. & ECON. 143, 144-45 (1992) (noting the spread of early publication requirement throughout the world).

99. For example, the public debate on whether the U.S. should adopt the early publication rule was informed by the experience of other nations. See, e.g., Symposium, *Early Patent Publication: A Boon Or Bane? A Discussion On The Legal And Economic Effects Of Publishing Patent Applications After Eighteen Months Of Filing*, 16 CARDOZO ARTS & ENT. L.J. 601 (1998) (panel discussion on the proposed U.S. adoption of early publication, with panelists referring repeatedly to the experience of other countries).

100. *Id.* at 624 (statement of Douglas Wyatt, patent attorney); *id.* at 618, 614 (statements of Dr. Robert Rines, professor, patent attorney and inventor).

101. See 35 U.S.C. § 122(b)(2)(B)(i) (Supp. 2001).

102. Examples of ongoing experiments include the availability of grace periods and the establishment of specialty courts for patent cases. See, e.g., *The Patent Office (UK)*, UK Consultation on Grace Periods, available at <http://www.patent.gov.uk/about/>

I will focus here on two of the most significant: the extension of patenting to business methods and the experimental use exception to infringement.

### 1. *Business Method Patents*

The Federal Circuit's holding in *State Street Bank v. Signature Financial Group* is, by now, very familiar to all patent practitioners. The decision eliminated whatever was left of the business methods exception to patentable subject matter.<sup>103</sup> The development was presaged by the practice of the PTO, which had already been issuing patents (including the patent at issue in *State Street*) on financial methods and other processes that seemed to fall within the classic business methods exception. Nonetheless, the Federal Circuit's decision brought attention to this development and clarified the law so as to leave no doubt that the business method exception was dead.

In addition to producing an enormous volume of commentary, the *State Street* decision has prodded jurisdictions worldwide to rethink the continued vitality of their business method exceptions. The results of this process so far have been mixed. The Japanese Patent Office (JPO) appears to be following the lead of *State Street* in permitting patents on business methods.<sup>104</sup> Australian courts also appear receptive to the development.<sup>105</sup>

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consultations/grace/index.htm (initiating public discussion as to whether the UK should adopt a grace period and setting forth as possible alternatives five models, including ones based on current U.S. and European law); Rochelle Cooper Dreyfuss, *The Federal Circuit: A Case Study in Specialized Courts*, 64 N.Y.U. L. REV. 1, 3 (1989) (noting that, in creating the Federal Circuit, "Congress decided to embark upon a sustained experiment in specialization"), Richard Price, *Patent Litigation in England—Quiet Revolution*, 17 EUR. INTEL. PROP. REV. D-290 (1995) (describing the U.K.'s experience with a new specialized trial court—the Patents County Court—which offers litigants less formal, streamlined procedures to resolve patent disputes). For an example of a nation considering whether to adopt minor innovations from other patent systems, see The Patent Office (U.K.), *Meeting The Future: Consultation On Proposed Changes In Patent Practice And Procedure* ¶¶ 16, 30, 44 (July 31, 2001), available at <http://www.patent.gov.uk/about/consultations/future/future.pdf> (using the experience of other patent offices, including the European and Japanese Patent Offices, to evaluate possible reforms of the UK Patent Office).

103. *State St. Bank & Trust Co. v. Signature Fin. Group*, 149 F.3d 1368, 1375 (Fed. Cir. 1998) ("As an alternative ground for invalidating the . . . patent under § 101, the court relied on the judicially-created, so-called 'business method' exception to statutory subject matter. We take this opportunity to lay this ill-conceived exception to rest.")

104. In a recent press release, the JPO stated that it "intends to continue its efforts to offer appropriate protection of intellectual property rights (IPRs) in this field." Press Release, Japanese Patent Office, Policies Concerning "Business Method Patents," Nov. 2000, available at <http://www.jpo.go.jp/infoe/tt1211-055.htm>.

However, the European Patent Office appears to be maintaining the traditional rule.<sup>106</sup> The global law on the subject is unsettled, and jurisdictions are watching developments elsewhere in the world.

## 2. *The Experimental Use Exception to Infringement*

In U.S. law, the experimental use exception to infringement liability traces back to Justice Story's 1813 opinion in *Whittemore v. Cutter*, which stated in dicta that:

It could never have been the intention of the legislature to punish a man who constructed [a patented] machine merely for philosophical experiments, or for the purpose of ascertaining the sufficiency of the machine to produce its described effects.<sup>107</sup>

The extent of this doctrine remained unclear for more than a century and a half, with few cases testing its limits.<sup>108</sup> In 1984, however, the Federal Circuit eliminated the exception for all practical purposes by holding it “to be truly narrow” and not to extend to research activities with “definite, cognizable, and not insubstantial commercial purposes.”<sup>109</sup>

Although, the *Bolar* holding remains controversial among academic commentators,<sup>110</sup> the more important point is that many nations are not following the United States on this issue; indeed they seem to be going in the other direction. The United Kingdom, Germany, Japan, Korea and many others expressly recognize an experimental use exception in their

105. *Welcome Real-Time SA v. Catuity Inc.*, (2001) FCA 445, para. 129 (Fed. Ct. Austl. May 17, 2001), available at [http://www.austlii.edu.au/au/cases/cth/federal\\_ct/2001/445.html](http://www.austlii.edu.au/au/cases/cth/federal_ct/2001/445.html) (finding “[t]he *State Street* decision [to be] persuasive”).

106. *See* *Controlling Pension Benefit Systems Partnership*, T 0931/95-3.5.1 (European Patent Office Bd. of App. Sept. 8, 2000), available at <http://www.european-patent-office.org/dg3/pdf/t950931eu1.pdf> (holding unpatentable a method for administering a pension system).

107. 29 F. Cas. 1120, 1121 (C.C.D. Mass. 1813) (No. 17,600).

108. *See* Rebecca S. Eisenberg, *Patents and the Progress of Science: Exclusive Rights and Experimental Use*, 56 U. CHI. L. REV. 1017, 1019-20 (1989) (noting that “the use of patented inventions in noncommercial research rarely provokes a lawsuit” and thus “the purpose and scope of the experimental use defense are not well defined”).

109. *Roche Prods, Inc. v. Bolar Pharm. Co.*, 733 F.2d 858, 863 (Fed. Cir. 1984).

110. *See, e.g.*, Eisenberg, *supra* note 108, at 1078 (proposing royalty-free experiment use exception to infringement); Janice M. Mueller, *No “Dilettante Affair”*: *Rethinking the Experimental Use Exception to Patent Infringement for Biomedical Research Tools*, 76 WASH. L. REV. 1, 36, 54-55 (2001) (describing the analysis in *Bolar* as “no longer supportable” and arguing in favor of an expanded experimental use limitation on infringement liability but with the experimenter liable to the patent holder for a reasonable royalty—in effect, creating a compulsory license for experimenters).

statutory law.<sup>111</sup> Perhaps because of the express statutory recognition, those jurisdictions have interpreted the experimental use doctrine broadly in recent cases.<sup>112</sup> Yet even Canada, which does not have any express experimental use provision in its statutory law, takes a broad view of the exception in its case law.<sup>113</sup>

Interestingly, this diversity of law on the experimental use exception provides incentives for certain industries—specifically, those conducting commercial research on patented technologies hoping to obtain patentable improvements—to locate their research operations outside of the United States. Time and experience will tell whether those incentives impose pressure on the United States to change its law.

## IX. IMPLICATIONS

Diversity of law is an ongoing tradition in the patent field. It need not be viewed as a problem in need of a harmonized solution; indeed, experimentation and concomitant jurisdictional diversity may be essential so that the evolution of law in this area keeps pace with rapid technical change. Yet the seemingly relentless drive toward harmonization threatens the continuation of this process. For example, commentators have already in-

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111. See, e.g., Patent Act, 1977, ch. 37, § 60(5)(b) (Eng.), reprinted in U.K. PATENT OFFICE, MANUAL OF PATENT PRACTICE (1999), available at [http://www.patent.gov.uk/patent/reference/mpp/s60\\_71.pdf](http://www.patent.gov.uk/patent/reference/mpp/s60_71.pdf) (providing a defense to infringement for actions “done for experimental purposes relating to the subject-matter of the invention”); Japanese Patent Act § 69(1), available at <http://www.jpo.go.jp/shoukaie/patent.htm> (last visited Feb. 28, 2002) (English translation); Korean Patent Law, art. 96(1), available at [http://www.kipo.go.kr/english/sub5\\_index.html](http://www.kipo.go.kr/english/sub5_index.html) (last visited Feb. 28, 2002) (English translation).

112. See, e.g., U.K. PATENT OFFICE, MANUAL OF PATENT PRACTICE, *supra* note 111, § 60.24 (noting that the experimental use exemption in U.K. law extends to commercial experiments and that “[t]rials carried out in order to discover something unknown or to test a hypothesis . . . can fairly . . . be regarded as experiments”); *Klinische Versuche (Clinical Trials) I*, [1997] R.P.C. 623, 639 (F.R.G. BGH) (holding that the German experimental use exception “exempts all experimental acts as long as they serve to gain information and thus to carry out scientific research into the subject-matter of the invention”); *Klinische Versuche (Clinical Trials) II*, [1998] R.P.C. 423, 432 (F.R.G. BGH) (clarifying that German experiment use exemption is available even for commercial experiments); Yusuke Hiraki, *Japan: Patents-Infringement-Experimental Use Exempted for Clinical Trials*, 21 EUR. INTEL. PROP. REV. N140-141 (1999) (discussing the expansive interpretation of the experimental use exception by the Japanese Supreme Court in *Ono Pharmaceutical Co. Ltd. v. Kyoto Pharmaceutical Co. Ltd.*); Mueller, *supra* note 110, at 37-40 (detailing broader experimental use exception in other countries).

113. See *Micro Chems. Ltd. v. Smith Kline & French Inter-Am. Corp.*, [1972] S.C.R. 506, 520 (Can.); *Dableh v. Ontario Hydro*, [1996] 68 C.P.R. (3d) 129, 149 (Can. Fed. Ct. App.) (sustaining an experimental use defense).

voked harmonization as a reason for eliminating the diversity of national laws that exist on business method patents and the experimental use exception to infringement.<sup>114</sup> Such calls for squelching should be tempered with a greater appreciation of the costs of uniformity, particularly the constraint that uniformity imposes on experimentation with cutting-edge legal innovations. In addition to that shift in perspective, two more concrete proposals would be helpful in protecting jurisdictional experimentation and innovation. First, TRIPS should be interpreted and applied in a manner that permits flexibility not only where jurisdictions may have differing tastes and cultures, but also where jurisdictions appear to be engaging in experimentation to improve patent law. Second, further steps at “harmonization” should preserve a certain amount of diversity.

### A. Interpreting TRIPS

As previously discussed, the structure and negotiating history of TRIPS show the treaty to be more concerned with imposing certain minimum standards on developing nations, and less with harmonizing the patent law of developed nations. Since developed nations are likely to be good innovators in patent law, TRIPS itself may not pose much threat to ongoing experimentation in patent law provided that the treaty is interpreted as imposing few constraints on the ability of developed countries to maintain diverse laws. But the treaty has not always been viewed in this light.

Consider, for example, the Federal Circuit's opinion in *Rotec Industries v. Mitsubishi Corp.*,<sup>115</sup> which is, at once, a great and terrible decision. The *Rotec* litigation concerned whether an offer that the common law of

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114. See, e.g., Donna M. Gitter, *International Conflicts Over Patenting Human DNA Sequences in the United States and the European Union: An Argument for Compulsory Licensing and a Fair-Use Exemption*, 76 N.Y.U. L. REV. 1623, 1691 (2001) (concluding that the U.S. should adopt an experimental use exception to infringement because, among other reasons, “this proposal would effectively harmonize U.S. and E.U. law [and thereby] promot[e] harmonious international relations”); John R. Thomas, *The Patenting of the Liberal Professions*, 40 B.C. L. REV. 1139, 1178-85 (1999) (arguing that the United States should curb business method patents by requiring patents to have “industrial applicability” because, among other reasons, adopting such a requirement “would move the United States further in the direction of global patent harmonization”); Brian P. Biddinger, Note, *Limiting The Business Method Patent: A Comparison and Proposed Alignment of European, Japanese and United States Patent Law*, 69 FORDHAM L. REV. 2523, 2553 (2001) (advocating a requirement for U.S. patents to evince a “technological contribution” because the change “would temper the rapid exploitation of business method patents in the United States while harmonizing the protection available internationally”).

115. *Rotec Indus. v. Mitsubishi Corp.*, 215 F.3d 1246 (Fed. Cir. 2000).

contract would not recognize as an offer for sale should nonetheless be considered an offer for sale for purposes of determining a party's infringement liability. As the court noted, pre-TRIPS U.S. law imposed infringement liability where the invention was sold, but not where it was only offered for sale.<sup>116</sup> In one of the few instances where it required a change in U.S. law, TRIPS mandated that all signatory nations make "offering [patented inventions] for sale" an act of infringement.<sup>117</sup> The United States amended its infringement statute to comply with that obligation, and the *Rotec* court confronted the extent of infringement liability under that TRIPS-mandated amendment. In at least one other nation—the United Kingdom (U.K.)—an "offer for sale" was defined more broadly (e.g., to include "mere advertising activities") for purposes of patent infringement than for the common law of contracts.

The *Rotec* court began its analysis by stating that "we must recognize one of the [TRIPS] agreements' declared purposes: harmonizing worldwide patent law."<sup>118</sup> This is a dangerous and inaccurate assumption. It is a dangerous view because, if it were to be applied to eliminate the diversity of law existing amongst highly developed nations like the United States and the U.K., it could significantly curtail experimentation and innovation in the field. But it is also not an accurate view of TRIPS. TRIPS nowhere states that it is trying to harmonize worldwide patent law. True, it is a step toward harmonization, but only a limited one. The negotiation history of TRIPS demonstrates that the agreement was primarily to address the problem of externalities associated with the divergence in intellectual property law between developed and developing nations. The differences in patent law that exist among developed nations, like the U.K. and the United States, are unlikely to be explained by externalities. Indeed, in the specific case of the U.K. and United States, both nations are pioneers of patent law with long, historical commitments to their patent systems; neither seems to be free-riding off the other's patent system.

But let us assume for the moment that harmonization of world patent law is generally a desirable policy. How then should the issue in *Rotec* be resolved? If diversity of patent law serves primarily or exclusively to adjust patent law to differing cultures and tastes, then the issue in *Rotec* would seem an easy case for harmony. The United States and the U.K. are about as close in law and culture as two nations are likely to be. Indeed, the very issue in *Rotec* involves the relationship of patent law to the com-

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116. *Id.* at 1249.

117. TRIPS Agreement, *supra* note 4, art. 28.

118. *Rotec*, 215 F.3d at 1253.

mon law of contracts, two areas in which U.S. law grew out of early English precedents. But if the value of experiment and innovation is recognized, the case looks much different. The United States and the U.K. are two of only a handful of highly-developed nations with a long experience in patent law. They are good potential experimenters in patent law, and thus diversity between the two has value.

Now here is why *Rotec* is a great decision: After looking to U.K. law, the Federal Circuit nonetheless allowed U.S. law to diverge from that of the U.K. Under U.K. law, “the common law of contract does not limit the meaning of ‘offer for sale’ in the context of patent infringement.”<sup>119</sup> After *Rotec*, the common law does limit the same phrase for purposes of U.S. patent infringement law. And so *Rotec* is a good decision—in terms of preserving diversity—so long as courts follow what the court *did* and not what it *said*.

The legislative history of section 287(c) provides another example where the ability of developed countries to maintain diverse laws was threatened by an overly aggressive interpretation of TRIPS. In one of the few exceptions to the general TRIPS requirement that member countries grant patents in all fields of technology, Article 27.3 of the Agreement allows members to exclude from patentability “diagnostic, therapeutic and surgical methods for the treatment of humans or animals.”<sup>120</sup> The United States has never taken advantage of this exception but, after one particular patent on a surgical technique triggered extensive public debate on the subject,<sup>121</sup> Congress considered legislation, which would ultimately become section 287(c), making surgical patents unenforceable against doctors and other medical practitioners. In opposing the legislation, the office of the U.S. Trade Representative (USTR) argued that the proposed change would violate TRIPS:

Although TRIPS Article 27:3 permits Members to exclude diagnostic, therapeutic and surgical techniques from patentability, we believe that if a member makes patents available for this field of

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119. *Id.*

120. TRIPS Agreement, *supra* note 4, art. 27.3(c).

121. The patent was “Method of Making Self-Sealing Episcleral Incision,” U.S. Pat. No. 5,080,111 (issued Jan.14, 1992). The patentee, Dr. Samuel Pallin, brought an infringement action that survived a motion for summary judgment, *Pallin v. Singer*, 36 U.S.P.Q.2d 1050 (D. Vt. 1995), though ultimately the parties stipulated to the patent’s invalidity due to prior art uses of the claimed technique in *Pallin v. Singer*, Consent Order, Mar. 28, 1996 (D. Vt. 1996), reported at 1996 WL 274407. For a good overview of the debate sparked by the Dr. Pallin’s case, see William D. Noonan, *Patenting Medical and Surgical Procedures*, 77 J. PAT. & TRADEMARK OFF. SOC’Y 651 (1995).

technology, a Member must accord the full rights required under the TRIPS Agreement. Article 27:1 requires that patent rights be enjoyable without discrimination as to the field of technology. Those rights are specified in Article 28 and include the right to prevent third parties from the act of using a patented process.<sup>122</sup>

While the USTR's interpretation of TRIPS is quite plausible, it would limit legal diversity in the area. Under the USTR view, TRIPS signatories are limited to two polar choices: grant no surgical patents, or grant surgical patents with the full panoply of legal rights afforded other patents. A third alternative—surgical patents with a different set of rights—would not be possible.

As Congress ultimately enacted section 287(c), it seems to have rejected the USTR's interpretation.<sup>123</sup> Rejecting that interpretation was a positive development, for even those who might question the particular policy pursued in section 287(c) (including this author) should recognize that the USTR's interpretation restrained legal diversity without advancing the goals of the TRIPS agreement. TRIPS, after all, permits nations to eliminate surgical patents entirely. Interpreting TRIPS to permit just the extremes (full patenting or no patenting) would not address any externality problem nor advance in any significant manner the other plausible policy goals associated with harmonization. While opposition to section 287(c) is understandable on the merits of the policy being pursued in the statute, government officials and other policymakers should balk at advancing interpretations of TRIPS that undervalue legal diversity.

## **B. Beyond TRIPS**

Patent practitioners and policymakers are already looking beyond TRIPS to the next stage of international harmonization. As demonstrated by the statements of former PTO Commissioner Dickinson set forth at the beginning of this article,<sup>124</sup> one great hope for this next stage is to reduce the administrative costs for obtaining worldwide patent protection. That is a worthy goal, but it does not necessarily require creation of a single pat-

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122. Letter from Jennifer Hillman, General Counsel, Office of the U.S. Trade Representative, to Senator Orrin Hatch, *reprinted in* 142 CONG. REC. S11,843 (Sept. 30, 1996); *see also* Cynthia Ho, *Patents, Patients, and Public Policy: An Incomplete Intersection at 35 U.S.C. § 287(c)*, 33 U.C. DAVIS L. REV. 601, 672 (2000) (arguing that section 287(c) may harm U.S. interest in promoting TRIPS because “[o]ther nations may be less likely to uphold the TRIPS provisions if they perceive that the United States, a major proponent of the TRIPS agreement, ignores its provisions”).

123. This, of course, assumes that Congress was taking its obligations under the TRIPS agreement seriously.

124. *See supra* note 2 and accompanying text.

ent office with worldwide jurisdiction. Diverse, competing offices would be better.

The concept of competing patent offices may sound new, but it is in fact already a reality, albeit to a very limited extent. The Paris Convention allows the patent offices of each member country to establish a worldwide priority date; patent offices may thus compete to attract filings intended to establish priority dates.<sup>125</sup> So too in Europe, national patent offices and the EPO have overlapping jurisdiction, and inventors are free to choose the most efficient examination system. Of course, the national offices are at a disadvantage because their patents cannot extend throughout Europe. But in some circumstances (e.g., where a particular technology is uniquely located in one nation), competition is possible and seems to be occurring.<sup>126</sup>

A more complete vision of competing patent offices can be found in the Patent Cooperation Treaty (“PCT”).<sup>127</sup> While currently cumbersome and flawed, the PCT does create a system whereby certain functions incident to prosecution are afforded worldwide effect. For example, the PCT standardizes the form and content of applications by barring nations from imposing requirements “different from or additional to” those provided by the PCT and its regulations.<sup>128</sup> The PCT also mandates a search of prior art by an international searching authority, and that search is used by the patent offices in every nation where the applicant seeks rights. In many jurisdictions, applicants can even choose between international searching authorities. For example, applicants filing in the United States are permitted to select either the PTO or the EPO.<sup>129</sup> The PCT also authorizes a non-binding preliminary examination of the application, and once again applicants may be granted a choice in selecting an examination authority. U.S. applicants, for example, can choose the EPO provided they selected that agency as their international searching authority.<sup>130</sup>

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125. See discussion of Monaco’s efforts to attract patent application filings, *supra* Part II.A.1.

126. For example, in evaluating its own performance in its annual report, the U.K. Patent Office compares the number of its filings against the number received by the EPO. See, e.g., THE PATENT OFFICE ANNUAL REPORT AND ACCOUNTS 2000-2001, at 19 (2001), available at <http://www.patent.gov.uk/about/reports/anrep2001/chapter7.pdf>.

127. Patent Cooperation Treaty, June 19, 1970, 28 U.S.T. 7645, 1160 U.N.T.S. 231, available at <http://www.wipo.int/pct/en/index.html> [hereinafter PCT].

128. PCT, *supra* note 127 art. 27.1.

129. See UNITED STATES PATENT & TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE § 1840.01 (7th ed. 1999) [hereinafter MPEP].

130. MPEP, *supra* note 129, § 1865; see also PCT, *supra* note 127, art. 32.2 (authorizing each patent office receiving PCT applications to designate one or more authorities for conducting international preliminary examinations).

While the PCT has many limitations, two are particularly significant. First, the rules promulgated under the PCT limit inventors to filing in the receiving office of their home country or the International Bureau of the World Intellectual Property Association.<sup>131</sup> This limitation curtails the competition for filings that might otherwise develop between PCT offices. Second, and perhaps more obviously, the PCT gives worldwide effect to only a limited set of functions—establishing requirements for application form and content, receiving the application, and conducting a prior art search.<sup>132</sup> All other functions incident to examination must be repeated in each country where the inventor seeks rights, and the PCT-authorized preliminary examination need not be afforded any deference by the national examining authority.

The PCT system could be improved if (1) each applicant could choose among a full range of examination authorities, and (2) all functions incident to examination were given worldwide effect. The result would be that the EPO could issue to Americans patents valid in the U.S. (and everywhere else), just as the U.S. PTO could issue to Europeans patents for all the European countries (and everywhere else).

This proposal may seem radical at first because it would allow a non-U.S. entity to issue U.S. patents. But careful analysis reveals that it is not so troubling. The real value of the patent document issued by the PTO—indeed, the real legal effect of that document—is merely a presumption that the PTO’s analysis of the applicant’s rights is accurate.<sup>133</sup> It is a technological audit to which courts afford some measure of deference.<sup>134</sup> There is no necessary reason that such a presumption cannot be afforded to a determination conducted by an entity not part of our nation’s government, provided that the judgments of that entity demonstrate that respect is due. Nor is it necessarily the case that patent applicants would rush to file

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131. See PCT, *supra* note 127, Rule 19.1, available at [http://www.wipo.int/pct/en/texts/rules/r19.htm#\\_19](http://www.wipo.int/pct/en/texts/rules/r19.htm#_19); see also MPEP, *supra* note 129, § 1801 (noting that U.S. residents and citizens can file only at the PTO or at the International Bureau). Unfortunately, the rule is also entrenched; each contracting state has an effective veto over any change. See PCT, *supra* note 127, art. 58(3)(a). Contracting states with a large patent offices may resist changes that would increase competition.

132. See PCT, *supra* note 127, art. 27.1.

133. See 35 U.S.C. 282 (1994).

134. Even today, this technology audit is conducted by comparing the alleged invention against a largely global standard of prior art. Thus, each patent office conducts a search of patents and printed publications issued anywhere in the world. The few categories of “country-specific” prior art—e.g., the U.S. category of prior art “known or used by others in this country”—have a negligible effect on patent office practice. 35 U.S.C. §102(a) (1994).

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with the most lax examining office, for a patent from such an office might be worth much less than one from an office with more stringent standards. Indeed, the dynamic might be similar to that in educational market, where the value of reputation drives students to seek degrees from most demanding institutions.

Once we overcome the conceptual hurdle of permitting a non-U.S. entity to issue patents valid within the U.S. (and overcoming that hurdle is essential for any globalized examination system), then there is no convincing reason why only a *single* entity must be vested with that power. And having more than one preserves diversity of practice, fostering competition and innovation.

### X. CONCLUSION

The impulse to harmonize worldwide patent law is understandable. The pre-TRIPS variation of substantive law allowed nations with weak patent systems to free-ride on the positive externalities created by stronger systems. Even after TRIPS, the fragmented system of redundant patent examinations is almost certainly not optimal. Since the middle of the fifteenth century, patent law has been an evolving area. The need for continued reform and innovation today is no less pressing than in other eras, and one component in that continuing development will undoubtedly be further integration of the global patent system.

But in reforming current law, we should resist the Sirens' song of complete uniformity. A consolidation of existing patent systems into a single monolith would impoverish the field; it would be mass extinction of legal species. Diversity has its own worth; it permits competition and breeds innovation. These virtues should be evident to the patent community, for they are dear not only to the goals of the patent law, but also to its history. Patent law of the twenty-first century would be enriched if national and international policymakers learn to balance the values of harmony with those of cacophony.

# THE RESPONSIBILITY OF THE RULEMAKER: COMPARATIVE APPROACHES TO PATENT ADMINISTRATION REFORM

By John R. Thomas<sup>†</sup>

## ABSTRACT

Patent administrators across the globe currently face the most challenging operating environment they have ever known. Soaring application rates, lean fiscal policies and an increasingly ambitious range of patentable subject matter are among the difficulties faced by the world's leading patent offices. These trends have resulted in persistent concerns over the quality of issued patents. Responding to recent writings questioning the value of maintaining high levels of patent quality, Professor Jay Thomas asserts both that patent quality matters, and that increasing the responsibilities of patent applicants provides a fair and efficient mechanism for improving patent office work product. This Article then assesses recent reform agendas pursued by the European Patent Office, Japanese Patent Office and U.S. Patent and Trademark Office that have elevated applicant obligations. After distilling broader policy trends from these distinct programs, Professor Thomas presents several proposals for patent administration reform.

## I. INTRODUCTION

Global patent administration is strained to the breaking point. Domestic commentators have persistently suggested that the U.S. Patent and Trademark Office ("USPTO") has become more lenient, allowing an increasing number of patents to issue which appropriate knowledge previously within public domain.<sup>1</sup> This impression recently received a quantitative boost from Cecil D. Quillen, Jr. and Ogden H. Webster, whose data analysis leads them to conclude that the USPTO may approve as many as

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1. 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 (1999).

97% of the applications placed before it.<sup>2</sup> Budgetary limitations, an exploding filing rate, and the increasing range of patentable subject matter are among the reasons that U.S. patent quality appears to be on the decline.<sup>3</sup>

The two other leading patent-granting agencies in the world may face even more arduous conditions. The chronically understaffed Japanese Patent Office (“JPO”) employs just over one thousand examiners to process a staggering 400,000 applications per year.<sup>4</sup> Deferral of examination has sustained the JPO over the past decade, but recent legal reforms decreasing the maximum deferral period from seven to three years have exposed the frailty of this regime.<sup>5</sup> The anticipated upsurge of applications has rendered workload reduction a significant theme for JPO management.

The European Patent Office (“EPO”) faces perhaps the most challenging circumstances. With the European patent community overtaking its political community, European Union member states may soon no longer constitute the majority of European Patent Convention signatories.<sup>6</sup> This changing roster holds significant legal consequences for the international body and, by bringing signatory states with deep-seated differences to the table, has already made compromise and reform more difficult to achieve.<sup>7</sup> It is said that financial incentives encourage the EPO to delay approving applications,<sup>8</sup> an observation borne out by a hefty backlog of Patent Cooperation Treaty (“PCT”) applications that await action in Munich.<sup>9</sup> EPO

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2. Cecil D. Quillen, Jr. & Ogden H. Webster, *Continuing Patent Applications and Performance of the U.S. Patent and Trademark Office*, 11 FED. CIR. B.J. 1, 12 (2001-2002).

3. John R. Thomas, *Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties*, 2001 U. ILL. L. REV. 305 (2001).

4. JAPANESE PATENT OFFICE, ANNUAL REPORT 2000, at 58, 73, available at <http://www.jpo.go.jp/>. In 2000, the JPO employed 1,088 examiners, along with 391 appeal examiners. *Id.* at 73.

5. JAPANESE PATENT OFFICE, *Revision of the Time Limit for Submitting a Request for Examination* (2001), available at <http://www.jpo.go.jp/>; see also Association Internationale pour la Protection de la Propriété Intellectuelle Japon, *Japanese Laws Relating to Industrial Property*, Section 48ter, at 21 (1993).

6. See EPO Member States, available at <http://www.european-patent-office.org/epo/members.htm>.

7. Consider, for example, that Cyprus, Greece and Turkey are each signatories of the European Patent Convention. *Id.*

8. See also EUROPEAN PATENT OFFICE, REPORT OF EPO FINANCES COMMITTEE, 51st Council Meeting, Lugano 1, Oct. 22-23, 2001 (“The EPO is in extremely good financial health for an organisation that is functioning so poorly.”).

9. See Sam Black, *Europe Could Stem Patent Searches: Europe Expected to Cut Off U.S. Inventors*, CITYBUSINESS, Aug. 31, 2001, available at <http://twincities.bizjournals.com/twincities/stories/2001/09/03/ocus2.html>.

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management has also been plagued with recurring strikes and sit-ins by an aggressive examiners union.<sup>10</sup> In a troubling sign of the times, the EPO has invoked a provision of the PCT agreement that it claims allows it to reject requests by U.S. residents for international searches and preliminary examinations where claims relate to biotechnology or business methods and, to a lesser degree, telecommunications.<sup>11</sup> Yet despite such difficulties, the EPO seems poised to undertake new duties, including the business of patent reissuance.<sup>12</sup>

The current crisis in global patent administration compels a rethinking of patent acquisition procedures. It also prompts the preliminary inquiry of whether the quality of patent office work product is worthy of our concern. In Part II, I recount the traditional view of academics, industry and patent office management that high patent quality promotes innovation by lowering transaction costs, coordinating research and development efforts between rivals, and reducing strain upon the judicial system. I then respond to a recent challenge to this traditional precept, Professor Mark Lemley's essay *Rational Ignorance at the Patent Office*.<sup>13</sup> According to Lemley, because relatively few patents are the subject of licensing or litigation, a sparing inquiry serves as the optimal level of examination for all patent applications.<sup>14</sup> This Article finds me the defender of the conventional account of patent quality. Dissatisfied with Lemley's assessment, I argue that in an era where the patent system has become the ultimate regulatory regime, patent quality does matter. I believe more emphasis should be placed upon a point that Lemley does not dispute: Whether or not society expands the resources it devotes to patent examination, better uses should be made of the resources that are so committed.

In Part III, I make the case that patent applicants should be compelled to assist patent offices in improving patent quality. Patent applicants stand

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10. See, e.g., "Dutch EPO On Strike Today", available at <http://www.aful.org/pipermail/patents/2001-April/001687.html> (translation from a Dutch newspaper article reporting EPO union strike at the Amsterdam office of the EPO); InventNET's Internet Patent News Services site, available at <http://www.inventnet.com/newsf.html> (noting strikes and demonstrations accompanying EPO management meeting).

11. See EUROPEAN PATENT OFFICE, Notice from the President of the European Patent Office dated 26 November 2001 concerning limitation of the EPO's competence as a PCT authority (Nov. 26, 2001), available at [http://www.european-patent-office.org/epo/president/e/2001\\_12\\_11\\_e.htm](http://www.european-patent-office.org/epo/president/e/2001_12_11_e.htm).

12. See Charles Gielen, *Important Changes to the European Patent System*, 15 WORLD INTELL. PROP. REP. 3 (2001).

13. Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495 (2001).

14. *Id.*

in a better position than patent offices to define their inventions in a manner conducive to prompt examination, distinguish the invention from the prior art, and bear the social costs of improvidently granted patents. Further, patent applicants can be assigned this responsibility justly and in a manner that should not decrease innovation nor disclosure.

Part IV of this Article catalogues and reviews recent developments from the USPTO, JPO and EPO that enlarge the responsibilities of the patent applicant. In this Part, I identify measures that have worked well, as well as those that have been less successful. Building from this experience, Part V offers three discrete proposals for improving patent quality, along with avenues for further research.

## II. DOES PATENT QUALITY MATTER?

It is widely agreed that quality is a significant goal of patent prosecution. Government, industry, academia and the patent bar alike have long insisted that the USPTO approve only those patent applications that describe and claim a patentable advance.<sup>15</sup> Quality patents are, in short, valid patents. Such patents may be reliably enforced in court, consistently expected to surmount validity challenges, and dependably employed as a technology transfer tool. Quality patents fortify private rights by making their proprietary uses, and therefore their value, more predictable. They also clarify the extent to which others may approach the protected invention without infringing. These traits in turn strengthen the incentives of private actors to engage in value-maximizing activities such as innovation or commercial transactions.<sup>16</sup>

In contrast, poor patent quality is said to hold deleterious consequences. Large numbers of improvidently granted patents may create *in terrorem* effects on entrepreneurship, ranging from holdup licensing to patent thickets.<sup>17</sup> They also create duplicative, deal-killing transaction costs, as potential contracting parties must revisit the work of the USPTO in order to assess the validity of issued patents. Poor patent quality may also encourage activity that is not socially productive. Attracted by large damages awards and a porous USPTO, rent-seeking entrepreneurs may be

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15. See, e.g., Irwin M. Aisenberg, *A Level Playing Field to Patent Protection*, 35 IDEA 357 (1995); Robert Corcoran & Louis S. Zarfes, *Quality Review and Control in the PTO: The Historical Evolution*, 81 J. PAT. & TRADEMARK OFF. SOC'Y 5 (1999); Nancy J. Linck et al., *A New Patent Examination System for a New Millennium*, 35 HOUS. L. REV. 305 (1998); Emily Sherwin, *Epstein's Property*, 19 QUINNIPIAC L. REV. 697 (2000).

16. Sherwin, *supra* note 15.

17. Thomas, *supra* note 3, at 319-20.

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attracted to form speculative patent acquisition and enforcement ventures. Industry participants may also be forced to expend considerable sums on patent acquisition and enforcement.<sup>18</sup> The net results appear to be reduced rates of innovation, decreased patent-based transactions, and higher prices for goods and services.

This traditional account of patent quality casts the USPTO in a poor light. Persistent accounts suggest that patent quality at the USPTO has diminished, or at least remained at unacceptably low levels.<sup>19</sup> Some accounts are anecdotal: Anyone who has used a vending machine may wonder how Amazon.com obtained a patent claiming single action purchasing, not to mention a preliminary injunction.<sup>20</sup> Others, such as the Quillen & Webster study, suggest that patent quality problems are widespread.<sup>21</sup> When the USPTO allows nearly every application it receives to issue, patent examination procedures result in little more than R&D Completion Certificates. The USPTO would appear to have much work to do in order to make the merits matter during its patentability determinations.

The USPTO has attracted an unlikely apologist for the current state of affairs. Professor Mark Lemley, in his recent Northwestern University Law Review essay titled *Rational Ignorance at the Patent Office*, asserts that the USPTO wisely spends little time and effort examining individual applications.<sup>22</sup> Observing that the overwhelming majority of patented inventions are not used in a way that calls their validity into question, Lemley concludes that society is better off making a searching inquiry only in those few cases where a patent is licensed or litigated.<sup>23</sup> Lemley describes the USPTO as “rationally ignorant”—because the cost of acquiring the information necessary to reach a patentability judgment exceeds the benefits, the USPTO sensibly chooses to remain uninformed.<sup>24</sup> Further, because most proposed examination reforms would increase the costs associated with every patent application, Lemley reasons that these expenditures would be wasteful for all but a small percentage of applications.<sup>25</sup> Although Lemley advocates several reforms to account for uncertain pat-

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18. Merges, *supra* note 1.

19. See Simson L. Garfinkel, *Patently Absurd*, WIRED, Jul. 1994, at 14; James Gleick, *Patently Absurd*, N.Y. TIMES MAG., Mar. 12, 2000, at 44; Robert M. Hunt, *You Can Patent That?*, BUSINESS REVIEW, Jan. 1, 2001, at 515; *Patently Absurd?: Intellectual Property*, THE ECONOMIST, Jun. 23, 2001.

20. Thomas, *supra* note 3.

21. Quillen & Webster, *supra* note 2.

22. Lemley, *supra* note 13.

23. *Id.*

24. *Id.*

25. *Id.*

ent quality levels, his central conclusion is that society should resign itself to the fact that invalid patents will issue and allow the federal judiciary to deal with them during enforcement litigation.<sup>26</sup>

*Rational Ignorance at the Patent Office* is an insightful piece. It quantifies the shared impression that the patent game is one that many will enter, but few will win. From this basis, Lemley is more rigorously able to explore the consequences of patent examination reform proposals. His recommendations to ratchet down the presumption of validity, reform the Hatch-Waxman Act and more frequently shift attorney's fees are, in my view, sound ones.<sup>27</sup> Indeed, many of these suggestions are presently lodged before the 107th Congress in the form of introduced bills.<sup>28</sup> Ultimately, however, I remain unpersuaded that the value of USPTO operations can be so quickly discounted. In my view the conventional accounts of patent quality retain considerable normative force, despite the detractions that Lemley ably articulates. The following paragraphs will present five reasons why I remain unpersuaded by *Rational Ignorance at the Patent Office*.

First, the theory of rational ignorance is in my view an inapt metaphor for patent examination. The theory actually does little lifting in Lemley's piece, but it does play a supporting role by invoking a considerable scholarly apparatus.<sup>29</sup> The chief disconnect between rational ignorance theory and patent acquisition pragmatics is that the theory assumes that the decisionmaker knows he will bear responsibility for declining to acquire information. If a surgeon who makes \$500 per hour elects not to sort through newspaper grocery advertisements, she should realize that she is purposely ignorant of comparative grocery prices. She rationally should not care, however, because the expected rate of return of parsing grocery advertisements is quite small compared to her professional income. However, in deciding whether or not to plough through the Sunday newspaper

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26. *Id.*

27. *Id.* at 1527-31.

28. See H.R. 1332, 1333, 1530, 107th Cong. (2001). For example, H.R. 1332 would reduce the showing needed to overcome the presumption of validity accorded patents on business methods to a preponderance of the evidence.

29. See generally NICHOLAS RESCHER, COGNITIVE PRAGMATISM: THE THEORY OF KNOWLEDGE IN PRAGMATIC PERSPECTIVE (2001); Roger D. Congleton, *In Defense of Ignorance: On the Significance of a Neglected Form of Incomplete Information*, 17 E. ECON. J. 391 (2001); Klaus Nehring, *A Theory of Rational Choice Under Ignorance*, 48 THEORY & DECISION 205 (2000).

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inserts, the surgeon knows she will ultimately bear responsibility if she pays ten cents too much for a can of corn.<sup>30</sup>

In contrast to our surgeon, the USPTO bears no responsibility for allowing an invalid patent to issue. Courts do not fine the USPTO upon invalidating a patent; the examiners who allowed the case are not disciplined for their oversight; nor must the USPTO award damages to affected members of the public to compensate for an improvidently granted patent. The costs of failing to acquire information are simply shifted to other actors—in particular, the federal courts, the patentee's competitors, and, ultimately, consumers. Under these circumstances, the threshold under which the USPTO becomes rationally ignorant is slight indeed. Yet just because the USPTO acts rationally given its own role and resources does not imply that the patent acquisition regime is sound as a whole.

An apt analogy to contemporary patent acquisition is the plea bargaining system. Society tolerates plea bargaining due to its meager prosecutorial and judicial resources when compared with its enormous crime problem.<sup>31</sup> But for many of us, plea bargaining remains a suspect expedient on the fringes of due process, rather than the result of an enlightened decision to engage in criminal justice through horse trading.<sup>32</sup> Surely plea bargaining is efficient, but few commentators view plea bargaining as a rational way of determining guilt or innocence.<sup>33</sup> Nor has it been effective in preventing recidivism, waging the war on drugs or justly distributing punishments across race and class lines. So it is with examination procedures at the contemporary USPTO. Patent solicitation conducted through hasty, ill-informed bargaining between examiner and applicant is only rational if the only measure of rationality is administrative efficiency.

The rational ignorance theory itself has a significant shortcoming, one that is exposed in *Rational Ignorance at the Patent Office*.<sup>34</sup> Decision-makers often do not know the value of a piece of information until they have acquired it.<sup>35</sup> They must instead make judgments based upon esti-

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30. COMMUNITY & ECONOMIC DEVELOPMENT PROGRAM, CLEMSON UNIV., *The Theory of Rational Ignorance* (1997), available at <http://www.strom.Clemson.edu/teams/ced/econ/8-3No29.pdf> [hereinafter *Theory of Rational Ignorance*].

31. GEORGE P. FLETCHER, WITH JUSTICE FOR SOME 191 (1995) (“In the American system, plea-bargaining seems to be inevitable. If all those who now plead guilty insisted on a jury trial, the system would collapse under the burden.”).

32. See Comment, *Constitutional Alternatives to Plea-Bargaining: A New Waive*, 132 U. PA. L. REV. 327 (1984).

33. Gerald E. Lynch, *Our Administrative System of Criminal Justice*, 66 FORDHAM L. REV. 2117, 2130 (1998).

34. Lemley, *supra* note 13.

35. *Theory of Rational Ignorance*, *supra* note 30.

mates of the expected costs and benefits of acquiring information.<sup>36</sup> Where these values are miscalculated or unknowable, decisionmakers may employ rational decisionmaking heuristics but still reach appallingly bad results.<sup>37</sup> In my view, this effect produces two flaws in Lemley's analysis: one on the cost side and the other on the benefit side.

Concerning USPTO costs, Lemley assumes that improvements to patent quality necessarily imply more exacting and time-consuming prior art searches. We have not, however, always required meticulous literature searches to determine patentability. Until recently, subject matter limitations provided a less time-consuming mechanism for the USPTO to reject applications.<sup>38</sup> Notably, the EPO and JPO still employ these constraints quickly and effectively.<sup>39</sup> A robust written description could also limit the availability of patent protection for many sorts of inventions, in particular biotechnologies.<sup>40</sup> Such rejections can be timely made, too. As I discuss later, applicant use of Jepson claim formatting and USPTO use of official notice may also substitute for scorched-earth searching. In sum, the USPTO does not necessarily require large multiples of its current prosecution times in order to improve its performance. Other, less resource-intensive options are available to improve patent quality.

With regard to the benefits of patent quality, *Rational Ignorance at the Patent Office* largely limits the social costs of improvidently granted patents to litigation-related expenses in striking them down.<sup>41</sup> Lemley recognizes that other costs may rise, particularly those related to *in terrorem* effects against the patentee's potential competitors, but does not give them much weight in his calculus.<sup>42</sup> In my view, these costs are weighty indeed and cannot be so quickly brushed aside. Consideration of the pharmaceutical industry alone reveals patent-related stakes, sometimes pertaining to a single drug, that greatly exceed the amount of the USPTO's annual budget.

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36. *Id.*

37. See generally Amartya K. Sen, *Rational Fools: A Critique of the Behavioral Foundations of Economic Theory*, PHIL. AND PUB. AFF.'S 317 (Summer 1977).

38. See Thomas, *supra* note 3, at 316.

39. See *Pension Benefit Systems*, European Patent Office Technical Bd. of Appeal, T0931/95-3.5.1 (Sept. 8, 2000); Japanese Patent No. 3,023,658 (issued Jan. 21, 2000; revoked via opposition June 11, 2001) ("Presentation Method of Gift at Wedding Ceremony").

40. See Stephen G. Kunin, *Written Description Guidelines and Utility Guidelines*, 82 J. PAT. & TRADEMARK OFF. SOC'Y 77, 99 (2000).

41. Lemley, *supra* at note 13.

42. *Id.* at 1516-17.

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Although many episodes enliven the pharmaceutical patent saga, one recent example concerns the antibiotic augmentin.<sup>43</sup> Augmentin consists of the combination of amoxicillin and clavulanate potassium.<sup>44</sup> The former is an off-patent antibiotic, the latter a salt of clavulanic acid that inhibits the enzyme that allows bacteria to break down penicillin compounds.<sup>45</sup> GlaxoSmithKline's core U.S. patent application on this combination was filed in 1975, with the resulting patent issuing in 1985 and set to expire in 2002.<sup>46</sup> At the start of the millennium, competitors lined up to produce generic versions of augmentin at considerably lower prices than charged by GlaxoSmithKline.<sup>47</sup>

Imagine the surprise of competitors, financiers, and patients alike when GlaxoSmithKline procured a second patent related to augmentin in early 2000.<sup>48</sup> Based on the same 1975 priority document that led to GlaxoSmithKline's core augmentin patent, but not set to expire until 2017, this patent's sole claim reads simply: "A solid pharmaceutically acceptable salt of clavulanic acid."<sup>49</sup> Should GlaxoSmithKline manage to retain patent protection upon augmentin through 2017, the social costs will be considerable. GlaxoSmithKline will have effectively obtained 32 years of patent protection on one of the most heavily prescribed drugs in the world.<sup>50</sup> Given that the average price for generic drugs was less than one-third that of brand-name equivalents in 2000, continued patent protection on augmentin alone may cost patients an amount equal to the entire USPTO budget annually.<sup>51</sup>

Pharmaceuticals may be the least of our worries. We must also recognize patents are no longer the exclusive concern of technological enterprises seeking to preserve market share. Patents regulate all manner of be-

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43. See Marilyn Chase, *Health Journal*, WALL ST. J., Mar. 29, 1999, at B1.

44. *Glaxo Digs In To Defend Patents on Top-Selling Antibiotic*, GENERIC LINE, Feb. 8, 2002, available at 2002 WL 9869372.

45. See *Acute Otitis Media: Antibiotic Approved for Children at Risk for Repeat Infections*, DRUG WEEK, Nov. 16, 2001, at 11.

46. U.S. Patent No. 4,526,783 (issued July 2, 1985).

47. See James Frederick, *Generics Likely To Rise on Tide of Expiring Patents*, 23 DRUG STORE NEWS 14, 26, (2001).

48. U.S. Patent No. 6,031,093 (issued Feb. 29, 2000).

49. *Id.*

50. *New Lease on Life*, PHARMACEUTICAL EXECUTIVE, Apr. 1, 2000, at 179.

51. See Drug Marketing, Feb. 5, 2001 (2001 WL 15459990) (stating that global augmentin sales totaled \$1.4 billion); see also UNITED STATES PATENT AND TRADEMARK OFFICE, USPTO 2000 ANNUAL REPORT, available at <http://www.uspto.gov/web/offices/com/annual/2000/> (providing for a budget of \$907.7 million); see generally Joe Richter & Deborah Stern, *Generic Sales Expected To Rise*, S. FLORIDA SUN-SENTINEL, Dec. 27, 2001, at 1D.

haviors now, including those that are subject to recognized constitutional protections. The public rolls already include granted patents that regulate access to abortion procedures,<sup>52</sup> limit the ability to comply with federal law<sup>53</sup> and suppress speech.<sup>54</sup> What is worse, constitutional restrictions such as substantive due process, equal protection and freedom of speech are unlikely to be of direct application during patent litigation. The reason is that patentees may not qualify as state actors, and thus may be unconfined by the Bill of Rights of the U.S. Constitution.<sup>55</sup> This determination holds startling consequences. If Congress unduly restricted a fundamental liberty interest, a facial challenge would prove fatal to the statute. Yet if the USPTO issued identically worded patent claims to a private actor, the patent could be freely enforced without regard to constitutional limitations.

Internet advertiser DoubleClick's aggressive enforcement of its portfolio of electronic commerce patents illustrates these concerns. DoubleClick commenced litigation against two competitors, L90 Inc. and 24/7 Media, based upon its patent on a "method of delivering, targeting, and measuring advertising over networks."<sup>56</sup> The parties narrowly avoided trial last year, reaching a last-minute settlement that ended DoubleClick's charge of infringement.<sup>57</sup> Internet service provider Juno Online Service Inc. was not so fortunate. NetZero Inc. filed suit against Juno in a Los Angeles federal district court, charging infringement of its patented method of displaying advertisements in floating windows.<sup>58</sup> On January 5, 2001, the court issued a

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52. See, e.g., U.S. Patent Nos. 5,356,783 (issued Oct. 18, 1994); 4,073,899 (issued Feb. 14, 1978); and 3,852,465 (issued December 3, 1974).

53. See Richard H. Stern, *Scope-of-Protection Problems with Patents and Copyrights on Methods of Doing Business*, 10 FORDHAM INTELL. PROP., MEDIA & ENT. L.J. 105, 120-22 (1999) (comparing the claims of U.S. Patent No. 5,193,056 with the federal tax laws and regulations).

54. See John R. Thomas, *Post-Industrial Patents and Personal Liberties* (Working Paper, 2002) (on file with author) (noting patents on methods on commercial speech; teaching language, music, vocabulary acquisition, dialogue writing and mathematics; and drafting a patent application).

55. *Id.*

56. *DoubleClick, L90 Settle Patent Lawsuit*, NEWSDAY, Nov. 7, 2000, at A44; see U.S. Patent No. 5,948,061 (issued Sept. 7, 1999).

57. *DoubleClick, L90 Settle Patent Lawsuit*, NEWSDAY, Nov. 7, 2000, at A44.

58. U.S. Patent No. 6,157,946 (issued Dec. 6, 2000) ("Communication system capable of providing user with picture meeting characteristics of user and terminal equipment and information providing device used for the same.").

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restraining order that prohibited Juno from practicing the patented invention through March 15, 2001.<sup>59</sup>

Notable about the DoubleClick case is the absence of an accounting for First Amendment principles. Had a content-neutral law constrained speech in this fashion, the court would have reviewed the law as a time, place or manner restriction. This analysis would have considered such factors as the existence of adequate alternative channels for communication and whether the regulation was narrowly tailored to serve a specific government interest.<sup>60</sup> The courts have yet to subject a patent to similar scrutiny, perhaps out of the belief that constitutional limitations on government actions do not apply to patent litigation commenced by private parties.

Frankly, I hesitate to hazard a guess as to the social costs of injunctions that amount to prior restraints on protected speech. Perhaps someone from the law and economics camp would be less circumspect. However, my firm sense is that the costs greatly exceed the lawyer's fees and court costs that would be incurred to strike down such a patent.

My review of the augmentin and DoubleClick cases does not detract from the fundamental insight of *Rational Ignorance at the Patent Office* that, although hundreds of thousands of patents are granted, only a small minority will have a social impact.<sup>61</sup> However, the costs of those few which are improvidently granted may be considerable. Since the USPTO is usually unable to assess the social impact of a particular patent application, society may indeed be better off improving the quality of all issued patents.

An additional concern I have with regard to *Rational Ignorance at the Patent Office* is its reliance upon very low estimates of the rate of patent usage. Lemley understandably expresses frustration at our primitive understanding of the frequency with which patented inventions have a marketplace impact. He relied upon litigation statistics to obtain a reliable count of 1.5% of issued patents being litigated, with a good faith estimate of an additional 3.5% under license.<sup>62</sup> *Rational Ignorance at the Patent Office* further makes much of low patent maintenance rates as suggesting that few patents have commercial significance.<sup>63</sup>

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59. See Nancy Weil, *NetZero Suit Hits Juno with a Restraining Order*, INFOWORLD DAILY NEWS, Jan. 8, 2001, available at <http://www.idg.net>.

60. Robert A. Sedler, *The First Amendment in Litigation: The "Law of the First Amendment,"* 48 WASHINGTON & LEE L. REV. 457, 462-81 (1991).

61. Lemley, *supra* note 13.

62. *Id.* at 1507.

63. See *id.* at 1502-03.

Other research suggests higher patent use rates than surmised by Lemley, however, even where maintenance rates are low. A study conducted by Professor Ove Granstrand reveals robust rates of commercial usage among the Japanese and Swedish corporations surveyed in 1992.<sup>64</sup> Granstrand's survey results are as follows:

	Share of commercially exploited patents	Share of patents leading to commercial success	Share of patents licensed commercially	Number of years patents are kept in force	Share of patents kept maximally
Japanese companies	26.1	14.7	11.3	10.5	16.1
Swedish companies	60.5	38.1	4.9	11.4	21.6

These data suggest that low maintenance and licensing rates do not tell the entire story about whether patents are meaningful or not. Maintenance fees grow increasingly costly as the patent ages,<sup>65</sup> and the product cycles in some industries, such as computer software and electronics, tend to be far shorter than the maximum twenty-year patent term.<sup>66</sup> We should recognize that patents need not reach a ripe old age to enjoy marketplace significance. Nor should the initial value of patents be confused with the continued payment of maintenance fees.

Another survey, conducted by Professor Ron Westrum and Ed Zimmer, also suggests that the commercial significance of patented inventions may be higher than Lemley suspects.<sup>67</sup> Their study concluded that about 34% of independent inventors made patent-based profits, a number comparable to the overall success rates of small businesses.<sup>68</sup> This study

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64. OVE GRANSTRAND, *THE ECONOMICS AND MANAGEMENT OF INTELLECTUAL PROPERTY* 165 (1999).

65. See Thomas J. Kowalski, *The Maintenance Fee System and Policy of the Patent and Trademark Office: Arbitrary, Irresponsible and In Need of Reform*, 30 *IDEA* 95, 96 (1989).

66. See Mark Aaron Paley, *A Model Software Petite Patent Act*, 12 *SANTA CLARA COMPUTER & HIGH TECH. L.J.* 301, 317 (1996).

67. Joanne Hayes-Rines, *Invention Success Survey*, *INVENTOR'S DIGEST*, Nov./Dec. 2001, at 30.

68. *Id.*

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also suggests that a presumed success rate of one patent in twenty may be too small, particularly for the small businesses that some studies identify as the crucible of U.S. innovation.<sup>69</sup>

My fifth and final point of departure from *Rational Ignorance at the Patent Office* concerns its estimates of the cost of patent compliance. The article cites many individual estimates that patentee notification letters are ignored; that even in patent-intensive industries like pharmaceuticals, the majority of patents are valueless; and that many patents are obtained solely for their “marquee value.”<sup>70</sup> Another benchmark points elsewhere, however, suggesting that the cost of intellectual property compliance may be considerable; one basis for comparison consists of the \$843 billion Americans spent on compliance with federal regulations in 2000.<sup>71</sup> This sum is equal to eight percent of the U.S. Gross Domestic Product and amounts to \$8,164 per household. The cost of regulatory compliance exacts a heavy toll on business. A recent Small Business Administration study found that companies with 20 workers or less face an annual regulatory toll of \$6,975 per employee.<sup>72</sup>

The central repository of federal regulation, the Federal Register, provides a useful benchmark for considering the patent law.<sup>73</sup> The 2000 Federal Register consisted of 83,000 pages of regulations, proposed rules, notices, executive orders, proclamations and other presidential documents. Eighty-three thousand pages of regulations is a staggering figure—to almost anyone but a patent attorney. In the year 2000, the USPTO issued 175,983 patents. This number works out to 3350 patents in each USPTO Official Gazette, which together comprise approximately 40,000 pages per week. Even if lengthy prosecution histories are not included in this calculation, the USPTO issues roughly as many pages of regulations in a fortnight as the rest of the U.S. government places in the Federal Register in a year.<sup>74</sup> Further, although the number of pages in the Federal Register has

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69. SMALL BUS. ADMIN., THE FACTS ABOUT SMALL BUSINESS (1997), available at <http://www.sba.gov/ADVO/stats/fact1.html>.

70. Lemley, *supra* note 13, at 1506.

71. W. Mark Crain & Thomas D. Hopkins, *The Impact of Regulatory Costs on Small Firms*, available at <http://www.sba.gov/advo/research/rs207tot.pdf> (last visited April 23, 2002).

72. *Id.*

73. For information on which regulations appear in the Federal Register, see 44 U.S.C. §§ 1501-11 (1994).

74. Another interesting benchmark is the length of the Code of Federal Regulations. During the Clinton administration, the C.F.R. averaged 134,173 pages. See CORNELIUS M. KERWIN, RULEMAKING 21 (1999). The USPTO issues that many pages worth of patents in less than one month.

increased in recent years, the number of issued patents has grown at even faster rate.<sup>75</sup>

Even though the page count of USPTO regulation outstrips the size of the Federal Register by 25 times, let us assume that the burden of patent compliance is a mere one percent of federal regulatory compliance costs. As we have good reason to expect that private actors may more zealously enforce their rights than the government its regulations,<sup>76</sup> this estimate appears quite favorable towards the analysis undertaken in *Rational Ignorance at the Patent Office*. Still that number amounts to over eight billion dollars—approximately double *Rational Ignorance at the Patent Office*'s estimate of the cost of domestic patent acquisition alone.

Sometimes standard accounts persist because they are accurate. That so many diverse observers of the patent system have concluded that patent quality matters suggests that the job of the USPTO is not only worth doing, it is worth doing well. Although I think Lemley is correct in arguing that society is concerned with only a minority of issued patents, I believe the costs of those favored few are higher than *Rational Ignorance at the Patent Office* supposes. Because the USPTO is usually unable to determine whether a particular patent application concerns a commercially valuable invention or not, the patent community should endeavor to ensure consistently high quality for all issued patents.

### III. PATENTING AS RULEMAKING

If patent quality matters, then participants in the patent system must change their ways. I have previously considered mechanisms for stimulating private citizens to act as partners in patent examination.<sup>77</sup> This Article focuses instead upon another actor in the patent acquisition process, the applicant himself. Prior discussion has largely centered upon augmenting applicants' prior art disclosure responsibilities.<sup>78</sup> I intend to explore other mechanisms through which the world's patent offices have encouraged applicants to improve patent quality.

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75. Compare *id.* at 19 (growth rate of Federal Register page count), with U.S. PATENT AND TRADE OFFICE, U.S. PATENT STATISTICS, CALENDAR YEARS 1963-2000, available at [http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us\\_stat.pdf](http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.pdf) (growth rate of patent filings).

76. See Mark A. Lemley & Eugene Volokh, *Freedom of Speech and Injunctions in Intellectual Property Cases*, 48 DUKE L.J. 147 n.180 (1998) (observing that “[p]rivately enforced laws might sometimes prove to be more restrictive than government-enforced ones.”).

77. Thomas, *supra* note 3.

78. See *infra* note 79.

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Professor Jay Kesan and Mark Banik have asserted that patent applicants possess comparative advantages over other actors in performing certain tasks.<sup>79</sup> I tend to agree with this claim, but in my view the reasons for placing increased responsibilities are even broader. Much debate has proceeded over whether patents are best characterized as property or monopoly.<sup>80</sup> In this context a more appropriate characterization would be patenting as regulation. Viewing patent prosecution as private rulemaking lends improved perspectives for judging what the responsibilities of the rule-maker should be.

There can be no question that Congress has conferred substantial rulemaking power through the patent system. Each issued patent instills in all of us the duty to avoid practicing the patented invention without the permission of the patentee.<sup>81</sup> Patent instruments yield causes of actions in tort that applicants write for themselves. They may govern abstract behaviors, unconnected to any discrete physical apparatus, and concern virtually any field of human endeavor. And they may be enforced in the fashion of a federal law, although backed by the vigor of private enterprise rather than the comparative languor of the state.

We should also recognize that the USPTO is not the sole delegate of rulemaking power under the Patent Act. The role of the USPTO in the patent system is quite limited. The USPTO lacks substantive rulemaking ability even within the field of patent law,<sup>82</sup> and its regulatory authority is limited to disciplining individuals licensed to practice before it.<sup>83</sup> Crucially, the USPTO neither enforces patents nor adjudicates patent infringement disputes itself. The Patent Act instead delegates authority to initiate patent enforcement to patent owners, who must litigate their cases in the federal court system.

In a very real sense, private individuals also enjoy a transfer of power through the Patent Act. Individuals themselves phrase the patent claims that, if issued, amount to proprietary rights in privately drafted federal

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79. See Jay P. Kesan & Marc Banik, *Patents as Incomplete Contracts: Aligning Incentives for R&D Investment with Incentives To Disclose Prior Art*, 2 WASH. U. J.L. & POL'Y 23, 52 (2000) ("In high technology sectors, such as computer software or biotechnology, the patentee is better informed about the relevant prior art with respect to an invention, as compared to the PTO.").

80. E.g., Giles S. Rich, *Are Letters Patent Grants of Monopoly?*, 15 W. NEW ENG. L. REV. 239 (1993).

81. 35 U.S.C. § 271(a) (1994).

82. See *Merck & Co. v. Kessler*, 80 F.3d 1543, 1549-50 (Fed. Cir. 1996).

83. See 35 U.S.C. § 2(b) (1994).

regulations.<sup>84</sup> As patentees, they enjoy unfettered discretion to enforce their patent right by bringing a civil action in federal court. If everyone wants to be a regulator, the patent system amounts to a leveling construct that encourages governance by private citizens.

The view of the patent law as a rulemaking system points commentary in several interesting directions. For one, the faint but persistent nondelegation doctrine may yet have a role to play in the patent law.<sup>85</sup> Administrative law analogies also suggest that patent applicants bear increased rule-making responsibility. An analysis of USPTO processes in view of the traditional aspirations of administrative law reveals many shortcomings. Not only do applicants not need to justify the claims they propose, they are presumed to be entitled to the claims.<sup>86</sup> Despite recent reforms that call for the publication of pending applications, interested parties possess no opportunity to comment upon them. What is worse, these reforms fail to afford affected parties with any guarantee of notice. Patentees are still able to bring enforcement suits, and seek a preliminary injunction in expedited proceedings, on the very day the patent issues.<sup>87</sup> Unsuccessful plaintiffs in patent enforcement suits ordinarily pay only their attorneys fees, with the prevailing defendant and members of the public left to absorb the costs of an improvidently granted patent. The conclusion is that oversight of the regulator seems to have little place in contemporary patent law, despite its prominence in mainstream administrative law.

Perhaps we could employ traditional mechanisms of U.S. administrative law in order to improve patent quality. Unfortunately, the foundational norm of notice and opportunity for comment rulemaking has not worked well here. Patent law already employs this mechanism to some degree, and for once has chosen less ungainly words, "opposition" and "reexamination," to describe it. Unfortunately, public goods problems have eviscerated reexamination proceedings in the United States.<sup>88</sup> More full-fledged rulemaking of this sort appears not to solve this fundamental

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84. See 35 U.S.C. § 112 (1994) (requiring patent applicants to claim the subject matter they regard as proprietary); *id.* § 154(a)(1) (providing patentees with the right to exclude).

85. Thomas, *supra* note 54.

86. See 35 U.S.C. § 102 (1994); see also *In re Piasecki*, 977 F.2d 1443, 1448 (Fed. Cir. 1992) (Plager, J., concurring).

87. See, e.g., *Robotic Vision Sys., Inc. v. View Eng'g, Inc.*, 112 F.3d 1163, 1164 (Fed. Cir. 1997); *GAF Bldg. Materials Corp. v. Elk Corp.*, 90 F.3d 479, 480 (Fed. Cir. 1996); *Nat'l Presto Indus., Inc. v. W. Bend Co.*, 76 F.3d 1185, 1193 (Fed. Cir. 1996); *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1205 (Fed. Cir. 1991); *Exxon Chem. Patents, Inc. v. Lubrizol Corp.*, 935 F.2d 1263, 1264 (Fed. Cir. 1991).

88. Thomas, *supra* note 3, at 333-40.

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problem, may be impractical given the sheer volume of USPTO operations, and, taken to its fullest extent, might even violate the TRIPS Agreement. We need other mechanisms to make the rulemaker accountable to the public.

Before going much further, I should anticipate the objection that I intend to lay too much responsibility at the feet of patent applicants. Overly high costs associated with patent filings could coax some inventors into trade secrecy. Perhaps even the rate of innovation would decrease.<sup>89</sup> Although I cannot totally discount such concerns, our experience suggests that the demand for patent examination services is relatively inelastic.

Consider recent changes to the fee schedules at both the USPTO and the EPO. In 1982, the minimum fees to procure and maintain a U.S. patent to its full statutory term were increased by over ten times.<sup>90</sup> By 1990, these augmented fees had again been doubled.<sup>91</sup> Filing rates remained stable in the face of both of these increased costs, and actually have increased dramatically in recent years.<sup>92</sup> Also noteworthy is that the EPO substantially decreased its application fees both in 1997 and 1999.<sup>93</sup> The seemingly impressive result was a 60% increase in the number of applications filed at the EPO from 1994 and 1999.<sup>94</sup> In a period in which patent fees were stable, however, USPTO filings actually increased by 50% during the same five-year period.<sup>95</sup> The decrease in EPO fees may have stimulated some filings, but it seems rather likely that other forces were also at work.

Although these episodes likely deserve more rigorous analysis, they suggest some flexibility in pricing patent services. It should be remembered that the chief alternative to patenting, trade secrecy, often requires substantial expenditures. Additionally, the Federal Circuit's increased emphasis upon precision in patent procurement appears not to have deterred applicants either, despite the increased costs presumably associated with

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89. Merges, *supra* note 1.

90. Heath W. Hoglund, *Patent Fee Diversion Crosses Constitutional Boundary*, 83 J. PAT. & TRADEMARK OFF. SOC'Y 725 (2001).

91. *Id.*

92. See [http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us\\_stat.pdf](http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.pdf) (last visited Apr. 23, 2002).

93. See United States Patent and Trademark Office, Technology Assessment and Forecast Branch, Mark D. Janis, *Second Tier Patent Protection*, 40 HARV. INT'L L.J. 151 n.4 (1999) (collecting citations); Michael N. Meller, *Costs Are Killing Patent Harmonization*, 79 J. PAT. & TRADEMARK OFF. SOC'Y 211, 214 (1997) (reporting 1997 fee reduction).

94. Setsuko Asami, *A View Toward the Global Patent: Mutual Exploitation of Examination Results*, AIPPI J. 12, 14 (Jan. 2002).

95. *Id.*

such efforts.<sup>96</sup> The Bush Administration's recent budget proposal may provide another opportunity to measure the effect of patent fees upon filing rates, as it would establish a 19.3% surcharge on patent-related fees.<sup>97</sup>

In sum, there is good reason to believe that even substantial increases in applicant responsibilities will not deleteriously impact patent filing and innovation rates. Applicants are therefore a logical party to whom patent office administrators should turn in order to reform the procedures through which proprietary rights are awarded. This Article takes up this effort, considering discrete mechanisms by which patent quality can be improved.

#### IV. A COMPARATIVE REVIEW OF PATENT ADMINISTRATION REFORM

I have previously used game theory to consider improvements to the administration of the patent system.<sup>98</sup> This piece employs a more traditional mode of legal scholarship—comparative law. Continental lawyers have often told us that the common law lacks theoretical richness, although a consultation of civil law sources makes many of us question the grounding of such claims. In the case of patent administration, where less may depend upon ideals than the pragmatics of workload management, another reason suggests that this avenue may not seem very promising. Other major patent offices are facing even more worrisome circumstances than the USPTO, despite their drives at reform. A further stumbling block is that patent office practices are poorly documented. Patent office management keeps some information close to the vest, leaving the would-be comparativist to ferret out information from patent solicitors and other informal sources.<sup>99</sup>

Yet a comparative approach offers some advantages. In contrast to the theoretical musings of game theory, actual patent office practices have a demonstrated track record. Many have met with little resistance despite long periods of use, suggesting that they comply with the TRIPS Agree-

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96. *See, e.g.*, *Festo Corp. v. Shoketsu Kinzoku Kogyu Kabushiki Co.*, 234 F.3d 558 (Fed. Cir. 2000) (en banc) (expanding the role of the prosecution history, thereby limiting the scope of patent protection); *Sage Prods., Inc. v. Devon Indus., Inc.*, 126 F.3d 1420 (Fed. Cir. 1997) (emphasizing more precise claiming practices by patentees).

97. *See Legislation/Appropriations: PTO Budget Proposal Includes \$162 Million for 'Homeland Security and Defense,'* 63 PAT., COPYRIGHT & TRADEMARK J. (BNA) 307 (2002).

98. Thomas, *supra* note 3.

99. *Id.* at 314.

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ment.<sup>100</sup> And as demonstrated by domestic adoption of some features of foreign patent systems, including a twenty-year-term measured from the filing date and piecemeal publication of pending applications, they stand some chance of being employed in the United States as well.

This piece next considers five patent administration reforms from the world's major patent offices. The purpose of this consideration is to review these divergent data points in order to identify common themes, as well as those that have been successful and those that have failed. Coherent policies can be developed in order to address the current woes of modern patent administration.

### A. The Action Program for 80%

The JPO faces the same problems today that it did in the mid-1980's: too few examiners, an inability to hire additional personnel, and the largest number of filed patent applications in the world. One JPO response was to embark upon the so-called "Action Program for 80%" ("AP 80%").<sup>101</sup> The thinking behind AP 80% was apparently to ease the task of examiners by presenting them with more applications that were already positioned for allowance.<sup>102</sup> Through AP 80%, the JPO requested that large, domestic applicants endeavor to increase their individual allowance rate from approximately 60% to 80%.<sup>103</sup> The requests were made via JPO publications and, supposedly, forthright appeals from JPO officials to representatives of domestic corporations in Kasumigaseki meeting rooms.<sup>104</sup> Among the steps applicants could take to reach the 80% allowance plateau were conducting augmented prior art searches, requesting that fewer filed applications be examined, and, of course, making more selective filing decisions in the first place.<sup>105</sup> Successful participants in AP 80% were lauded in JPO publications and perhaps received other less transparent benefits.

AP 80% has proved a modest success for the JPO. The plan appears to have diminished perennial problems for the JPO. AP 80% has not curbed Japan's accelerating application rate, however, nor would it have the same impact in other patent offices. Japan is the only state where domestic in-

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100. Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, Legal Instruments, Results of the Uruguay Round Vol. 31, 33 I.L.M. 81 (1994) (hereinafter "TRIPS Agreement").

101. JAPANESE PATENT OFFICE, ANNUAL REPORT 45-50 (1989).

102. *Id.*

103. *Id.*

104. *Id.*

105. *Id.*

dustry holds a dominating share of issued patents.<sup>106</sup> Cultural differences further suggest that the AP 80% will not be readily exported as a solution. Furthermore, according to Quillen and Webster, the USTPO has already taken the steps necessary to allow applicants to achieve a grant rate of well over 80%.<sup>107</sup>

A novice reader of the TRIPS Agreement, examining the Article 27 obligation that seems to call for treating all comers equally, may believe that a patent administration regime that creates any point of distinction among applicants would violate international commitments.<sup>108</sup> One lesson to take from AP 80%, however, is that subtle means exist for burdening particular patent applicants with additional responsibilities. After all, Article 27 calls for equality of treatment “as to the place of invention, the field of technology and whether products are imported or locally produced.”<sup>109</sup> Ample room appears to exist for other grounds of discrimination, particularly for repeat filers or areas where patent quality problems are especially endemic.<sup>110</sup>

## B. PCT Lite

In its salad days, the EPO employed a bifurcated search and examination procedure. One specific examiner in the Hague looked for the prior art and completed a search report. Each piece of prior art cited in the search report had (and still has) associated with it a letter code. The most significant of these are “X,” which indicates that a claim was anticipated by the reference; “Y,” which indicates that a claim would have been obvious in light of that reference when combined with other such references; and “A,” which indicates that the cited reference merely defines the state

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106. In 1999, domestic industry received 133,960 Japanese patents, while foreign applicants received a paltry 16,099 Japanese patents. In the United States, domestic applicants received 55.6% of issued patents in 1999; at the European Patent Office, the share of EPC signatory states was 56.1%. See JAPANESE PATENT OFFICE, ANNUAL REPORT 1999, available at <http://www.jpo.go.jp>; U.S. PATENT AND TRADEMARK OFFICE, ANNUAL REPORT 1999, available at <http://www.uspto.gov>; EUROPEAN PATENT OFFICE, ANNUAL REPORT 1999, available at [http://www.european-patent-office.org/epo/an\\_rep/1999/html/index.htm](http://www.european-patent-office.org/epo/an_rep/1999/html/index.htm).

107. See Quillen & Webster, *supra* note 2 and accompanying text.

108. TRIPS Agreement, *supra* note 100, at art. 27.

109. *Id.*

110. The recent EPO rescission of its PCT commitments with regard to particular U.S. industries may serve as another example of this line of endeavor. The EPO’s abrupt jettisoning of its largest user was an attempt to reduce its staggering workload, but whether this step will actually decrease filings remains to be seen. U.S. applicants may simply file straight European applications rather than take the so-called “Euro-PCT” route.

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of the art and is not of significance to patentability.<sup>111</sup> With this search report in hand, a second examiner in Munich then substantively considered the merits of the application.<sup>112</sup> This idiosyncratic procedure was never marked by great logic or efficiency. It did allow the EPO to maintain large offices in two different European Union member states, however, as well as make use of expertise formerly associated with the Institut International des Brevets.<sup>113</sup>

Lean times have forced the EPO away from the frivolities of its youth. The EPO has already begun the process of outfitting both its Hague and Munich offices with full search and examination capacities.<sup>114</sup> Commencing on January 3, 2002, the EPO began performing streamlined international preliminary examination in certain Patent Cooperation Treaty (“PCT”) cases.<sup>115</sup> The particulars of this initiative exceed our present purposes; in essence, the EPO has automated certain PCT examination procedures by issuing computer-generated office actions based solely upon the search report. If the search report contains at least one X or Y document, the EPO will issue a negative written opinion. For example, suppose the Hague search examiner believes that the most pertinent prior art references are articles written by Gandalf, Radagast, and Saruman, each classified as Y references. The applicant will then receive a statement explaining no more than “we issue a negative opinion based upon Gandalf and Radagast, in view of Saruman”—no matter what the contents of these three references or their particular relationship to the submitted application. On the other hand, if the search report does not cite X or Y references, then the EPO will issue a favorable preliminary examination report without further human intervention.

At present time, the patent community lacks much experience with the EPO “PCT Lite” approach.<sup>116</sup> However, given the dubious value of a PCT International Preliminary Examination Report, this shortcut may be of lit-

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111. James R. Cartiglia, *The Patent Cooperation Treaty: A Rational Approach to International Patent Filing*, 76 J. PAT. & TRADEMARK OFF. SOC’Y 261, 269 n.41 (1999).

112. GERALD PATERSON, *THE EUROPEAN PATENT SYSTEM: THE LAW AND PRACTICE OF THE EUROPEAN PATENT CONVENTION* (1994).

113. Michel Marandon, *BEST and the Latest Trends in Automation in the EPO*, available at <http://www2.ari.net/foley/marandon.html> (last visited Apr. 23, 2002).

114. *Id.*

115. Notice of the President of the European Patent Office (November 2, 2001), available at [http://www.european-patent-office.org/epo/president/e/2001\\_11\\_13\\_e.htm](http://www.european-patent-office.org/epo/president/e/2001_11_13_e.htm) (concerning rationalization of international preliminary examination procedure at the EPO).

116. See J.C. Boff, *PCT-Lite*, available at [http://www.cipa.org.uk/info\\_ip\\_pros/document/pct-lite.pdf](http://www.cipa.org.uk/info_ip_pros/document/pct-lite.pdf) (last visited Apr. 23, 2002).

tle moment to the patent community. Practitioners agree that most foreign patent offices pay little heed to such reports, preferring to revisit both the search and examination themselves.<sup>117</sup> Some observers assert that the best reason for pursuing the optional international examination phase of the PCT is to delay examination for ten months, with the salutary consequence of deferred costs and prosecution decisions.<sup>118</sup>

The EPO PCT Lite initiative does suggest an interesting possibility for mainstream patent acquisition procedures. Examiners presently possess both the initial burden of production, to articulate an initial ground for denial of an application, and the ultimate burden of persuasion that an applicant is not entitled to a patent.<sup>119</sup> If PCT Lite were to be applied more generally, its effect would be to shift the burden of production from examiner to applicant at the start of the prosecution. Along with a largely automated prior art search, this approach could transfer a meaningful portion of the resource-intensive tasks of patent administration from agencies to applicants.

### C. Rule 105

As part of a larger Business Methods Patent Initiative, the USPTO has undertaken several measures that it claims will improve the quality of patent searches,<sup>120</sup> including implementation of Rule 105, "requirements for information."<sup>121</sup> Although not inspired by the American Inventors Protection Act of 1999,<sup>122</sup> Rule 105 was introduced along with regulatory changes mandated by that legislation. As will be discussed below, Rule 105 is a radical regulation that could work extreme changes to the traditional functions of examiners. The infrequent application of the rule is telling, however, and suggests that patent administrators would do better to pursue other policies.

Newcomers to patent procurement practice are often surprised by the passive posture of the USPTO. Examiners have traditionally lacked inquisitorial powers and, absent unusual circumstances, are resigned to ac-

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117. Markus Nolf, *TRIPS, PCT and Global Patent Enforcement*, 83 J. PAT. & TRADEMARK OFF. SOC'Y 479, 481-82 (2001).

118. Cartiglia, *supra* note 111, at 271.

119. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992).

120. *See Business Method Patents: Hearings Before the House Subcomm. on Courts, the Internet and Intellectual Property*, 107th Cong. (2001) (Statement of Nicholas P. Godici), available at 2001 WL 2006918.

121. 37 C.F.R. § 1.105 (2001).

122. American Inventors Protection Act of the Intellectual Property and Communications Omnibus Reform Act of 1999, Pub. L. No. 106-113, 113 Stat. 1536 (1999).

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cept sworn applicant submissions as truth.<sup>123</sup> For example, in submitting a Rule 131 affidavit, applicants may redact all dates associated with their inventive activities and merely assert under oath that they performed these acts prior to the date of a section 102(a) reference.<sup>124</sup> Some USPTO subdivisions apparently go further, accepting applicants' sworn (but wholly unsupported statements) that they invented prior to the date of the reference. This latter policy effectively removes section 102(a) from the purview of USPTO examination.

For the first time, Rule 105 allows the USPTO to play a more active role. Examiners may now require applicants to submit a broad range of information, including any materials referenced during the drafting of the application, literature consulted during the invention process, and identification of any predecessor technology that the invention improves.<sup>125</sup> If a complete reply is not forthcoming, the application may be considered abandoned.<sup>126</sup> Rule 105 yields one significant concession—if an applicant states that the requested information is unknown or not readily available, Rule 105 compels examiners to treat that answer as a complete reply.<sup>127</sup>

Rule 105 appears quite potent on its face, but the silence concerning its adoption has been deafening. Few patent attorneys have faced a Rule 105 request because examiners appear reluctant to make them. Imposing a requirement for information can be time-consuming for an examiner. In addition to their normal duties, examiners employing Rule 105 must draft a detailed statement explaining the need for the information and specifying the desired information.<sup>128</sup> The benefits of going to this trouble seem to be slight from an examiner's perspective.<sup>129</sup> Any received information would likely negatively impact the application and prolong the prosecution, distancing examiners from the disposition points upon which their profes-

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123. See Lawrence Schlam, *Compulsory Royalty-Free Licensing as an Antitrust Remedy for Patent Fraud: Law, Policy and the Patent-Antitrust Interface Revisited*, 7 CORNELL J. L. & PUB. POL'Y 467, 516 n.277 (1998) (citations omitted).

124. See UNITED STATES PATENT & TRADEMARK OFFICE, *MANUAL OF PATENT EXAMINING PROCEDURE* § 715.07, at 700-139 (8th ed. 2001) [hereinafter "MPEP"] (stating that, with respect to proof of dates of inventive activity, the Patent Office allows applicants to redact dates from proffered exhibits and "merely allege that the acts referred to occurred prior to a specified date").

125. 37 C.F.R. § 1.105(a)(1) (2001).

126. *Id.* § 1.105(c).

127. *Id.* § 1.105(a)(3).

128. MPEP, *supra* note 124, § 704.14 (observing that a Rule 105 requirement is "a significant burden on both the applicant and the Office since the applicant must collect and submit the required information and the examiner must consider all the information that is submitted").

129. See Thomas, *supra* note 3.

sional performance is measured.<sup>130</sup> Withheld information also suggests a violation of Rule 56, a regulation that the USPTO appears not to have a desire to enforce aggressively.<sup>131</sup>

Our experience with Rule 105 offers an important lesson about contemporary patent administration. Prosecution reforms that heighten examiner burdens will be employed grudgingly or not at all. Granting USPTO examiners greater powers of inquiry than they previously enjoyed appears to be a sound reform. But since this authority requires the expenditure of scarce resources and works at cross purposes with the incentive structure of individual examiners, sparing use of Rule 105 comes as no surprise. If we mean to improve patent quality, then we must do so with an awareness of what patent offices can accomplish practically.

#### D. Official Notice

Poorly documented but increasingly heard from solicitors of business method patents are reports that certain segments of the USPTO are making enhanced use of the concept of “official notice.” Official notice substitutes for the usual process of proof through the formal presentation of evidence. It is akin to judicial notice—and so closely akin that in many judicial opinions the USPTO’s use of official notice is termed judicial notice as well.<sup>132</sup> Under Rule 201(b) of the Federal Rules of Evidence, judicial notice may be taken of any adjudicative fact that is not subject to reasonable dispute because “it is capable of accurate and ready determination by resort to sources whose accuracy cannot reasonably be questioned.”<sup>133</sup> The preferred phrasing is similar in patent procurement. USPTO examiners may take official notice of such facts that “are capable of such instant and unquestionable demonstration as to defy dispute.”<sup>134</sup> In patent cases, notice has been taken of such sundries as the heating of welds following welding operations,<sup>135</sup> the use of carbonless paper in business forms,<sup>136</sup> and the use of video screens to display information.<sup>137</sup>

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130. *Id.*

131. See MARTIN J. ADELMAN ET AL., PATENT LAW: CASES AND MATERIALS 746 (1998).

132. See generally Lance Leonard Barry, *Did You Ever Notice? Official Notice in Rejections*, 81 J. PAT. & TRADEMARK OFF. SOC’Y 129 n.44 (1999).

133. 28 U.S.C. § 201(b)(2) (1994).

134. *In re Ahlert*, 424 F.2d 1088 (C.C.P.A. 1970).

135. *See id.*

136. *In re Wright*, 866 F.2d 422 (Fed. Cir. 1989).

137. *In re Raynes*, 7 F.3d 1037 (Fed. Cir. 1993).

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Although a surprisingly robust body of case law exists on USPTO use of official notice,<sup>138</sup> examiners have tended not to employ it frequently. Under standard USPTO policy, if an applicant contests the noticed fact, then the examiner must supply a reference demonstrating that fact or else withdraw the rejection.<sup>139</sup> Official notice has essentially been little more than a delaying tactic that has detracted from the general USPTO policy of compact prosecution.<sup>140</sup>

Accounts have surfaced that Class 705, that portion of the USPTO responsible for reviewing applications claiming methods of doing business, has begun to rely more heavily upon official notice. Class 705 examiners supposedly employ official notice more often than their peers. They are said to be less willing to withdraw rejections founded upon official notice, even when applicants challenge the taking of notice.

Two largely unappreciated Court of Customs and Patent Appeals (“CCPA”) cases may underlie this phenomenon. One of them, *In re Howard*, involved an early patent application on a method of doing business.<sup>141</sup> Howard claimed a method of pricing merchandise said to reduce the amount of manual handling to stock the shelves of retail grocery stores. The claimed technique appears to have been an early version of bar coding—items were marked with a code that could then be used to supply retail prices at check-out.<sup>142</sup> Although Howard’s broadest claim spoke vaguely of a “memory system” to connect codes and prices, dependent claims required the use of an “electrical comparison,” suggesting the presence of some sort of electrical apparatus or computer.

On appeal, the CCPA strongly stressed judicial notice. The court affirmed the USPTO rejection of Howard’s broadest claim with the following statement:

It is a matter of common practice of wide notoriety, well within the ambit of judicial cognizance, for retail outlets to list by code or otherwise various items stocked for sale, together with the price assigned to each item, so as to enable the clerk or sales person to ascertain the charge to the customer. This practice relates back to the proverbial country merchant who has all but passed from the scene, but has his present-day counterpart in this context in the supermarket cashier who has a price list of advertised

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138. See generally Barry, *supra* note 129.

139. MPEP, *supra* note 124, § 2144.03.

140. See Margo A. Bagley, *Internet Business Model Patents: Obvious by Analogy*, 7 MICH. TELECOMM. & TECH. L. REV. 253 (2001).

141. 394 F.2d 869 (C.C.P.A. 1968).

142. *Id.* at 870.

'specials' taped to his register. Furthermore, common observation cannot escape the deluge of second class matter in the form of mail order catalogs which embody lists of merchandise designated by code or otherwise together with the purchase price assigned to individual items. Selecting one instance from many, equally relevant, the solicitor referred to radio tubes, it being well known that these items are disseminated to users through a code listing designating type and applicable retail price assigned to various types. Prominent in many drug and hardware stores today are tube testing machines having a cabinet full of tubes marked only by a code designation and an associated retail price list correlating the retail price to the code designation. These common merchandising practices, as to which we cannot escape judicial notice, would in practice and effect constitute a memory system in that they clearly reflect and suggest a coded indicia and corresponding prices.<sup>143</sup>

As to the dependent claims, the CCPA succinctly concluded that "to electrically compare the code markings is without patentable significance."<sup>144</sup> According to Judge Almond, "patentability may not be predicated on the recitation of an electrical comparison."<sup>145</sup>

The CCPA took official notice one step further in *In re Boon*.<sup>146</sup> There, Boon appealed from the PTO's rejection of his application claiming a pneumatic conveying system for bulky material. Observing that the PTO Board had in part relied upon official notice in affirming the examiner's rejection, Boon argued that he had not been afforded an opportunity to rebut the notice taking. The court rejected this argument, observing that either *Boon* had either failed to challenge the notice taking at all, or had offered little more than an unsupported statement doing so. The CCPA took the opportunity to stipulate that a challenge to PTO notice must contain "adequate information or argument so that on its face it creates a reasonable doubt regarding the circumstances justifying the judicial notice."<sup>147</sup>

The combination of *Howard* and *Boon* suggests not only the lenient use of official notice in business method patent cases, but substantial staying power for rejections founded upon official notice. Pushed to its outer limits, the court's statement in *Boon* could be seen to require that a challenge to official notice must all but disprove the noticed fact. This combination appears to provide the USPTO with powerful tools for addressing

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143. *Id.* at 870-71.

144. *Id.* at 871.

145. *Id.*

146. 439 F.2d 724 (C.C.P.A. 1971).

147. *Id.* at 728.

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applications claiming methods of doing business. Prior art is poorly documented in these disciplines. Business persons lack the knowledge-sharing norms of the traditional scientific community.<sup>148</sup> Earlier understandings of the limits of patentable subject matter have also led to a paucity of patent literature concerning methods of doing business. The result has been an issuance of patents that claim electronic versions of everyday business activities.<sup>149</sup> Seemingly cognizant of these criticisms, the USPTO appears to have provided itself with means to address applications in disciplines where documentation is elusive.

The increased role of official notice during patent prosecution may be short-lived. Recent Federal Circuit case law suggests that the USPTO may have to reduce its reliance upon official notice. For example, on remand from the Supreme Court in the well-known *Dickinson v. Zurko* litigation,<sup>150</sup> the Federal Circuit reversed the decision of the Board of Patent Appeals and Interferences for lack of substantial evidence.<sup>151</sup> In particular, the court criticized the USPTO for relying upon “basic knowledge” and “common sense” to support a conclusion of obviousness.<sup>152</sup> These decisions suggest that the USPTO may have to retreat from its reliance upon official notice as a burden-shifting device with patent prosecution.

This recent trend in Federal Circuit case law is an unfortunate one. Although seemingly disfavored by contemporary case law, USPTO use of official notice would have approximated the approach taken in H.R. 1332, the proposed Business Methods Improvement Act of 2001. H.R. 1332 would create a presumption that a claimed invention would have been obvious “if the only significant difference between the combined teachings of the prior art and the claimed invention is that the claimed invention is appropriate for use with a computer technology.”<sup>153</sup> While academic commentators have supported H.R. 1332,<sup>154</sup> influential members of the patent bar have not,<sup>155</sup> and the likelihood of the bill becoming law seems

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148. See Rochelle Cooper Dreyfuss, *Are Business Method Patents Bad for Business?*, 16 SANTA CLARA COMPUTER & HIGH TECH. L.J. 263 (2000).

149. *Id.* at 268.

150. 527 U.S. 150 (1999).

151. 258 F.3d 1379, 1386 (Fed. Cir. 2001).

152. *Id.*; see also *In re Lee*, 277 F.3d 1338 (Fed. Cir. 2002).

153. Section 4, H.R. 1332.

154. LAWRENCE LESSIG, *THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD* 261 (2001).

155. Statement of Michael K. Kirk, Executive Director of the American Intellectual Property Law Association, Before the House Subcomm. on Courts, the Internet and Intellectual Property, Business Method Patents (Apr. 4, 2001), available at 2001 WL 2006919 (viewing predecessor to section 5 of H.R. 1332 as “unnecessary and problematic”).

slim. The USPTO appears to be using another technique for achieving the same goal attempted by H.R. 1332, namely, placing upon applicants the burden of proving that a computer-based business method presents an inventive advance over the prior art.

Detractors of H.R. 1332 argue that the bill would violate the TRIPS Agreement.<sup>156</sup> The logic goes that by supposedly creating a distinct nonobviousness standard for business methods, H.R. 1332 is said to run afoul of Article 27's commandment to treat all technologies similarly.<sup>157</sup> This argument is exceptionally weak. Business methods are assuredly not technologies within the meaning of the TRIPS Agreement. At the time the United States entered the TRIPS Agreement, patents on business methods were not widely sought, and the common understanding among members of the patent bar was that the patentability of such methods was at best dubious.<sup>158</sup> With the two other leading patent-granting powers, Europe and Japan, declining to award patents on methods of doing business,<sup>159</sup> the more plausible reasoning is that business methods, like databases, lie without the borders of the TRIPS Agreement.

Whatever the merits of these arguments, the USPTO appears to have stumbled upon an ingenious end-run around Article 27 of the TRIPS Agreement. Thanks to its heavily publicized Business Method Patent Initiative,<sup>160</sup> as well as its surreptitious development of the official notice doctrine, the USPTO readily treats business method patent applications differently from others. But the USPTO can plausibly assert that its distinctions are based upon the difficulty of examination rather than the discipline from which the claimed invention arises. In so doing the USPTO could point to the WTO Dispute Settlement Body opinion in *Canada - Patent Protection of Pharmaceutical Products*.<sup>161</sup> There, the WTO panel upheld the Canadian version of the Hatch-Waxman Act, despite its seemingly distinct treatment of pharmaceuticals. The express terms of the Canadian statute applied to all regulated products; according to the panel, the

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156. See TRIPS Agreement, *supra* note 100.

157. Kirk, *supra* note 155 (stating belief that "it would possibly be inconsistent with the obligations of the United States under the Agreement on the Trade Related Aspects of Intellectual Property Rights (TRIPs) to single out business method patent applications and patents for special treatment. . .").

158. See John R. Thomas, *The Patenting of the Liberal Professions*, 40 B.C. L. REV. 1139, 1145-47 (1999).

159. See *supra* note 39.

160. TRIPS Agreement, Business Method Patent Initiative, *available at* <http://www.uspto.gov/web/offices/com/sol/actionplan.html> (last visited Apr. 23, 2002).

161. WT/DS114/R (Mar. 17, 2000) *available at* <http://docsonline.wto.org/>.

mere fact that its effects were most keenly felt in the area of pharmaceuticals could not give rise to a finding of impermissible discrimination.<sup>162</sup>

The USPTO official notice incident provides policymakers with two cues. First, despite the TRIPS Agreement, administrators retain considerable discretion to address particular points of stress within the patent procurement regimes. Different technologies can indeed be treated differently, so long as the point of distinction is not strictly based upon an invention's technical characteristics. Second, the use of official notice presents an alternative mechanism for effectively shifting examination burdens from patent offices to the private sector.

### E. Jepson Claims

Patent offices have also eased their examination tasks by encouraging the use of so-called "Jepson claims." A Jepson claim defines an invention in two parts. First, the preamble recites the subject matter of the invention and the technical features necessary to define the claimed subject matter but that lie within the prior art. The second, or characterizing, portion of the claim describes the technical features that the invention adds to the prior art.<sup>163</sup> The EPO, along with the national patent offices of Europe, encourages the use of the Jepson claim format.<sup>164</sup> Patent Cooperation Treaty rules additionally provide that claims should be written in this style wherever possible.<sup>165</sup>

In contrast to these positions, the U.S. patent bar has long derided the Jepson claim. With a few exceptions,<sup>166</sup> the preamble of a Jepson claim constitutes an admission that the recited subject matter constitutes prior art.<sup>167</sup> This claiming style also tends to portray the invention as a limited improvement, rather than an elegant combination of diverse elements that together produce an inventive advance. Most U.S. patent practitioners decline to use the Jepson format, even going to the extent of redrafting such claims that they receive from their colleagues overseas. Conversely, USPTO examiners generally prefer to receive such claims.<sup>168</sup> Experience teaches them that Jepson claims are far more readily parsed and compared to prior art than other claim formats.

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162. *Id.* at ¶ 7.104.

163. *See In re Fout*, 675 F.2d 297, 299 (C.C.P.A. 1982).

164. Arthur L. Plevy, *Some Important Differences Between Patent Practice in Europe and the United States*, 209 N.J. LAW. 40, 41-42 (2001).

165. Patent Cooperation Treaty, Jan. 24, 1978, 28 U.S.T. 1976, 1976-77.

166. *See Reading & Bates Construction Co. v. Baker Energy Resources Corp.*, 748 F.2d 645 (Fed. Cir. 1984).

167. *See In re Fout*, 677 F.2d 297, 299 (1982).

168. ADELMAN ET AL., *supra* note 128, at 681.

There is much to be said for conforming U.S. claiming practice with European and international trends. The USPTO has already required that claims be no more than one sentence long<sup>169</sup> and barred the use of omnibus claims.<sup>170</sup> The USPTO also possesses the regulatory authority to compel applicants to use Jepson claiming style where it is possible to do so. Lean times compel changes that allow examination tasks more quickly and effectively. If some would say the benefits would be modest, so would the costs, and U.S. inventors would advantage themselves by placing their applications in better position for foreign filings.

## V. PROPOSALS FOR PATENT ADMINISTRATION REFORM

A review of recent initiatives in the world's leading patent offices suggests several avenues for future reform of the USPTO. First, examination burdens should continue to be shifted to the private sector. In particular, patent offices should continue to place additional responsibilities upon those entities that most heavily employ their services. Administrators should also abandon the pretense of an ecumenical examination system in favor of a more particularized regime that recognizes that different sorts of inventions pose different burdens. Finally, although not based upon existing practices, the theme of heightened applicant responsibilities suggests several additional reform opportunities.

### A. Shift Examination Burdens to the Private Sector

The EPO, JPO, and USPTO have already commenced the process of shifting examination burdens to patent applicants. This technique should continue to prove its worth, provided that it is cost effective in two ways. First, patent offices should outsource only those tasks that applicants can perform at least as effectively as examiners. Second, the supervision of applicant efforts should not create additional burdens upon examiners.

Three of the policies discussed here should be further developed by the USPTO. First, despite the unfavorable turn of Federal Circuit case law,<sup>171</sup> the USPTO should continue to explore the use of official notice or other burden-shifting mechanisms. This policy appropriately charges applicants with the duty to supply expert testimony or secondary literature not readily known to the USPTO. The USPTO should declare its official notice policies more clearly and publicly. Use of isolated language from the thirty-

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169. *See* Fressola v. Manbeck, 36 U.S.P.Q. 2d (BNA) 1211 (D.D.C. 1995).

170. *See Ex parte* Fressola, 27 U.S.P.Q. 2d (BNA) 1608 (B.P.A.I. 1993).

171. *See supra* notes 150-152 and accompanying text.

year-old *Boon* opinion is no substitute for firmly articulated and officially promulgated guidelines.<sup>172</sup>

The USPTO should also mandate that drafters employ Jepson claims wherever possible. Such claims will not have much of an effect on biotechnology and chemistry product claims, given the peculiarities of those fields. In other fields, however, such claims are inexpensive to draft and will offer some streamlining of the tasks of the examiner.

Finally, the USPTO should follow the lead of the EPO's PCT Lite policy. Patent searching should become increasingly automated and its results presented to the applicant prior to the First Office Action. To assist in this endeavor, applicants should be encouraged or even required to supply search terms. Applicants would then be required to respond to the disclosed prior art before to the examiner's initial review of the case.

### **B. Increase Responsibilities for the Heaviest Users**

Some entities employ the patent system more frequently than others. Fourteen enterprises were awarded one thousand or more U.S. patents in 2000; an additional 151 obtained at least one hundred patents. These 165 enterprises received in total 56,105 patents—about 35.6% of the 157,497 utility patents granted that year.<sup>173</sup> A review of similar data from previous years suggests that 2000 was not an anomaly for these patentees. Generally speaking, repeat players dominate the counts each year. One explanation for this trend is that each of them has established an in-house pipeline that guarantees the generation of a large number of patent applications on a recurring basis.

These statistics reveal that over one-third of the USPTO's efforts are devoted to 165 large customers. This "Century Club" of patent recipients contributes significantly to the USPTO's mounting workload. Each group member is undoubtedly sophisticated in the patent system and heavily invested in it. Likewise, each enjoys a greater voice before the USPTO and patent-oriented associations, such as the American Intellectual Property Law Association, American Bar Association, and Intellectual Property Owners, to which USPTO management most closely listens. Surely the USPTO could reasonably expect its heaviest users to participate in any efforts to address current problems and inefficiencies in the application and review process.

Other patent offices have successfully imposed extra requirements upon frequent filers before. Through the AP 80%, the JPO caused its best

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172. *Id.*

173. U. S. PATENT & TRADEMARK OFFICE, PATENTING BY ORGANIZATIONS (2000).

customers to devote more resources to the preparation of patent applications. The approach taken in Munich was less subtle. The EPO decision to abandon certain PCT commitments with regard to biotechnology, business method and telecommunications applications originating in the U.S. was nonetheless an attempt to manage workload by shutting its doors to the Euro/PCT route's largest single category of users.

Varying applicant responsibilities based on relative abilities is not a new idea in the United States either. The USPTO fee schedule calls for individual inventors, universities and small businesses to pay half of most of the fees charged to their larger colleagues. This approach provides few benefits the USPTO, however, but rather causes large enterprises to subsidize the patent expenses of smaller ones. The USPTO should seize upon the concept of a graduated fee scheme and call upon its heaviest users to assume additional patent examination responsibilities as well.

The USPTO's largest users could take on additional responsibilities in at least three ways. Members of the "Century Club" should be compelled to perform initial classifications and prior art searches with respect to their own applications, on behalf of the USPTO and under its supervision. They should also be expected to bring prosecution to a close promptly. The USPTO should conduct periodic reviews of the status of each of their applications, with special attention paid to lingering applications from the pre-TRIPS Agreement era. Finally, the USPTO could mimic the JPO AP 80%, asking "Century Club" members to place their applications in a better position for timely examiner review.

### C. Abandon the Pretext of a Universal Examination Regime

Although the patent system has long held pretensions of ecumenical treatment of applications, experienced patent solicitors know that the USPTO as an agency is far from uniform. The USPTO is Balkanized into technology-based subdivisions that sometimes act under different search and examination policies than other divisions.<sup>174</sup> Beyond its organizational flowchart, the USPTO also operates with a degree of delegation unique among federal administrative agencies. Experienced examiners are granted "full signatory" authority, effectively authorizing them to act as one-person patent offices. Demonstrative of this reality is that crucial matters such as examiner experience and application pendency times vary widely among different USPTO subdivisions.<sup>175</sup>

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174. See D.C. Toedt, *Reengineering the Patent Examination Process: Two Suggestions*, 81 J. PAT. & TRADEMARK OFF. SOC'Y 462, 465 (1999).

175. See John R. Allison & Mark A. Lemley, *Who's Patenting What? An Empirical Exploration of Patent Prosecution*, 53 VAND. L. REV. 2099, 2146 (2000).

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Distinctions are also built into the U.S. patent statute and case law. For example, section 103(b) creates a distinct (if little-used) rule of nonobviousness for certain biotechnologies.<sup>176</sup> The elaborate Hatch-Waxman Act applies only to certain pharmaceuticals and medical devices.<sup>177</sup> Judicial precedent concerning the written description and conception requirements also weigh more heavily in the fields of chemistry and biology.<sup>178</sup> Business methods and methods of medical treatment also receive special statutory treatment.<sup>179</sup>

The USPTO ought to recognize expressly that it does not apply the same rules to all applications. Coming out of the closet, so to speak, would allow it to manage its workload more creatively and aggressively. In particular, the USPTO should consider pricing individual services based upon their costs. The Copyright Office sometimes charges hourly rates,<sup>180</sup> and given the dramatic distinctions between the examination burdens posed by different applications, such a step would be appropriate here as well. An application addressing complex biotechnology requires a more sophisticated and time-consuming review than one claiming a kitchen appliance. Charging fees for patent services based upon the technology classification would constitute an important step toward reengineering the manner in which patent examination should be performed. Among other benefits, a cost-based reengineering of examination procedures would allow the USPTO to hire and retain individuals of legal and technological sophistication, to pair its most talented personnel with its most technically complex applications, to allocate bibliographic and human resources in keeping with the demands of individual examination tasks, and ultimately to improve the quality of the patents that it issues.

### D. Additional Proposals

Although not strictly founded upon prevailing patent office practice, the following proposals would also further the goal of improving patent quality. First, if the USPTO is serious about ensuring a high level of patent quality, it should consider providing the public with compensation for those patents it granted improvidently. Both the USPTO and the owner of

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176. 35 U.S.C. § 103(b) (1994).

177. 35 U.S.C. § 156(f)(1)(3) (1994).

178. *See* *Fiers v. Revel*, 984 F.2d 1164, 1170 (Fed. Cir. 1993) (applying written description requirement to biotechnology claims present in the priority document); *Smith v. Bousquet*, 111 F.2d 157, 159 (C.C.P.A. 1940) (suggesting that in chemistry and biology, no conception is achieved until the invention is actually reduced to practice).

179. *See* 35 U.S.C. § 273 (1994) (business methods); *id.* § 287(c) (methods of medical treatment).

180. 37 C.F.R. § 201.3 (1994).

an invalidated patent could be assessed damages in administrative or judicial proceedings. In the case of an inappropriately issued patent on a pharmaceutical compound, for example, compensation might consist of the difference in costs between the brand-name pharmaceutical and any generic competitors that were barred from the market. Patients, health care providers and generic drug companies would stand among the parties to be reimbursed of their losses, in this example.

To the extent that it does not itself absorb the costs resulting from improvidently issued patents, the USPTO should develop and underwrite insurance products that distribute these costs. The confidentiality of pending applications may also lead to social costs. Firms often make investments in ignorance of applications filed by another, only to discover that continued use of those investments would constitute patent infringement. As the master of the nation's patent procurement docket, the USPTO stands in the best position to assess the risks and distribute the costs associated with prospective infringement of pending intellectual property rights.

The world's patent offices should also improve upon the transparency of their procedures. There is much to what the USPTO does that cannot be found in the MPEP. Practices such as the augmented use of official notice are difficult to ferret out from the isolated accounts of diverse practitioners. By maintaining a veil of secrecy, patent offices hinder the development of meaningful dialogue on the contemporary problems of patent administration. USPTO group directors should be encouraged to announce administrative policy distinctions and track evolving examiner practices for the benefit of an increasingly concerned public.

## VI. CONCLUSION

As the TRIPS Agreement furthers the globalization of patent law, less wealthy nations will look to the trilateral patent powers of the European Union, Japan, and the United States as models for structuring their own patent administration regimes. Regrettably, many of the examples set by the EPO, JPO, and USPTO are unworthy of emulation. Victims of financial limitations, human resource constraints, and especially their own increased pretensions, the world's elite patent officers are facing as difficult an operating environment as they have ever known.

This Article has urged that there is good reason to be concerned with the work product of our patent office. Absent an unexpected influx of financial support from Congress, patent administrators must look to other sources to improve patent quality. Employing private citizens as partners in patent examination presents one mechanism for advancing this pro-

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ject.<sup>181</sup> The USPTO should also give serious consideration to placing further examination burdens to the patent applicants, increasing the responsibilities of its heaviest users and abandoning its pretensions of a universal examination regime. By building upon its own successful practices, as well as drawing upon the experience of the EPO and JPO, the USPTO can meaningfully fulfill its high administrative aspirations for the benefit of all parties alike.

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181. Thomas, *supra* note 3.

# CARROTS AND STICKS TO CREATE A BETTER PATENT SYSTEM

*By Jay P. Kesan<sup>†</sup>*

## ABSTRACT

It is widely recognized that the Patent Office grants overly-broad patents because it has deficient knowledge of the relevant prior art, especially in high technology areas with significant nonpatent prior art.

This paper presents five strategies to: (a) increase the quantity and quality of information obtained by the Patent Office from the patentee and her competitors; and (b) create disincentives for patentees to engage in opportunistic behavior by capitalizing on the information asymmetry between patentees and the Patent Office.

The first and second strategies propose changes to our current prior art information disclosure rules based on insights from the economic theory of incomplete contracts. The first strategy proposes that we give patentees the option of presenting an expanded information disclosure statement (IDS) to the Patent Office, disclosing all relevant prior art, including an analysis of how the claims, as filed, relate to this disclosed prior art. If the patentee chooses to exercise this option, the issued patent will be granted a specific presumption of validity with respect to the disclosed prior art. In the alternative, if the patentee does not choose the expanded IDS option outlined above, then the second strategy proposes that we eliminate the presumption of validity for any patent that issues under the current disclosure rules. Ideally, the first and second strategies can be

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adopted together. Alternatively, the second strategy can be adopted by itself.

Based on insights from cognitive dissonance and from empirical data regarding oppositions in Germany and Japan, the third strategy proposes that we institute a *pre-grant*, third party, patent opposition system based on a publication date that is set at 90 days from the issuance of the first Office Action. This proposal creates a mechanism for third parties to participate in the patent examination process prior to its issuance.

Addressing issues in software patents, the fourth strategy proposes that we mandate the use of representational languages in the specification of computer software patents in order to satisfy disclosure requirements and to explicate the metes and bounds of the claimed patent right for software inventions.

The fifth strategy proposes that we create a one-way, pro-defendant fee shifting system if patents are invalidated or revoked in a litigation or opposition proceeding based on certain categories of prior art that are reasonably likely to be discovered by a diligent patentee. This proposal attempts to increase the costs borne by the patentee of engaging in opportunistic enforcement of bad patents.

If these strategies were implemented in concert, we would put in place incentives and mechanisms to create a better informed Patent Office that is more likely to grant patent rights commensurate with innovation and not impoverish the public domain.

## I. INTRODUCTION

Commentators have long complained about the performance of the U.S. Patent & Trademark Office (“Patent Office”<sup>1</sup>).<sup>2</sup> Much of this criticism is directed at the quality of the patents that are granted by the Patent Office. It is widely suggested that the Patent Office issues patents that are either “facially” invalid or broader than the actual innovation disclosed in

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1. When referring to the United States Patent & Trademark Office, I use the term Patent Office instead of the PTO or USPTO to make clear that I am referring to the patent-related activities of the USPTO.

2. See, e.g., Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1496 (2001); 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 (1999); John R. Thomas, *Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties*, 2001 U. ILL. L. REV. 305, 316-22 (2001); James Gleick, *Patently Absurd*, N.Y. TIMES MAGAZINE, Mar. 12, 2000, at 44; Lawrence Lessig, *The Problem with Patents*, INDUSTRY STANDARD, Apr. 23, 1999, at <http://www.thestandard.com/article/0,1902,4296,00.html>; Gregory Aharonian, *Patenting the Internet, Electronic Commerce, Bioinformatics*, at <http://www.bustpatents.com/-index.html> (last visited Apr. 20, 2002); Carol Pickering, *Patently Absurd*, Business2.com, May 29, 2001 at 28.

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the patent application. Both problems result from the Patent Office's inability to accurately determine the scope of information that is already in the public domain or is the subject of other patents (i.e., the relevant prior art) when examining patent applications. This is particularly true in areas such as computer software where identifying the relevant prior art is often difficult.<sup>3</sup>

These problems are not necessarily the result of incompetence at the Patent Office. Several commentators have noted that the Patent Office is being asked to perform miracles because it operates under significant budgetary constraints.<sup>4</sup> In the patent community, it is well-known that the amount of time the Patent Office spends examining a patent application, from initial examination to issuance, is approximately the same as the amount of time an attorney may spend searching for relevant prior art in the first week of a patent litigation.<sup>5</sup> As a result, even doubling the amount of time spent by a typical patent examiner would be insignificant when compared to the time devoted to studying prior in litigation, unless the quality of information made available to the patent examiner is improved.

The problems created by a lack of resources are exacerbated by the localized nature of technical knowledge and the social costs of "bad" patents.<sup>6</sup> First, we must consider the nature of the technical and specialized knowledge with which the patent examiner must acquaint herself in every application in order to make a patentability determination. The localization of knowledge pertaining to science and technology is well recognized in a number of disciplines, including information science, knowledge management, and information economics. For example, in his book *Informa-*

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3. The problem of identifying material prior art is particularly difficult in the area of computer software. See, e.g., Julie E. Cohen, *Reverse Engineering and the Rise of Electronic Vigilantism: Intellectual Property Implications of 'Lock-Out' Technologies*, 68 S. CAL. L. REV. 1091, 1178 (1995) (noting that "in the field of computers and computer programs, much that qualifies as prior art lies outside the areas in which the PTO has traditionally looked—previously issued patents and previous scholarly publications."). For a general discussion of the problem, see ROBERT MERGES ET AL., *INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE* 1045-47 (2d ed. 2000).

4. Pickering, *supra* note 2, at 44; Arti K. Rai, *Addressing the Patent Gold Rush: The Role of Deference to PTO Patent Denials*, 2 WASH. U. J.L. & POL'Y 199, 218 (2000) (noting that one straightforward patent reform proposal involves increasing the number and quality of patent examiners).

5. Lemley, *supra* note 2, at 1500 (noting that, depending on the art unit, a patent examiner may spend a total of eight to thirty-two hours on a patent application during its two to three year prosecution period).

6. I use this term in the following sense—a patent is "bad" if it should not have been granted by the Patent Office after a reasonable search and review of the relevant prior art.

*tion Anxiety*, Richard Saul Wurman categorizes all types of information as a series of concentric circles radiating out from an individual, with internal and conversational information occupying the innermost circles and general cultural information occupying the peripheral ones. Scientific and technological information occupies one of the inner circles because such information is not widely shared; rather, it is available only to persons working in a specific field or sub-field.<sup>7</sup>

Similarly, researchers in information science and knowledge management have demonstrated that within any technical discipline, technologists form sub-groups referred to as “invisible colleges.” These are loose, but effective, communication networks within which technologists share information with one another.<sup>8</sup> Within each sub-group, the members work out a rich set of customs, habits, mechanisms, and traditions to define the protocol for information collection, including mechanisms for listening and screening out information.<sup>9</sup> Many of these sub-groups are non-intersecting, and hence, knowledge that is most relevant to their technological activities remains local.

A third example illustrating the wide recognition of the localized nature of technical knowledge is found in *The Use of Knowledge in Society*, where noted economist Friedrich Hayek recognized that scientific knowledge is very unlikely to be widely dispersed. Instead, it is most likely to be at the disposal of a few particular individuals, the so-called “experts” in that field of knowledge.<sup>10</sup> Further, Hayek persuasively contends that it is unlikely that any single administrative authority could possess all of the information about various facts that are dispersed among various individuals.<sup>11</sup>

From these insights, it is clear that information regarding the relevant prior art for any patent application is most likely to be known only to the patentee and his competitors.<sup>12</sup> Hence, the Patent Office is unlikely to be well informed about the relevant prior art, creating an asymmetry between

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7. RICHARD SAUL WURMAN, *INFORMATION ANXIETY: WHAT TO DO WHEN INFORMATION DOESN'T TELL YOU WHAT YOU NEED TO KNOW* 43-45 (1990).

8. *See generally*, DIANA CRANE, *INVISIBLE COLLEGES* (1972); DANIEL J. BOORSTIN, *THE DISCOVERERS* (1983).

9. Blaise Cronin, *Progress in Documentation: Invisible Colleges and Information Transfer*, 38 J. DOCUMENTATION 212, 225 (1982).

10. Friedrich Hayek, *The Use of Knowledge in Society*, 35 AMER. ECON. REV. 519-30 (1945).

11. Michael W. Spicer, *On Friedrich Hayek and Public Administration*, 25 ADMIN. & SOC'Y 46-59 (1993).

12. Scott Kieff presents similar thoughts at <http://www.ftc.gov/os/comments/intelpropertycomments/harvardlaw.pdf>, page 4.

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the patentee's information and the information possessed by the Patent Office. Consequently, in many cases, especially those areas with significant nonpatent prior art, it is simply not a matter of providing the Patent Office more resources to conduct a more thorough prior art search.<sup>13</sup> Indeed, the patent examiner may not be aware of where to discover the most relevant prior art once she has gone beyond traditional patent databases. Thus, it is not at all surprising that the Patent Office grants invalid or overly broad patents.

As a second preliminary matter, the social costs of improvidently granted patents are numerous.<sup>14</sup> They include the following: (a) opportunistic licensing royalties/fees (including cross-licensing) collected from licensors who may rationally settle for a license instead of resorting to protracted litigation; (b) the disincentive to downstream innovation, i.e., the social cost of abandoned research activities by the patentee's competitors who may fear infringement; (c) the cost of wasteful designing-around activities by competitors; (d) the cost of rent-seekers, such as venture capital financiers, who may choose to invest in start-up companies based on bad patents, thereby taking away resources from genuine entrepreneurs; (e) the social cost of supra-competitive pricing, in the absence of noninfringing product substitutes, based on bad patents; and (f) the filing and prosecution costs and the subsequent cost of having the courts fix the Patent Office's oversights.

Without significant empirical research,<sup>15</sup> it is difficult to meaningfully quantify the magnitude of the total social costs of bad patents. Even the more simple task of estimating unnecessary licensing fees is difficult because the value of a license is dependent on factors such as flat payments, reasonable royalties for direct use and subsequent derivative use of the patented technology, and grant-back clauses.<sup>16</sup> Nevertheless, momentarily setting aside the diminution in public confidence in an administrative sys-

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13. Mark Lemley comes to the same conclusion but under a different rationale. *See* Lemley, *supra* note 2, at 1508-11.

14. *See, e.g.,* Merges, *supra* note 3, at 595 (listing the costs of bad patents).

15. There is a significant and burgeoning body of empirical work in the patent area. *See, e.g.,* John R. Allison & Mark A. Lemley, *Who's Patenting What? An Empirical Exploration of Patent Prosecution*, 53 VAND. L. REV. 2099 (2000); Jean O. Lanjouw & Mark Schankerman, *Characteristics of Patent Litigation: A Window on Competition*, 32 RAND J. ECON. 129 (2001); Josh Lerner, *Patenting in the Shadow of Competition*, 38 J.L. & ECON. 463 (1995); Kimberly A. Moore, *Judges, Juries, and Patent Cases—An Empirical Peek Inside the Black Box*, 99 MICH. L. REV. 365 (2000).

16. Mark Lemley attempts to tackle this issue and estimates the maximum social cost of licensing holdups to be \$443 million, a figure less than the annual patent prosecution costs. *See* Lemley, *supra* note 2, at 1515-19.

tem that issues bad patents, improvidently granting extravagant patent rights presents a real concern in a capitalist economy grounded on efficient uses of resources and strong property rights.

The theoretical approach to eliminating the social costs of bad patents is to set the marginal investment in information gathering by the Patent Office to be equal to the marginal reduction in social cost from granting better patents. Many of the proposals presented in this paper attempt to move in that direction.

Recognizing that the social costs of bad patents are significant and that relevant knowledge about the prior art is localized in the patentee and her competitors, we can frame the problems regarding the Patent Office's performance as follows:

(a) How can we increase the quantity and quality of information obtained by the Patent Office from the patentee and her competitors?

(b) How can we create disincentives for patentees to engage in opportunistic behavior by capitalizing on the information asymmetry between patentees and the Patent Office?<sup>17</sup>

In this paper, I attempt to briefly answer these two questions. I outline the substance of five strategies that, when implemented in concert, are likely to result in a better-informed Patent Office and a better patent system. I do not present a detailed analysis or defense of any of these strategies, because that is a significant endeavor that I have undertaken elsewhere.<sup>18</sup> Instead, I present these strategies as thoughtful proposals that are worthy of careful consideration.

The first and second strategies propose changes to our current prior art information disclosure rules. The first strategy proposes that we give patentees the option of presenting an expanded information disclosure statement ("IDS") to the Patent Office, disclosing all relevant prior art, includ-

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17. For instance, the patentee may seek to enforce an invalid patent and then settle for license fee terms favorable to both the patentee and the licensee, thereby permitting both parties to extract supracompetitive profits from the consuming public. See John R. Thomas, *Collusion and Collective Action in the Patent System*, 2001 U. ILL. L. REV. 305, 335 (2001).

18. See Jay P. Kesan, *Getting It Right at the Outset: Granting Patent Rights Commensurate with Innovation* (Working Paper, 2002) (on file with author); Jay P. Kesan & Marc Banik, *Patents As Incomplete Contracts: Aligning Incentives for R&D Investment with Incentives to Disclose Prior Art*, 2 WASH. U. J.L. & POL'Y 23 (2000).

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ing an analysis of how the claims, as filed, relate to this disclosed prior art. If the patentee chooses to exercise this option, the issued patent will be granted a specific presumption of validity with respect to the disclosed prior art. In the alternative, if the patentee does not choose the expanded IDS option outlined above (and either files the current IDS form—PTO Form 1449—or files nothing), the second strategy proposes that we eliminate the presumption of validity for any patent that issues under the current disclosure rules. Ideally, the two strategies are adopted together; as an alternative, the second strategy may be adopted alone. But, as discussed below, it does not make sense to adopt only the first strategy while maintaining the current disclosure system.

The third strategy proposes that we institute a pre-grant, third party patent opposition system based on a publication date that is set at 90 days from the issuance of the first Office Action.

The fourth strategy suggests that we mandate the use of representational languages in the specification of software patents in order to satisfy disclosure requirements and explicate the metes and bounds of the claimed patent right for software.

The fifth strategy proposes that we create a one-way, pro-defendant fee shifting system for situations where patents are invalidated or revoked in a litigation or opposition proceeding based on certain categories of prior art that are reasonably likely to be discovered by a diligent patentee.

The first four strategies attempt to increase the quality and quantity of information that is made available to the Patent Office. The fifth strategy increases the patentee's cost of engaging in opportunistic behavior by attempting to enforce a bad patent, and reduces the alleged infringer's costs of invalidating a bad patent.

The remainder of this Article discusses these proposals in greater depth.

## II. SPECIFIC PROPOSALS

### A. The First Strategy

The first strategy is to change our current prior art information disclosure rules by creating an option for patentees to present an expanded information disclosure statement (“IDS”) to the Patent Office, disclosing all relevant prior art, including an analysis of how the claims are patentable over this disclosed prior art. If the patentee chooses to exercise this option, the issued patent will be granted a specific presumption of validity with respect to the disclosed prior art.

### 1. *The Current Prior Art Disclosure System*

At the outset, we must examine the current disclosure requirements governing relevant prior art. The patentee has a duty of candor to disclose prior art that is material to patentability. However, the patentee has no duty to conduct an affirmative prior art search prior to filing a patent application. In other words, the patentee need only disclose any material prior art that is in her possession. This prior art is listed sequentially in an IDS<sup>19</sup> that is submitted to the Patent Office, and the patent that issues is virtually bullet-proof with respect to invalidation based on the listed prior art in post-issuance patent litigation.<sup>20</sup> Note that in the current system the list of prior art references is simply submitted to the Patent Office without stating the relative importance of the prior art references or how the claims, as filed, are patentable over that prior art. This disclosure is of limited assistance to the Patent Office because the patent examiner has the difficult task of discerning what *knowledge* is buried in these references in order to appreciate the import of the disclosed prior art.<sup>21</sup>

Currently, the doctrine of inequitable conduct<sup>22</sup> and the duty of candor<sup>23</sup> encourage patentees to produce material prior art to the Patent Office. Inequitable conduct arises when information material to patentability is not disclosed to the Patent Office, or when false material information is disclosed to the Patent Office with an intent to deceive the Patent Office.<sup>24</sup> Nevertheless, the level of proof required to establish a claim of inequitable conduct has been set so high by the Federal Circuit that it has reduced the incentive to disclose prior art to the Patent Office. The Federal Circuit has held that even gross negligence in failing to disclose prior art is not in it-

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19. PTO Form 1449.

20. See John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q. J. 185, 229-31 (1998) (studying 202 patents over a eight-year period from 1989 to 1996 and finding that the probability of invalidation based on prior art cited in the course of prosecution was very low).

21. I specifically use the term *knowledge*, as opposed to *information*, to refer to the process of internalizing the information found in the disclosed references, thereby turning the disclosed information into relevant knowledge and permitting assessment of novelty or nonobviousness of the patent application.

22. See *Kingsdown Medical Consultants, Ltd. v. Hollister, Inc.*, 863 F.2d 867 (Fed. Cir. 1988); *Molins PLC v. Textron, Inc.*, 48 F.3d 1172 (Fed. Cir. 1995).

23. 37 C.F.R. § 1.56 (1992) (“Each 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.”).

24. See *Kingsdown*, 863 F.2d at 872.

self sufficient to prove an intent to deceive the Patent Office.<sup>25</sup> Since 1988, the Patent Office has indicated that it will not investigate and reject patent applications based on violations of the duty to disclose material prior art as it is ill-equipped to make such a determination.<sup>26</sup> The Federal Circuit has frowned on assertions of inequitable conduct as a defense in patent lawsuits and charged that the habit of claiming inequitable conduct has become “an absolute plague.”<sup>27</sup> The net result is that there is little incentive to undertake a complete disclosure of the prior art to the Patent Office. Indeed, Allison and Lemley report that from 1989 to 1996, nonpatent prior art was not disclosed to the Patent Office in the vast majority of cases that they studied.<sup>28</sup> Private information regarding the relevant prior art is often not adequately disclosed to the Patent Office because there is no significant incentive for the patentee to do so. As a result, the Patent Office is not equipped to determine the scope of the patentee’s nonobvious contribution, particularly in certain technical areas with significant nonpatent prior art.<sup>29</sup>

## 2. *The Patent System as a Two-Stage Bargain*

In order to understand how to improve the current information disclosure system, we must first analyze the current patent system in contractarian terms, relying on insights from the theory of economically incomplete contracts.<sup>30</sup> A general example of a two-stage bargain illustrates the key insights; let us consider a two-stage bargain involving the order and delivery of car doors by a supplier who contracts with an auto manufacturer.

If the auto manufacturer is unsure about the quality of the car doors provided by the supplier, he will reserve, in the first stage, the residual rights to reject the car doors when they are delivered to him in the second delivery stage. If the auto manufacturer preserves these residual rejection rights, he reduces his risk in the event that the car doors are sub-standard upon delivery. In turn, the car door supplier, cognizant of the possibility that the auto manufacturer may reject his car doors, will supply him with generic car doors that can be sold to other auto manufacturers if rejected

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25. *Id.* at 873.

26. MARTIN J. ADELMAN ET AL., CASES AND MATERIALS ON PATENT LAW 746 (1998).

27. *Burlington Indus. v. Dayco Corp.*, 849 F.2d 1418, 1422 (Fed. Cir. 1988) (stating that “the habit of charging inequitable conduct in almost every major patent case has become an absolute plague”).

28. *See Allison & Lemley, supra* note 20, at 231-34.

29. *See Merges, supra* note 2, at 589.

30. *Kesan & Banik, supra* note 18, at 41-48.

by the car manufacturer with whom he initially contracted. Therefore, reserving the residual rights to reject the car doors, while somewhat advantageous, will result in the auto manufacturer receiving generic-quality car doors. Stated differently, the division of rights of the contracting parties in the second stage will affect the actions taken by those parties in the first stage and vice versa.

In order to improve the positions of both the auto manufacturer and the car door supplier, the auto manufacturer must clearly state in the contract the standards and specifications for the car doors that he seeks, and, at the same time, relinquish the residual right to reject the car doors if they are delivered in compliance with his specifications. Such a contract allows the car supplier to invest in providing superior car doors, having been contractually assured that they will not be rejected if they comply with the contract. The auto manufacturer is also better off because he now receives a superior product for his car, achieving this result by relinquishing some of his residual rights to reject the delivered car doors. This illustration demonstrates how the contract terms in a two-stage bargain can be modified to improve the positions of both contracting parties. In other words, both parties can engage in a Pareto-improving trade by re-engineering the contract terms in the first and second stages of the contract.<sup>31</sup>

The patent system can be characterized as a two-stage contractual bargain. In the first stage of this bargain, the prosecution stage, the patentee presents the Patent Office (and hence the public, following the common, but perhaps uncomfortable, assumption that the Patent Office is an agent of the public) an enabling disclosure of her invention and a disclosure of the material prior art. In return, provided the requirements for patentability are met, the patentee receives a contingent set of exclusive rights that are granted by the public. This grant is not unconditional. Rather, the public reserves certain residual rights to invalidate or revoke the issued patent in the second stage, the litigation stage, if the patent is found to be invalid in post-issuance patent litigation. Thus, the public has a valuable *option* that it can exercise in the second stage of the patent bargain.

This option should not be relinquished lightly. In our current patent system, we trade away this option by granting a general statutory presumption of validity to any issued patent,<sup>32</sup> requiring challengers to produce clear and convincing evidence of invalidity to overcome this pre-

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31. A situation is said to be Pareto efficient or Pareto optimal if there is no change from that situation that can make someone better off without making someone else worse off. A. MITCHELL POLINSKY, AN INTRODUCTION TO LAW AND ECONOMICS 7 (2d ed. 1989).

32. 35 U.S.C. § 282 (1994).

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sumption.<sup>33</sup> In return for granting this presumption of validity, the Patent Office receives a list of the relevant prior art. In practice, however, this usually does not enhance the patent examiner's ability to meaningfully examine the disclosure and claims of the patent application at hand. Thus, the current system is a Faustian bargain—the public trades away future residual invalidation rights without receiving in return sufficient current knowledge in return from the better-informed party, the patentee. The public should trade away its residual right to invalidate a patent by granting a presumption of validity only in circumstances where it is economically advantageous to do so.

### 3. *A New Prior Art Disclosure Regime*

Under this proposal, the public relinquishes its residual invalidation rights by granting a *specific* presumption of validity only when the Patent Office receives an expanded disclosure of the prior art, including a discussion of how the claims, as filed, are patentable over the prior art. This specific presumption of validity is different from the current statutory presumption of validity,<sup>34</sup> and attaches only to disclosed prior art. Under this specific presumption of validity, a court will not invalidate a patent based on disclosed prior art unless it is convinced that no reasonable examiner would have allowed the patent in light of the disclosed prior art.

Simultaneously, the patentee's position is improved because the patentee is granted a patent that is less likely to be vulnerable in post-issuance litigation, thereby increasing the patent's value to potential investors. Indeed, the patentee has every *ex ante* incentive to maximize prior art disclosure and analysis, knowing that the issued patent will be more immune from attack based on his disclosure of prior art. By creating such an option for patentees, this scheme reduces the information asymmetry between the patentee and the Patent Office, and simultaneously creates an opportunity for the patentee to acquire a property right that is more certain. In short, this is a Pareto-improving trade for both the Patent Office and the patentee.

Furthermore, once such a scheme is in place, patentees who opt into it, and receive patents that are less vulnerable to post-issuance attack, will build patent portfolios that are more attractive to investors. In other words, the market can then value these patent rights appropriately and recognize the significance of the option to obtain a superior patent right, devaluing in

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33. *EZ Dock, Inc. v. Schafer Sys., Inc.*, 276 F.3d 1347, 1351 (2002).

34. 35 U.S.C. § 282 (1994).

turn the patent rights of those who do not wish to choose this disclosure option.

The enhanced prior art disclosure requirements under this scheme will need to be specified and implemented with care in order to maximize the relevant prior art knowledge the patentee reveals to the Patent Office. Once these standards are specified, they may form the basis for additional claims in post-issuance litigation challenging whether these disclosure requirements were actually met in prosecution. However, this is a small price to pay in order to reduce the informational asymmetry between the patentee and the Patent Office. Moreover, administrative agencies, such as the SEC, FDA, and the EPA, routinely require carefully specified information disclosures from regulated firms.<sup>35</sup> Disclosure schemes are how the administrative state's tool for receiving important information from the better-informed individuals who appear before it.

Finally, this first strategy can be implemented as a scheme that patentees can choose to opt into, and the second strategy can be adopted as the default for those patentees who wish to continue with our current disclosure practices. If the first strategy is implemented, but the Patent Office does not appear to benefit from the enhanced disclosures about the relevant prior art and continues to grant overbroad patent rights, then we should consider the second strategy as an exclusive alternative.

## **B. The Second Strategy**

The second strategy is an alternative to the first strategy. If the patentee does not choose the enhanced prior art disclosure option outlined above, any statutory presumption of validity for a patent that issues under the current disclosure rules is eliminated.

If the patentee does not elect to provide an enhanced prior art disclosure, as presented above, the public should retain all residual rights to invalidate the patent in post-issuance litigation, and should not grant any presumption of validity.<sup>36</sup> As has been discussed above, it is economically worse for the public to trade away their post-issuance invalidation rights when they are the less informed party and the disclosure rules do not sufficiently alleviate that information disparity.

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35. See, e.g., Cynthia A. Williams, *The Securities and Exchange Commission and Corporate Social Transparency*, 112 HARV. L. REV. 1197, 1210 (1999) (noting that securities laws mandate disclosure to advance a number of purposes such as preventing fraud and promoting market efficiency).

36. See John H. Barton, *Reforming the Patent System*, 287 SCIENCE 1933, 1933 (2000) (advocating weakening the presumption of validity); Lemley, *supra* note 2, at 1528-29.

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Consequently, if the first strategy is not an attractive choice, given the continued concerns that the Patent Office may not be able to appreciate the import of the disclosed prior art even in a world with expanded information disclosure requirements, it makes economic sense to embrace the second strategy exclusively. The general presumption of validity accorded to all issued patents has been interpreted by the Federal Circuit as requiring clear and convincing evidence to invalidate a patent in post-issuance litigation.<sup>37</sup> Implementing the second strategy is equivalent to lowering this burden of proof. Moreover, it is evident from the foregoing that only adopting the first strategy, and rejecting the second strategy—i.e., continuing to preserve the current disclosure system and the general presumption of validity while embracing the first strategy—does not make sense.

Most importantly, either the first or second strategy would present an improvement in economic terms over the present patent regime. Currently, the public relinquishes its broad invalidation rights by granting a presumption of validity that attaches to a list of prior art references with little or no improvement in the Patent Office's ability to examine the patent application under consideration. While eliminating the presumption of validity in these circumstances disadvantages the patentee, as the better-informed party, the patentee can undertake efforts to reduce the likelihood of post-issuance invalidation by performing a careful prior art study.

### C. The Third Strategy

The third strategy is to institute a pre-grant, third party, patent opposition system based on a patent publication date that is set at ninety days from the issuance of the first Office Action.

A number of commentators have argued that we should adopt a third-party opposition system, akin to post-grant patent opposition systems in Europe and Japan, in order to bring parties with more knowledge than the Patent Office into the patent examination process, thereby empowering the Patent Office to more accurately discriminate among patent applications.<sup>38</sup> In this section, relying on insights from post-decisional cognitive disso-

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37. See *EZ Dock*, 276 F.3d at 1351.

38. See, e.g., Rochelle Cooper Dreyfuss, *Dethroning Lear: Licensee Estoppel and the Incentive to Innovate*, 72 VA. L. REV. 677, 754 n.277 (1986); Mark D. Janis, *Rethinking Reexamination: Toward a Viable Administrative Revocation System for U.S. Patent Law*, 11 HARV. J.L. & TECH. 1, 118 (1997); Merges, *supra* note 2, at 611-12; Craig Allen Nard, *Certainty, Fence Building, and the Useful Arts*, 74 IND. L.J. 759, 767 (1999); J.H. Reichman, *From Free Riders to Fair Followers: Global Competition under the TRIPS Agreement*, 29 N.Y.U. J. INT'L L. & POL. 11, 31 (1997); Dietmar Harhoff, F.M. Scherer and K. Vopel, *Citations, Family Size, Opposition and the Value of Patent Rights—Evidence from Germany* (1999) (unpublished manuscript, on file with author).

nance theory and on empirical evidence from Germany and Japan, I suggest that any third-party opposition system instituted in the U.S. must be a *pre-grant* opposition system. In the next sub-section, I briefly review pre-grant and post-grant patent opposition systems and also discuss a recently introduced House Bill that would add an opposition proceeding to the United States patent laws.

### 1. *Review of Patent Opposition Proceedings*

As discussed earlier, patent systems where significant numbers of patents are of questionable validity undermine public and investor reliance upon the issued patent as an enforceable property right.<sup>39</sup> Information, especially relevant technical information, tends to remain local, which creates the problem that the patent examiner often will not have sufficient knowledge of the prior art, especially unpublished prior art, and is therefore unable to sufficiently scrutinize a patent application.<sup>40</sup> As a result, a patent of questionable validity may issue and potentially expensive litigation might follow.

This problem may be ameliorated by adopting an opposition proceeding into the patent examination process. An opposition system would permit third parties to challenge the validity of a patent in an administrative proceeding with the Patent Office. Opposition proceedings may be pre-grant or post-grant. A pre-grant opposition system allows challenges to the patent to be made after publication of the patent application but before the patent is granted. A post-grant opposition system allows challenges to the patent to be made after the grant of the patent.

A pre-grant opposition system has the advantage of greater certainty in the validity of granted patents because any challenges to a patent would come before the patent is granted. Additionally, it is less likely that the Patent Office would become entrenched in its position regarding the validity of a patent as a result of fidelity to its examination process. It may be difficult for the Patent Office, which sets out procedures and enforces standards for issuing patents, to turn around and revoke patent claims in a post-grant opposition proceeding immediately after allowing them. Furthermore, if a significant number of oppositions are successful, then the patent examination process could be called into question, a prospect that the Patent Office would not desire. These factors suggest that a more extensive examination process which includes a possibility of pre-grant, *in-*

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39. See Allan M. Soobert, *Breaking New Ground in Administrative Revocation of U.S. Patents: A Proposition for Opposition—and Beyond*, 14 SANTA CLARA COMPUTER & HIGH TECH. L.J. 63, 155 (1998).

40. See *id.*

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*ter partes* opposition may be more beneficial than a post-grant opposition system.

The pre-grant opposition system requires early disclosure of the patent application. Critics claim that by doing so, the Patent Office would be succumbing to the influence of large corporations, who could begin to use and/or design around a patent at a much earlier point in time.<sup>41</sup> The underlying concern is that, as a result of early disclosure, what was previously a trade secret in the application is now laid bare to the public. If the patent does not issue, the inventor has no means to protect her invention. Proponents of early disclosure systems point to the fact that early disclosure maximizes the economic value of the patent system by promoting disclosure which is likely to lead to further advances in the technology. Proponents also point to the fact that the U.S. patent system remains the only system of significance that does not require early disclosure for all patent applications.

Critics of the pre-grant system also cite the perceived weaknesses of the former South Korean and Japanese pre-grant opposition systems.<sup>42</sup> These particular pre-grant systems were criticized as being subject to abuse by large corporations that hampered patent applications through protracted oppositions, thereby holding off small inventors with competing or blocking inventions. As a result of such concerns and international pressure,<sup>43</sup> Japan and South Korea both replaced their pre-grant systems with post-grant opposition systems.

It is argued that a post-grant opposition system would avoid some of the problems of the pre-grant system while increasing the reliability of patent rights. As a result of the nature of post-grant opposition, early disclosure is not required, thereby avoiding a significant change to the U.S. patent system.

One concern in a post-grant opposition system arises from the fact that the Patent Office that initially issued the patent is expected to adjudicate the validity of that patent in the subsequent opposition proceeding based on primarily the same considerations. The concern is that the examiner is not likely to concede that the outcome of her examination was incorrect

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41. See Hayden Gregory, *Early Patent Publication: A Boon or Bane? A Discussion on the Legal and Economic Effects of Publishing Patent Applications After Eighteen Months of Filing*, 16 *CARDOZO ARTS & ENT. L.J.* 601, 606 (1998).

42. Jochen Pagenberg, *The WIPO Patent Harmonization Treaty*, 19 *AIPLA Q.J.* 1, 13 (1991).

43. U.S. businesses that felt that there was collusion between Japanese corporations attempting to exclude and delay U.S. patent applications through the pre-grant opposition process.

and that the patent should not have been granted. However, considering that the goal of the opposition is to promote the reliability of the issued patent right, the reluctance of the Patent Office to invalidate many issued patents would appear to further that goal. Additionally, looking to the Japanese Patent Office (“JPO”) Opposition Procedures, European Patent Office (“EPO”) Opposition Procedures and the newly introduced House Bill, H.R. 1333, The Patent Improvement Act of 2001, this problem is assuaged by the fact that the opposition panels are to be composed wholly or in the majority by independent members who had no involvement in the initial examination of that patent.

One important distinction between the U.S. Patent Office and the JPO, relating to post-grant oppositions, is the traditional roles of the respective patent offices. The Patent Office has the authority to grant patents, but, after a patent is granted, the Patent Office does not adjudicate the validity of subsequent claims; Section 1338 of the Federal Rules of Civil Procedure gives exclusive jurisdiction of patent cases to the federal district courts.<sup>44</sup> In contrast, the JPO has exclusive jurisdiction over questions of patent validity.<sup>45</sup> As a result, the practice of invalidating a previously granted patent is part of the JPO’s historical function, whereas granting such a function to the Patent Office would involve a substantial change in its role.

On April 3, 2001, Congressman Berman introduced House Bill 1333, the Patent Improvements Act, which proposes to amend Title 35 of the United States Code by inserting a new chapter after chapter 31.<sup>46</sup> The Patent Improvements Act would add an opposition proceeding to the U.S. patent laws.<sup>47</sup> The Patent Improvements Act requires the Director to establish an Administrative Opposition Panel (“AOP”), comprised of not less than 18 administrative opposition judges (“AOJ”).<sup>48</sup> Additionally, patent examiners may be assigned to assist the AOP, except that a patent examiner may not assist in the review of a patent application that he himself had examined.<sup>49</sup>

Any person would be able to file a request for an opposition to a patent on the basis of 35 U.S.C. §§ 101, 102, 103, or 112.<sup>50</sup> Section 321(b)(1)(A), in conjunction with the amendments to Section 41(a) of Title 35, regarding

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44. 28 U.S.C. § 1338 (1994).

45. *See* Soobert, *supra* note 39, at 155.

46. Patent Improvement Act of 2001, H.R. 1333, 107th Cong. § 321(a)(1) (2001).

47. *Id.*

48. *Id.*

49. *Id.*

50. *Id.* § 321(b)(1)(A).

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the fee of \$200 for filing an opposition “based on prior art citations or obviousness” and the fee of \$5000 for filing an opposition on “any other basis” indicates that the Patent Improvements Act acknowledges the fact that competitors and insiders in the industry are more knowledgeable about the prior art and the obviousness of a patent than the Patent Office. In order for the request to be valid, the request must be made in writing, within nine months of the issuance of the patent, and must be accompanied by the payment of the fee specified in 35 U.S.C. § 41(a).<sup>51</sup>

The Patent Improvements Act would create an expedited administrative procedure for certain challenges to a patent’s validity rather than relying on patent litigation in the federal district courts. Section 321(b)(1)(A) requires the Director of the Patent Office to send a copy of the request to the owner of the patent within two months after the request has been made. Next, the patent owner is granted a reasonable period of at least sixty days from the mailing of the request by the Director to “file a statement in reply to the grounds for the request, including any amendment to the patent and new claim or claims, for consideration in the opposition proceeding,” and “the patent owner shall promptly serve a copy of the statement on the third-party requester.”<sup>52</sup> Within two months of such service, the third-party requester may file a reply to the statement filed by the patent owner.<sup>53</sup> The AOJ in the opposition proceeding shall determine patentability of the subject matter of the patent within eighteen months, a copy of which shall be placed in the official file of the patent and promptly mailed to the owner of the patent and the requester.<sup>54</sup> Although, this is still a shorter period than in typical litigation, it is a significant period of time.

### 2. *Rethinking Pre-Grant Opposition Systems*

The Patent Improvement Act’s proposition of a post-grant opposition system, although a step in the right direction, does not go far enough. Although the conventional wisdom in the patent world favors post-grant opposition systems, I urge the adoption of a pre-grant, third party opposition system with a prompt publication date. I suggest that patent applications be published ninety days after the issuance of the first Office Action. This publication date is carefully chosen to address the concerns associated with an inordinately early publication date, such as prompt publication at the time of filing. In addition, this publication date will permit a patentee to assess her chances of getting an issued patent or preserving the option

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51. *Id.*

52. *Id.* § 321(b)(1)(B).

53. *Id.*

54. *Id.* § 321(b)(4).

of keeping her invention a trade secret based on the results of the first Office Action.<sup>55</sup>

There are several good reasons why any opposition system should be a pre-grant system. Insights from theories of self-perception biases, particularly cognitive dissonance, are compelling in this regard. Post-decisional cognitive dissonance suggests that after the Patent Office has already decided to grant a patent it will be inclined to require a greater quantum of evidence to revoke a patent than is objectively necessary based on the new evidence. As Leon Festinger stated, people experience cognitive dissonance when they simultaneously hold two thoughts that are psychologically inconsistent, i.e., thoughts that feel contradictory or incompatible in some way.<sup>56</sup> In these circumstances, people try to reduce cognitive dissonance by systematically discounting the evidence that arouses such feelings. Post-decisional cognitive dissonance follows from the making of a decision. For example, voters are more likely to believe that the candidate they chose was the best candidate with the best chance of winning after voting than before.<sup>57</sup>

Applying these insights to patent opposition systems, it is likely that the Patent Office will be more confident that it reached the correct result in granting a patent after deciding to grant a patent, rather than before that decision. This effectively increases the evidentiary burden on third parties and creates a disincentive for them to oppose granted patents. Hence, we should create a system that allows third parties to offer evidence prior to the Patent Office's decision regarding allowance.

The problem of cognitive dissonance may be mitigated by having a different decisionmaker—an independent review board within the Patent Office, for example—for the opposition proceeding, as opposed to the initial patent examination. However, because the second decisionmaker is also drawn from the Patent Office, she is also likely to have an incentive to remain consistent with prior decisions, and to the extent that new prior art may arouse dissonance, she is prone to discount its importance. In other words, she is also likely to demand a greater amount of evidence for revocation of issued patent claims in a post-grant opposition proceeding.

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55. Note that patent applications are examined in secret prior to the eighteen month publication of the patent application. The entire file wrapper for a patent application is made public once the patent is issued.

56. LEON FESTINGER, A THEORY OF COGNITIVE DISSONANCE 2-3 (1957); SCOTT PLOUS, THE PSYCHOLOGY OF JUDGMENT AND DECISION MAKING 22-30 (1993).

57. PLOUS, *supra* note 56, at 28-29.

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Empirical evidence from Germany and Japan<sup>58</sup> also supports the contention that pre-grant oppositions are more effective, and indeed, post-grant oppositions are decreasing as a favored option among patent opponents. Data from Germany and Japan for both their pre-grant and post-grant opposition systems suggests that opponents perceive pre-grant oppositions to be more effective in comparison to post-grant systems. In 1981, Germany changed from a pre-grant system to a post-grant opposition system.<sup>59</sup> In the years 1974 to 1979, there were between 4,600 and 5,250 pre-grant oppositions filed each year. In the same period, nullity proceedings (i.e., court initiated invalidation trials) ranged from 90 to 140 each year.<sup>60</sup> Since Germany changed to a post-grant opposition system, the number of oppositions has steadily declined from a high of 3,800 post-grant oppositions in 1983 to about 1,650 post-grant oppositions in 1993. In the same time frame, the number of nullity proceedings increased from 93 in 1983 to 127 in 1993.<sup>61</sup> It is important to note that these changes took place in the context of an overall rise in the total number of patents granted each year. The data shows that patents are more likely to be challenged in a pre-grant opposition system compared to a post-grant system.<sup>62</sup> Once a patent is granted, opponents prefer to challenge a patent through nullity proceedings, i.e., invalidation trials, rather than post-grant oppositions. While there are several plausible reasons for this change, the perception that opponents are more likely to mount a successful challenge to a patent in a pre-grant system seems to have played a role in the decreasing number of challenges in the post-grant system.

It is possible that some of the reduction in the number of post-grant oppositions in Germany may be due to the possibility of filing an opposition at the European Patent Office (EPO) after 1980. However, after an initial surge in EPO oppositions from 1980 to 1987, the percentage of post-grant EPO oppositions has been steadily decreasing from 1987 to

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58. In this paper, I present the empirical data on pre-grant and post-grant oppositions from Japan and Germany very briefly. For a more complete discussion, see Kesan, *supra* note 18.

59. Correspondence from Mr. Ulrich Joos, German Patent Office (1994) (on file with author).

60. *Id.*

61. *Id.*

62. Some of the reduction in post-grant oppositions as compared to pre-grant oppositions may be due to the fact that the claims, as filed, were rather broad and were then narrowed in scope during prosecution, thus making it unnecessary to challenge them in the post-grant opposition phase.

1998;<sup>63</sup> during the same period, the number of post-grant oppositions in Germany has also sharply declined. Interestingly, the percentage of patent re-examinations in the U.S. has also been decreasing sharply from 1991 to 1998, after remaining relatively stable for many years in the 1980s.<sup>64</sup>

The data from Japan is similar to the German opposition data and supports the same conclusions. Japan changed from a pre-grant opposition system to a post-grant system in 1994.<sup>65</sup> Between 1991 and 1995, there were between 5,560 and 8,550 pre-grant oppositions filed each year.<sup>66</sup> During the same period, there were between 91 and 159 trials for invalidation each year.<sup>67</sup> Once Japan switched to an ex parte, post-grant opposition system, the number of oppositions dropped from 5,322 in 1997 to 4,558 in 2000.<sup>68</sup> At the same time, the number of trials for invalidation has increased from 184 in 1997 to 296 in 2000.<sup>69</sup> Note that the total number of Japanese patents granted each year kept increasing throughout this period. As with Germany, we see that patents are less likely to be challenged in post-grant opposition systems with parties instead choosing to opt for invalidation trials as a means to invalidate patents.

Opponents of pre-grant oppositions are correct in asserting that pre-grant oppositions provide additional opportunities for delay and harassment. For example, large companies with ample resources may choose to stall the issuance of patents by small inventors. However, these concerns can be addressed by procedural devices used to address similar concerns in any litigation or adjudication. The following measures are examples of devices that may limit the possibility of delay and harassment in a pre-grant opposition system: limiting the number of oppositions that may be filed by any third party, forbidding repeated oppositions based merely on cumulative evidence, creating pre-grant oppositions only for anticipatory evidence, etc. Thus, the dangers of delay and harassment should not be the reason for embracing a post-grant opposition regime.

In a pre-grant setting, it is possible that the incentive to challenge a patent may be diminished because the Patent Office may decide to pre-

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63. Stuart H. Graham et al., *Post-Issue Patent "Quality Control": A Comparative Study of U.S. Patent Re-examinations and European Patent Oppositions* (Working Paper, 2002) (on file with the author).

64. *Id.*

65. Correspondence from Mr. Yuji Nakano, Japanese Patent Office (2002) (on file with the author).

66. *Id.*

67. *Id.*

68. *Id.*

69. *Id.*

clude patenting, and as a result, potential challengers may decide not to expend resources until the Patent Office has made a final decision. On the other hand, in a post-grant setting, the Patent Office has already determined that a patent will issue. Faced with the possibility that a patent will issue which may pose a competitive threat, a post-grant challenger may be more inclined to come forward with invalidating prior art. In order to ensure that the incentives to challenge patents in a pre-grant setting are adequately maintained, a list of all the prior art cited by the Patent Office in the first Office Action should be published with the patent application. Consequently, challengers will be able to assess the quality of the prior art they possess compared to the Patent Office's cited prior art, and thereby, make an informed decision about mounting a pre-grant challenge.

#### **D. The Fourth Strategy**

The fourth strategy would mandate the use of representational languages in the specification of computer software patents.

##### *1. Disclosure Requirements for Software Inventions*

Patent law sets out general patentability standards that are divorced from any specific area of technology.<sup>70</sup> The process of applying these general patentability standards to an area of technology poses problems that are specific to that technology, including the historical treatment of inventions in that technology and the consistency with which the general standards are policed in that arena.<sup>71</sup>

Computer software is a prominent example. The problems generated by the fact that, until recently, computer software was not patentable subject matter continue to cast a long shadow on the current examination of software patents. Even a decade ago, patent attorneys disguised software innovations as mechanical inventions to work around subject-matter eligibility requirements.<sup>72</sup> As a result, prior art patented software is found in many different art units. Furthermore, patentees used different terminologies (based on their individual organizations) to refer to the same under-

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70. The requirements for patentability set forth in 35 U.S.C. §§ 101-103, 112 are independent of the area of technology that a patent pertains to. 35 U.S.C. §§ 101-103, 112 (1994).

71. See, e.g., Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology-Specific?*, (presented at the Telecommunications Policy Research Conference, Oct. 27-29 2001), available at <http://www.arxiv.org/ftp/cs/papers/0109/0109107.pdf>.

72. For a discussion of drafting claims to satisfy patentable subject matter requirements, see John R. Thomas, *Of Text, Technique and the Intangible: Drafting Patent Claims Around Patent Rules*, 17 J. MARSHALL J. OF COMPUTER & INFO. L. 219, 257-61 (1998).

lying technique. This makes the problem of locating relevant prior art even more difficult. Finally, the English language is a blunt instrument to describe computer software.

Since computer software has been considered patentable subject matter, the need to write around eligible subject matter rules by disguising software inventions as mechanical inventions no longer exists.<sup>73</sup> Therefore, we must avoid the consequences of creating what I refer to as “false translation problems” by allowing patentees to describe their software inventions in the same manner as they would describe it to a fellow software programmer. After all, both the patent examiner and the inventor are most likely educated and skilled in the field of computer software. Thus, there is no reason to disguise computer software inventions.

Moreover, the disclosure requirements, particularly enablement and written description, have been virtually written out of the basic *quid pro quo* between the patentee and the public in the case of software inventions.<sup>74</sup> The Federal Circuit has chosen not to impose specific criteria for software inventions through which the enablement and written description requirements may be satisfied. Indeed, the Federal Circuit has held that high-level, functional descriptions are sufficient to satisfy the enablement and best mode requirements.<sup>75</sup> Thus, for software inventions, general hand-waving amounts to an enabling disclosure. The Federal Circuit has treated the implementation of these functional descriptions in software as a “mere clerical function” for a skilled programmer.<sup>76</sup> Thus, in software patents, there is no requirement that the specific innovation in the software be described to an ordinarily skilled programmer in a manner that explains how the innovation was actually implemented.

## 2. *Employing Representational Languages in Software Patent Specifications*

Although software patents can now be sought openly, they are nevertheless inadequately described in patent disclosures. Therefore, the Patent Office should mandate the use of representational languages in the speci-

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73. *Id.*; Mark Janis & Jay P. Kesan, *Weed-Free I.P.: The Supreme Court, Intellectual Property Interfaces and the Problem of Plants*, \_\_ U. CIN. L. REV. \_\_ (forthcoming 2002).

74. Burk & Lemley, *supra* note 71, at 7-10; Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 CAL. L. REV. 1 (2001).

75. *See, e.g.*, *Fonar Corp. v. Gen. Elec. Co.*, 107 F.3d 1543, 1549 (Fed. Cir. 1997).

76. The Federal Circuit has explained that “the conversion of a complete thought . . . into a language a machine understands is necessarily a mere clerical function to a skilled programmer.” *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 941-42 (Fed. Cir. 1990) (quoting *In re Sherwood*, 613 F.2d 809, 817 n.6 (C.C.P.A. 1980)).

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cation of computer software patents. A general-purpose representational language is a language that expresses computer functions in real-world terms. Patent Office examiners who are skilled in computer software will be able to comprehend the inventive step in software inventions more precisely. In due course, we will create a significant repository of patented software prior art upon which the Patent Office can rely.

Mandating the use of representational languages for software inventions also ensures thorough compliance with specification and claim requirements, such as the written description, enablement, and claim definiteness requirements of 35 U.S.C. § 112, ¶¶ 1-2. Note that this approach has long been embraced in chemical and biotechnology inventions; in these technological arenas, use of chemical formulae, listing of nucleotide sequences, and producing deposits and specimens, when necessary, have been routine requirements carefully specified by the Patent Office.<sup>77</sup>

A general-purpose representational language is a language that expresses computer function in real world terms. Representational languages convey the structure of a program in a readable English form.<sup>78</sup> They allow an average reader to understand the steps of an algorithm without regard to the specific implementation or platform underlying the function.<sup>79</sup> A representational language may be used to illustrate the elements of a method or algorithm as the interconnection between the elements.

Broadly speaking, representational languages in computer software include object-oriented languages, modeling languages, pseudocode, and knowledge representation. An object-oriented language is a language that organizes software “as a collection of discrete objects that incorporate both data structure and behavior.”<sup>80</sup> This includes details about the language’s structure and rules that enable a programmer to effectively depict the details of her computer program, thereby communicating the essential features of the program at a level that makes reproduction reasonably possible. For example, an object-oriented approach includes organizational constructs such as identity, classification, polymorphism and inheritance to realize effective software representation.<sup>81</sup>

Similarly, a modeling language can employ various types of models such as state diagrams, object diagrams, and data flow diagrams to illus-

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77. See, e.g., U.S. PATENT & TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE § 2400 *et seq* (7th ed. 2000) [hereinafter MPEP] (specifying biotechnology patent application rules for nucleotide sequence listings and specimen deposit rules).

78. *Id.*

79. *Id.*

80. JAMES RUMBAUGH ET AL., OBJECT-ORIENTED MODELING AND DESIGN 1 (1991).

81. *Id.* at 1.

trate a system.<sup>82</sup> Pseudocode is another example of the representation of a computer algorithm in the form of English words and mathematics.<sup>83</sup> While the format may vary depending upon the system and environment, pseudocode allows the programmer to identify basic program concepts and program flow, and it is a standard tool in computer program design.<sup>84</sup>

The Manual of Patent Examining Procedure (“MPEP”) mentions block diagrams and flow charts as methods of describing software process claims, but they are only casually mentioned and no guidance is provided as to what is a “reasonably detailed” flow chart or diagram.<sup>85</sup> As noted earlier, the Federal Circuit has shied away from addressing the sufficiency of the technical disclosure in a flow chart or diagram.<sup>86</sup> A representational language such as a representational modeling language may be able to provide the structure and detail desired by the Patent Office while furnishing a readable disclosure useful to patent examiners, courts and the general public. Software system designers are already accustomed to modeling and other representational languages in the initial phase of program design. Programmers put their concepts into words and basic steps before implementing them in computer code. Programmers also employ multiple levels of representation before arriving at the final computer language implementation. Hence, it is not overly burdensome for programmers to employ the same language representations in each software patent application. Mandating a technical method of disclosure will increase the transparency of software inventions to patent examiners, the courts, and ultimately, to improvers and competitors.

### E. The Fifth Strategy

The final strategy is to create a one-way, pro-defendant,<sup>87</sup> fee-shifting system if patent claims are invalidated or revoked in a litigation or opposition proceeding based on certain categories of prior art that are reasonably likely to be discovered by a diligent patentee.

The patent system is ripe for litigation reform addressing the problems posed by overly-broad patents that are granted by the Patent Office and subsequently enforced by the courts. Fee-shifting is one way to increase

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82. *Id.* at 1-6.

83. R. SCHNEYER, MODERN STRUCTURED PROGRAMMING: PROGRAM LOGIC, STYLE AND TESTING 35 (1984).

84. *Id.*

85. MPEP, *supra* note 70, at § 2400 *et seq.*

86. *See supra* notes 75-76 and accompanying text.

87. In this context, the term “defendant” includes a plaintiff in a declaratory judgment action.

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the costs of opportunistic patenting and patent enforcement for plaintiffs who choose to strategically assert their invalid patents in litigation.<sup>88</sup> Under such a regime, if a patent were to be entirely or partially invalidated or revoked in a litigation or opposition proceeding, the plaintiff or patentee would have to pay all or a part of the defendant's fees or the third party opponent's fees. In addition, the Patent Office could be compensated for the costs associated with examining an invalid patent. Finally, if the plaintiff obtained any monopoly profits based on a patent that was subsequently invalidated in litigation, those profits could be disgorged based on an unjust enrichment theory.

Under this proposal, fee-shifting is implemented when a patent is revoked or invalidated based on certain categories of prior art that are reasonably discoverable by a patentee's diligent prior art search. Fee-shifting would not apply in situations where a patent is invalidated based on the sales or other acts of third parties that may not be discoverable when conducting a prior art search.

In exceptional patent cases, 35 U.S.C. § 285 allows a court to grant reasonable attorney fees to the prevailing party.<sup>89</sup> The Federal Circuit has noted that the only deterrent to the improper filing of unwarranted lawsuits on obviously invalid or unenforceable patents is section 285.<sup>90</sup> Nevertheless, the requirement in section 285 of establishing an "exceptional case" remains a formidable barrier that has been difficult to establish.<sup>91</sup> I urge that the underlying fee-shifting contemplated by section 285 be expanded to include situations when patent claim(s) are revoked or invalidated based on certain categories of prior art that may be reasonably discoverable by a diligent patentee conducting a prior art search.

The design of a fee-shifting regime is specifically tailored to an individual application. Because each type of litigation involves many factors, such as the amount of information available to the parties, the chances of winning, and the amount at stake, fee shifting is customized to fit a particular situation and to promote the incentives thought to be desirable. If an appropriate fee-shifting regime were chosen for a particular situation, it could be supported by both fairness considerations, incentive costs, and economic efficiency.

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88. Mark Lemley has called for a balance in fee-shifting awards to ensure that more accused infringers who prevail also receive fee awards, thereby encouraging more fee-shifting in patent cases. *See* Lemley, *supra* note 2, at 1530-31.

89. 35 U.S.C. § 285 (1994).

90. *Mathis v. Spears*, 857 F.2d 749 (Fed. Cir. 1988).

91. ROBERT L. HARMON, *PATENTS AND THE FEDERAL CIRCUIT* 822-33 (5th ed. 2001).

### 1. *Review of Fee-Shifting Rationales*

In order to understand some of these rationales for fee-shifting, a brief review of fee-shifting and its rationale is appropriate. Britain and the Commonwealth nations, as well as a number of other countries, operate under a two-way fee-shifting, or “loser-pays,” legal system.<sup>92</sup> The United States, on the other hand, has employed a no-way fee-shifting, or “pay-your-own-way,” system since at least the Eighteenth Century.<sup>93</sup> However, there are many exceptions to no-way fee-shifting in the United States.<sup>94</sup> State courts in Alaska have long followed a loser-pays rule.<sup>95</sup> Other states, such as Oklahoma and Oregon, have enacted loser-pays rules with mixed results.<sup>96</sup> Florida adopted the loser-pays rule for medical malpractice cases from 1980 until 1985.<sup>97</sup> Some federal laws also make exception to the no-way fee shifting rule, such as the Civil Rights Attorney’s Fees Award Act of 1976, which is a one-way fee-shift that favors civil rights plaintiffs.<sup>98</sup>

There has been much discussion on the merits of the different fee-shifting systems. These debates can be organized generally by fairness considerations and incentive arguments, which include various efficiency considerations.<sup>99</sup> The type of fee shifting employed depends on the rationale, whether it is for fairness, a particular incentive, or a combination of two or more reasons.<sup>100</sup>

Some commentators urge that the loser-pays rule would reduce speculative litigation and limit the tactical leverage gained by a party with a weak case threatening a defendant with costly litigation.<sup>101</sup> This rule may also deter excessive discovery and the filing of unnecessary motions.<sup>102</sup>

92. Valner L. Johnson, *The Award of Attorney’s Fees to Prevailing Defendants Under the Washington Long Arm Statute*, 63 WASH. L. REV. 125, 127 (1988).

93. Susan M. Olson, *How Much Access to Justice from State “Equal Access to Justice Acts”?*, 71 CHI.-KENT L. REV. 547, 549 (1995) (presenting empirical study of the scope and use of state equal access to justice acts; comparing state equal access to justice acts to federal equal access to justice acts).

94. *See generally* Walter Olson & David Bernstein, *Loser-Pays: Where Next*, 55 MD. L. REV. 1161 (1996).

95. *Id.* at 1164.

96. *Id.* at 1175-80.

97. Clinton F. Beckner III & Avery Katz, *The Incentive Effects of Litigation Fee Shifting When Legal Standards Are Uncertain*, 15 INT’L REV. L. & ECON. 205, 206 (1995).

98. 42 U.S.C. § 1988 (1994); Thomas D. Rowe, Jr., *The Legal Theory of Attorney Fee Shifting: A Critical Overview*, 1982 DUKE L.J. 651, 663 (1982).

99. *Id.* at 652.

100. *See id.* at 667.

101. Olson & Bernstein, *supra* note 94, at 1161.

102. *Id.* at 1162.

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Some commentators believe that, while the British system would reduce frivolous claims, it would also discourage valid claims.<sup>103</sup> American jurisprudence often imposes indemnity on frivolous claims or defenses. Imposing indemnity on the losing party for nonfrivolous claims may over-deter.<sup>104</sup> Mark Stein suggests a regime under which the attorney for an unsuccessful plaintiff must share the burden of the defendant's fees.<sup>105</sup> Under this altered contingency fee scheme, attorneys would only take good cases and plaintiffs would not be deterred by the costs as much as with the British rule.<sup>106</sup>

Some believe that the loser-pays rule would streamline proceedings. A claimant or defendant, even if he had only a small chance of losing, would be discouraged from engaging in costly discovery, frivolous motion filing, or, "throwing everything but the kitchen sink," at the other party.<sup>107</sup> Others, however, believe that there is no reason to believe that either the British rule or the American rule is more efficient overall.<sup>108</sup> It depends on assumptions that a court is not likely to accurately ascertain.<sup>109</sup>

It is difficult to predict whether different fee-shifting rules would increase or decrease the overall rate of litigation. If the plaintiff is more optimistic, he is more likely to bring suit under the British system. If he is more pessimistic, he is less likely to bring suit under the British system.<sup>110</sup> The pessimistic party is discouraged, while the optimistic party is encouraged under the British system.<sup>111</sup> If both parties are pessimistic, settlement will likely occur under either system. However, if the plaintiff is optimistic, he is more likely to litigate because he will get a judgment without incurring costs.<sup>112</sup>

Furthermore, under the British system, the risk averse are less likely to bring suit because, without indemnity, the range of costs to them vary from judgment minus costs, if they win, to the cost of litigation if they lose. With indemnity the range of costs is greater: from judgment, if they win, to the total litigation costs incurred by them and their opponents. Risk

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103. Mark S. Stein, *The English Rule with Client-to-Lawyer Risk Shifting: A Speculative Appraisal*, 71 CHI.-KENT L. REV. 603, 611-18 (1995).

104. RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 630 (5th ed. 1998).

105. *See* Stein, *supra* note 103.

106. *See id.*

107. *See* Olson & Bernstein, *supra* note 94, at 1162.

108. *See* Beckner & Katz, *supra* note 97, at 207.

109. *Id.*

110. Keith N. Hylton, *Fee Shifting and Incentives to Comply with the Law*, 46 VAND. L. REV. 1069, 1078 (1993).

111. *Id.*

112. POSNER, *supra* note 104, at 628-29.

aversion may not be very important because corporations are probably not very risk averse. Many personal suits may not be deterred because of contingency contracts because many parties are insured.<sup>113</sup>

An indemnity system will likely have a greater rate of appeals. Plaintiffs have greater incentive to appeal because they have a chance at a much greater benefit—the trial costs plus the judgment. The plaintiff's risk becomes only the added cost of litigating an appeal. Without indemnity, only the judgment is at stake; thus, it is not worth as much to the party that loses the appeal.<sup>114</sup> Indemnity may cause more court congestion because appellate courts are the “bottleneck of a judicial system.”<sup>115</sup>

One of the major arguments for different fee-shifting regimes is compliance with the underlying legal rule applicable to a case. In the context of tort actions, Keith Hylton determined that the pro-plaintiff fee-shifting rule results in the greatest compliance with the law because victims have greater access to the courts.<sup>116</sup> Second to one-way pro-plaintiff fee shifting are the American and British rules. Both systems provide nearly the same deterrence, except in situations where a plaintiff has an informational advantage.

The British system promotes more compliance with the law because the American system makes it more costly for a victim to litigate, while the British system provides a greater incentive to litigate for victims that are certain that they will win the suit. A plaintiff knows the defendant violated the law will sue under the British system, because he will not worry as much about the costs.<sup>117</sup> For tort actions, the pro-defendant, one-way rule promotes the least compliance with the law.<sup>118</sup> The pro-plaintiff rule also encourages the least amount of litigation. Even though the pro-plaintiff rule encourages suit, when the issue is in compliance with a standard of conduct, and not strict liability, settlement is also encouraged. If the rate of compliance is high, the probability of success for the plaintiff is low, and thus the plaintiff is more willing to settle.<sup>119</sup> While the pro-plaintiff rule generates the most compliance with the law, it may not be the most efficient rule if it leads to over-compliance.<sup>120</sup> However, Hylton suggests that without values to evaluate the tradeoffs between compliance

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113. *Id.* at 630.

114. *Id.* at 629.

115. *Id.*

116. Hylton, *supra* note 110, at 1097.

117. *Id.*

118. *Id.* at 1098.

119. *Id.*

120. *Id.*

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with the law and litigation cost increases, it is impossible to determine whether pro-plaintiff fee-shifting is economically efficient.<sup>121</sup>

A tradeoff exists between efficiency and equity. A fairness expense exists when innocent defendants are forced to pay the plaintiff's costs.<sup>122</sup> These insights, when applied to patent lawsuits to address the problem of improvidently granted patents, suggest that a pro-defendant fee-shifting rule is likely to result in greater compliance with the law and reduce the probability of opportunistic enforcement of frivolous patents.

Optimal deterrence is achieved when the penalties are high and the enforcement costs are low because this produces the most compliance at the lowest cost to society. Bruce Hay writes that awarding fees to prevailing plaintiffs is one way to achieve this enforcement system.<sup>123</sup> When a social planner determines the desired level of deterrence, he can choose damages and attorney's fees that would promote this level. Deterrence could remain the same, but costs are reduced.<sup>124</sup>

No deserving theoretical reason exists for believing that the British rule promotes efficient primary behavior. If the analysis is limited to very specific cases, it can sometimes be shown that the British or American rule is more efficient. But, because of the number of factors involved, it is unclear whether the American or British rule is better overall at promoting efficient primary behavior.<sup>125</sup>

As a general proposition, the British rule is less likely to induce settlement than any other fee-shifting rule.<sup>126</sup> The loser-pays rule encourages the most severe strategic demands during negotiation.<sup>127</sup> Settlement is more likely under the American system than under the British system.<sup>128</sup> This is so because the British system reduces the plaintiff's costs, assuming he is optimistic. Because the British rule raises the stakes, it makes litigation more attractive to the plaintiff. Litigation is more attractive to both parties when the defendant's estimate of the plaintiff's victory is less than the plaintiff's estimate of his chances of success.<sup>129</sup>

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121. *Id.*

122. *Id.* at 1100.

123. Bruce L. Hay, *Fee Awards and Optimal Deterrence*, 71 CHI.-KENT L. REV. 505, 507 (1995).

124. *Id.* at 509.

125. Beckner & Katz, *supra* note 97, at 215 (comparing the British and American rules).

126. See Eric Talley, *Liability-Based Fee-Shifting Rules and Settlement Mechanisms Under Incomplete Information*, 71 CHI.-KENT L. REV. 461, 466 (1995).

127. *See id.*

128. Hylton, *supra* note 110 at 1079.

129. *Id.*

Weak parties can be made stronger under different fee-shifting regimes. In some areas of the law, as in general tort or contract litigation, there is not necessarily a disparity in the strength of parties, even if there is in individual cases. However, in litigation by a small interest against the government, there is generally a disparity in strength.<sup>130</sup> While the British rule may allow weaker parties to bring suit against stronger parties involving small, meritorious claims, it also discourages large, complex suits that do not have a very high probability of winning.<sup>131</sup> One-way fee-shifting helps equalize the strength of the parties when there is generally a large disparity in strength.

Another theory that supports one-way fee-shifting against the government is that it encourages claims that benefit the public. The American rule might deter private litigants from bringing a costly claim that might not benefit the party more than his costs, even though the total benefits to society outweighs the cost to the individual.<sup>132</sup> This type of litigant is sometimes called a private attorney general.<sup>133</sup> Some state courts have required fee-shifting on a private attorney general theory in cases where there was little incentive for governmental enforcement, and the litigation benefited large numbers of people.<sup>134</sup> In contrast, the Supreme Court has rejected this idea absent a statute.<sup>135</sup> Congress has enacted some statutes similar to a private attorney general theory, such as the Civil Rights Attorney's Fees Awards Act of 1976.<sup>136</sup>

In a close case, it does not seem fair to make the loser pay for all of the legal costs.<sup>137</sup> Although the winner had a slightly better case, and should be compensated for his costs, the inequity of making a reasonable defendant pay all of the legal costs outweighs this consideration.<sup>138</sup> A losing claimant could have been completely reasonable in bringing a claim, but

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130. Rowe, *supra* note 98, at 664. *See also* Olson & Bernstein, *supra* note 94 (noting that governments that want deregulation can enact one-way fee shifting for individuals against the government; many states have equal access to justice acts that have encouraged small business owners to sue the government).

131. Beckner & Katz, *supra* note 97 at 216.

132. Rowe, *supra* note 98, at 662.

133. *Id.* In the patent prosecution context, Jay Thomas urges the use of private patent examiners to serve as patent bounty hunters in a modified pre-grant opposition proceeding. *See*, John R. Thomas, *Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties*, 2001 U. ILL. L. REV. 305, 343 (2001).

134. Rowe, *supra* note 98 at 663.

135. *Alyeska Pipeline Serv. Co. v. Wilderness Soc'y*, 421 U.S. 240 (1975).

136. 42 U.S.C. § 1988 (1994).

137. Rowe, *supra* note 98, at 655-56.

138. *Id.* at 656.

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still may have lost. It seems particularly unfair when the loss of a case is due to a court-made change in the law.<sup>139</sup> There is often no way for a losing claimant to know when the law will change. Generally applied, a loser-pays rule is similar to strict liability, and no consideration exists for the losing claimant's reasonableness.<sup>140</sup> Additionally, close cases may be longer and often more costly to litigate, because they are less likely to be settled. A defendant with a valid claim who pursues litigation will be punished more for a better, but nevertheless losing, claim.<sup>141</sup>

When a party has been wronged, he should be fully compensated. One argument for fee-shifting is that this compensation should include reasonable attorney's fees.<sup>142</sup> In American law, the make-whole idea underlies much of the law of remedies.<sup>143</sup> If this make-whole rationale required fee-shifting only if the loser did something wrong, inside or outside of court, then the problem of the close case disappears.<sup>144</sup>

This rationale for making the litigant whole does not apply symmetrically. Few cases would shift fees in favor of the defendant to a claim. Generally, American jurisprudence does not consider initiating litigation to be a legal wrong. If the plaintiff brings a baseless claim, or is guilty of malicious prosecution, the defendant will be awarded his attorney's fees. The same is true for plaintiffs in cases for restitution or declaratory judgment. There is no harm if the only monetary loss to a plaintiff is the cost of going to court. A make-whole rationale would not apply unless the plaintiff is subjected to malicious prosecution.<sup>145</sup>

Many states allow attorney's fees to be included in punitive damages.<sup>146</sup> Damages for attorney's fees can also be justified as punishment for abusing the legal system. However, assessing legal fees as damages for abusive litigation may not be sufficiently punitive.<sup>147</sup> When a claimant abuses the legal system, he not only damages the opposing party; he also burdens the court. The amount of legal fees seems unrelated to the amount necessary to punish a party for abuse of the system.<sup>148</sup>

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139. *Id.* at 655.

140. *Id.* at 656.

141. *Id.* at 670.

142. *Id.* at 657.

143. *Id.*

144. *Id.* at 658.

145. *Id.* at 658-59.

146. *Id.* at 660.

147. *Id.* at 661.

148. *Id.*

What amount of attorney's fees should be shifted and what is a reasonable fee?<sup>149</sup> Specific guidelines could be adopted that outline what reasonable attorney's fees should be in a particular circumstance.<sup>150</sup> If full indemnity is too severe as an incentive, some fraction of the reasonable attorney's fees could be awarded.<sup>151</sup> The amount could also depend on the rationale for fee-shifting. For example, punitive fee-shifting has little to do with the cost of reasonable attorney's fees, but if making the defendant whole is the rationale, attorney's fees are the real cost to him. Punitive and deterrent rationales could support double or treble damages.<sup>152</sup> Furthermore, there should be judicial oversight lest the optimistic party with a good chance of winning run up high attorney bills to push the predicted loser into unfair settlement. Another oversight would be to only partially shift fees so the winner will not run up outrageous fees, because he will incur some expense due to high legal bills.<sup>153</sup>

Who should pay the costs?<sup>154</sup> The losing party would usually be liable for the fee, if fee-shifting were employed. If the rationale is to make the injured party whole, it follows that the party liable for the injury should also be liable for the attorney's fees. However, if the lawyer is blameworthy, some of the fees may be shifted to him.<sup>155</sup> The parties could bear the costs when they are litigating factual issues that only apply to them; the state could bear the costs when parties are litigating issues of law that the state has been unclear about.<sup>156</sup>

## 2. *One-Way, Pro-Defendant Patent Fee-Shifting*

Applying some of the general insights outlined above to patent litigation, one-way, pro-defendant, fee-shifting in a narrow set of circumstances can be an effective disincentive by increasing the cost to patentees of engaging in certain kinds of opportunistic conduct. Patentees that manage to get overbroad or invalid patent claims granted by the Patent Office by taking advantage of the Patent Office's lack of knowledge regarding some prior art, may be penalized under such a regime. This may occur when their patent claim(s) are invalidated or revoked in a litigation or opposition proceeding based on prior art that should have been discovered by them

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149. *Id.* at 673.

150. *Id.* at 676-77.

151. *Id.* at 677.

152. *Id.*

153. Olson & Bernstein, *supra* note 94, at 1162-63.

154. Rowe, *supra* note 98, at 672.

155. *Id.*

156. *Id.* at 672-73.

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through a reasonable prior art search. Their penalty would consist of reimbursing the defendant for his litigation costs, in whole or in part.

This type of fee-shifting increases the risk borne by patentees because their range of possible outcomes is now larger. It also creates incentives for patentees to conduct a thorough prior art search before enforcing their patent in court, and at the outset when filing for patent, in order to ensure that they are issued claims commensurate with their innovation. In addition, pro-defendant fee-shifting creates disincentives for patentees seeking to enforce frivolous patents through the courts. For defendants, this type of fee-shifting creates incentives not to settle prematurely if they believe their invalidation case is strong, because their litigation costs may be borne by the patentee. In the case of oppositions, one-way, pro-opponent, fee-shifting encourages parties to successfully oppose published patents.

It is not altogether clear that the pro-defendant, fee-shifting rule would reduce frivolous patents; perhaps it would only reduce their enforcement. But such a rule, even if limited to invalidations based on discoverable prior art, would marginally affect innocent parties by lowering enforcement of valid patents. The more risk-averse the patentee, the more he will be affected by a pro-defendant (i.e., pro-alleged infringer) fee-shifting rule. The difference in outcomes for the patentee is greater with this fee-shifting rule: from patentee's judgment minus his costs to his costs plus the defendant's costs,  $\{[J-C^p] \text{ to } [C^p+C^d]\}$ . Without fee-shifting, the patentee's outcome ranges from  $\{[J-C^p] \text{ to } C^p\}$ . Similarly, with this fee-shifting rule, the difference in outcome for the defendant varies from  $\{[J+C^d] \text{ to } 0\}$  and is more favorable compared to the no fee-shifting scenario in which the defendant's outcome ranges from  $\{[J+C^d] \text{ to } [C^d]\}$ . Therefore, unless carefully tailored to circumstances that the patentee believes he can guard against such as invalidation based on discoverable prior art, the possible loss to the risk-averse patentee is greater with the pro-defendant fee-shifting rule. In other words, such a rule may also affect innocent patentees by lowering the enforcement of valid patents unless narrowly tailored to the circumstances noted above. Higher costs will also affect poor or weaker parties more than strong parties. A company with more money will be more willing to take on the extra costs of getting a patent enforced under a one-way, pro-defendant fee-shifting rule.

It may be argued that this one-way, fee-shifting strategy should also be employed when an accused infringer prevails in a patent litigation by establishing that there was no patent infringement by her accused product. The underlying rationale for such fee-shifting is to encourage defendants to continue to litigate and not prematurely settle in order to define the proper scope of protection accorded by the patent. In the same way that an

accused infringer who invalidates a patent claim performs a public service by removing an improvidently granted patent, an accused infringer who establishes noninfringement also performs a public service by delineating the proper scope of patent protection. However, I would suggest that we not employ fee-shifting for establishing noninfringement because it is difficult to distinguish between genuine, but perhaps unsuccessful, enforcement of a patent right and the harassment of an accused infringer. I prefer to restrict fee-shifting to those cases where there is clear fault, *i.e.*, the plaintiff is attempting to enforce a patent that he would have realized is invalid had he conducted a diligent prior art search. Fee-shifting in these circumstances creates an incentive for the patentee to conduct a diligent prior art search prior to enforcing her patent rights. Not doing so may result in additional costs imposed by the fee-shifting regime. In addition, in cases of clear noninfringement, there are other procedural mechanisms, such as moving for summary judgment for noninfringement, that are available to limit litigation expenses.

Pro-defendant fee-shifting does seem to have a good chance of decreasing infringement actions overall, lowering court congestion and speeding up proceedings by encouraging fewer frivolous motions on the part of the patentee. But it may encourage frivolous motions on the part of the alleged infringer. In addition, on the margins, with some risk-averse plaintiffs, it may encourage settlement. However, it is also likely to lower the defendants' incentive to settle based on the prospect of fee shifting in their favor, if the defendants believe their invalidation case is strong.

### III. CONCLUSION

It is widely recognized that the Patent Office grants overly broad patents since it has deficient knowledge of the relevant prior art, especially in high technology areas with significant nonpatent prior art. In this paper, I propose a number of strategies to both create incentives for patentees and their competitors to reveal prior art information to the Patent Office, thereby increasing the quantity and quality of prior art information available to the Patent Office, and to create disincentives to engage in opportunistic patenting and enforcement of frivolous patents. These strategies take the form of a threat of punishment and an offer of reward and they include: expanding the prior art disclosure rules and linking them to a specific presumption of validity granted to disclosed prior art and eliminating the current, general presumption of validity for all issued patents; creating a pre-grant opposition system based on a patent publication date of 90 days from the first Office Action; requiring the use of representa-

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tional languages in software patent specifications; and creating a one-way, pro-defendant fee-shifting rule in patent litigations or oppositions in which a patent is invalidated, in whole or in part, based on reasonably discoverable prior art. If these strategies were implemented in concert, we would put in place incentives and mechanisms to create a better-informed Patent Office that is more likely to grant patent rights commensurate with innovation and not impoverish the public domain.

# STRICT LIABILITY AND ITS ALTERNATIVES IN PATENT LAW

By Roger D. Blair<sup>†</sup> and Thomas F. Cotter<sup>‡</sup>

## ABSTRACT

In this Article, Professors Blair and Cotter pose two questions. First, is the U.S. patent system really a regime of strict liability, as it is often said to be? Second, however the current regime might be described, is it the best of all possible alternatives? In answer to the first question, Blair and Cotter argue that patent law is best conceived of as a modified strict liability system, in which the defendant's liability often depends upon the defendant's receipt of actual or constructive notice of the patent. In answer to the second question, Blair and Cotter examine a variety of alternatives, including an intent-based system, a negligence system, and a pure strict liability system. They conclude that a system of modified strict liability may be the best choice among imperfect alternatives, but that lawmakers should consider altering the patent marking statute, 35 U.S.C. § 287, in some respects.

## I. INTRODUCTION

Patent infringement is often characterized as a strict liability tort,<sup>1</sup> and in some ways it is. But it is not strict liability in the purest sense, or at least not in the sense in which the term is used in general tort law. Strict liability is typically (although not entirely accurately) defined as liability without fault.<sup>2</sup> Strict liability can arise in a variety of common tort law settings,

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1. *See, e.g.*, *Jurgens v. CBK, Ltd.*, 80 F.3d 1566, 1570 n.2 (Fed. Cir. 1996) (citing *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1527 (Fed. Cir. 1995) (en banc), *rev'd on other grounds*, 520 U.S. 17 (1997)).

2. *See, e.g.*, RESTATEMENT (SECOND) OF TORTS §§ 504-524A (1977). As others have recognized, however, describing strict liability as liability without fault can be mis-

such as when a person engages in unusually dangerous activity<sup>3</sup> or when a manufacturer distributes a defective product.<sup>4</sup> In the latter instance, a court may require the defendant to pay damages for injuries caused by the defective product, even if the defendant was unaware of the defect prior to the injury.<sup>5</sup> We suspect that when people use the term “strict liability,” they tend to think of situations in which the defendant is liable for past injuries bearing some causal relationship to her conduct, even though that conduct may not embody actionable negligence, much less an intentional tort.

Patent law is consistent with this model only in part. Patent infringement is a strict liability tort in the sense that a defendant may be liable without having had any notice, prior to the filing of an infringement action, that her conduct was infringing.<sup>6</sup> In other words, innocent (i.e., unintentional or inadvertent) infringement is not a defense to a patent infringement claim,<sup>7</sup> and a court usually will enjoin the defendant from infringing even though she was put on notice only by the filing of the lawsuit.<sup>8</sup> In contrast to the common tort law situation, however, the defendant in a patent infringement suit is often not liable for *damages* until the plaintiff puts her on notice; at that point, she becomes liable only for damages

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leading because many of the factors that are relevant to a determination of negligence are equally relevant to a determination of strict liability. *See, e.g.*, *Flaminio v. Honda Motor Co.*, 733 F.2d 463, 466-67 (7th Cir. 1984).

3. *See* RESTATEMENT (SECOND) OF TORTS § 519 (1977).

4. RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 1 (1998).

5. *See id.* §§ 1-2 illus. 1.

6. *See, e.g.*, *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1345-47 & n.3 (Fed. Cir. 1999) (noting earlier proceedings that had resulted in the entry of an injunction against the defendant, despite the fact that the defendant received neither actual nor constructive notice of its infringement until the service of the complaint and therefore was not liable for damages accruing before that date); *Am. Med. Sys. v. Med. Eng'g Corp.*, 6 F.3d 1523, 1526-29, 1534-39 (Fed. Cir. 1993) (affirming that portion of the judgment that permanently enjoined the defendant from infringing the '765 patent, despite the fact that the defendant was not put on constructive notice of its infringement until three months after it began infringing); 7 DONALD S. CHISUM, CHISUM ON PATENTS § 20.03[7][c][vi] (2001) (noting that a patent owner who fails to provide actual or constructive notice may nevertheless obtain injunctive relief against further infringement).

7. Compare this with copyright law, in which independent discovery (though not unconscious copying) is a valid defense. For further elaboration of this point, see *infra* notes 27-35 and accompanying text.

8. *See supra* note 6; *see also* 7 CHISUM, *supra* note 6, § 20.04[2] (stating that the prevailing patent owner “will usually be granted a permanent injunction against future infringement unless the public interest otherwise dictates”).

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arising from her subsequent conduct.<sup>9</sup> Section 287(a) of the Patent Act states:

Patentees, and persons making, offering for sale, or selling within the United States any patented article for or under them, or importing any patented article into the United States, may give notice to the public that the same is patented, either by fixing thereon the word “patent” or the abbreviation “pat.”, together with the number of the patent, or when, from the character of the article, this can not be done, by fixing to it, or to the package wherein one or more of them is contained, a label containing a like notice. In the event of failure so to mark, no damages shall be recovered by the patentee in any action for infringement, except on proof that the infringer was notified of the infringement and continued to infringe thereafter, in which event damages may be recovered only for infringement occurring after such notice. Filing of an action for infringement shall constitute such notice.<sup>10</sup>

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9. See 35 U.S.C. § 287 (1994).

10. *Id.* The Federal Circuit summarized the history of the marking requirement in *Nike, Inc. v. Wal-Mart Stores, Inc.*, 138 F.3d 1437, 1443 (Fed. Cir. 1998):

The early patent statutes contained no marking requirement. As explained in *Boyden v. Burke*, 55 U.S. (14 How.) 575, 582-83, 14 L.Ed. 548 (1852), patents were public records and all persons were “bound to take notice of their contents.” A duty to mark was imposed by the Patent Act of 1842, which required “all patentees and assignees of patents . . . to stamp . . . on each article vended, or offered for sale, the date of the patent.” Act of 1842, 5 Stat. 543, 544. If the patentee failed to mark each article, the penalty was a fine of “not less than one hundred dollars.” *Id.* In 1861 the statute was amended to delete the statutory penalty, and instead to place a limitation on the patentee’s right to recover for infringement. The Patent Act of 1861, 12 Stat. 246, 249, provided that “no damage shall be recovered by the plaintiff” unless that person marked the article as patented or the infringer received actual notice of the patent.

The marking provision has not been substantially changed since 1861.

*Id.* The last sentence quoted above is a slight overstatement. *Cf.* *Am. Med. Sys. v. Med. Eng’g Corp.*, 6 F.3d 1523, 1535-37 (Fed. Cir. 1993) (noting that, under the current statute, marking is no longer described as a “duty” and holding that a patent owner therefore may recover damages for infringing acts occurring after he complies with section 287; and rejecting case law, decided under earlier versions of the statute, precluding patent owners from recovering any damages if they failed to mark their products *immediately* upon issuance of the patent). Nevertheless, courts sometimes look to case law decided under earlier versions of the statute as persuasive authority, at least with respect to those portions of the current statute that are substantially similar to the preceding versions. *See*,

Thus, a patentee who markets products embodying his patent can recover damages only for infringing conduct that occurs after he has provided the requisite notice by: (1) commencing an infringement action against the defendant;<sup>11</sup> (2) providing actual, specific notice of the in-

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*e.g.*, *Amsted Indus. v. Buckeye Steel Castings Co.*, 24 F.3d 178, 186-87 & nn.3-4 (Fed. Cir. 1994).

11. *See* 35 U.S.C. § 287(a) (1994) (stating that “[f]iling of an action for infringement shall constitute such notice”). For purposes of completeness, we should note that there are two other circumstances in which the Patent Act departs from the strict liability model. The first relates to a person who uses, sells, offers to sell, or imports into the United States an unpatented product made by a process that is patented in the United States. Section 271(g) of the Patent Act states that these activities constitute infringement, but that: (1) “no remedy may be granted for infringement on account of the noncommercial use or retail sale of a product unless there is no adequate remedy under this title for infringement on account of the importation or other use, offer to sell, or sale of that product;” and (2) a product made by a patented process will not be considered so made after “it is materially changed by subsequent processes; or . . . it becomes a trivial and nonessential component of another product.” *Id.* § 271(g). Section 287(b)(1) of the Patent Act then provides, *inter alia*, that a person who infringes by using, selling, offering to sell, or importing the unpatented product of a patented process may be liable for damages if she “(A) practiced the patented process; (B) owns or controls, or is owned or controlled by, the person who practiced the patented process; or (C) had knowledge before the infringement that a patented process was used to make the product . . .” *Id.* § 287(b)(1). Otherwise, “[n]o remedies for infringement under section 271(g) . . . shall be available with respect to any product in the possession of, or in transit to, the person subject to liability under such section before that person had notice of infringement with respect to that product.” *Id.* § 287(b)(2). The statute goes on to specify that “notice of infringement” shall mean “actual knowledge, or receipt by a person of a written notification, or a combination thereof, of information sufficient to persuade a reasonable person that it is likely that a product was made by a process patented in the United States.” *Id.* § 287(b)(5)(A); *see also id.* § 287(b)(5)(C)-(D) (further defining acts which constitute notice of infringement for purposes of this subsection); *id.* § 287(b)(4)(C) (effectively providing that marking the unpatented products of a patented process with the process patent number constitutes constructive notice of the process patent for purposes of this subsection). Section 287 also prescribes that the defendant may show her good faith by requesting relevant information from a manufacturer of the product, and disclosing that information to her manufacturer or supplier, before first importing, using, offering for sale, or selling units of the product and before having notice of infringement with respect to the product. *See id.* §§ 287(b)(3)-(4). Thus, with respect to acts of infringement consisting of the unauthorized importation, use, sale, or offer to sell of unpatented products of a patented process, the defendant may be liable for damages if she has actual knowledge, actual notice, or constructive notice prior to her infringement. *Id.* § 287.

Second, the Patent Act now provides for the publication of pending patent applications eighteen months after filing, subject to certain exceptions. *See id.* § 122(b). A person who makes, uses, sells, offers to sell, or imports into the United States the invention claimed in a published application may be liable for a reasonable royalty for the period of time from the publication to the date on which the patent issues, but only if she has “actual notice of the published patent application.” *See id.* § 154(d)(1). Although the

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fringement, prior to the filing of the lawsuit;<sup>12</sup> or (3) providing constructive notice by affixation, as set forth in section 287(a).<sup>13</sup> One therefore might conclude that the Patent Act makes the recovery of damages contingent upon the defendant's *intentional* decision to infringe after having received notice, and that this outcome is considerably different from the common meaning of strict liability.<sup>14</sup> Indeed, the Federal Circuit has sug-

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statute does not define what constitutes "actual notice of the published patent application," one commentator argues that the defendant must be "informed (1) by the patentee, (2) of the identity of the patent application serial number, (3) of the activity that is believed to be within the scope of the published claims, and (4) of a proposal to abate the provisional 'infringement.'" Philippe Signore, *The New Provisional Rights Provision*, 82 J. PAT. & TRADEMARK OFF. SOC'Y 742, 748-49 (2000).

12. See, e.g., *SRI Int'l, Inc. v. Advanced Tech. Labs., Inc.*, 127 F.3d 1462, 1470 (Fed. Cir. 1997):

It is not controlling whether the patentee threatens suit, demands cessation of infringement, or offers a license under the patent. Although there are numerous possible variations in form and content, the purpose of the actual notice requirement is met when the recipient is notified, with sufficient specificity, that the patent holder believes that the recipient of the notice may be an infringer. Thus, the actual notice requirement of § 287(a) is satisfied when the recipient is informed of the identity of the patent and the activity that is believed to be an infringement, accompanied by a proposal to abate the infringement, whether by license or otherwise.

*Id.* (citation omitted); see also *Gart v. Logitech, Inc.*, 254 F.3d 1334, 1345-46 (Fed. Cir. 2001) (stating that "mere 'notice of the patent's existence or ownership' is not 'notice of the infringement,'" and that section 287(a) requires an "'affirmative communication [to the alleged infringer] of a specific charge of infringement by a specific accused product or device,'" although the latter need not constitute an "'unqualified charge of infringement'") (quoting *Amsted Indus.*, 24 F.3d at 187; *SRI Int'l*, 127 F.3d at 1470); *Lans v. Digital Equip. Corp.*, 252 F.3d 1320, 1326-27 (Fed. Cir. 2001) (holding that notification must come from, and identify, the patentee, and that notice even from one "closely associated with the patentee" is therefore insufficient); *Amsted Indus.*, 24 F.3d at 187 (holding that actual notice "requires the affirmative communication of a specific charge of infringement by a specific accused product," and that the defendant's actual knowledge of the patent or its own infringement is irrelevant).

13. See 35 U.S.C. § 287(a) (1994).

14. Learned Hand once made an analogous observation with respect to the way in which he thought liability should operate in copyright law. See *DeAcosta v. Brown*, 146 F.2d 408, 414 (2d Cir. 1944) (Hand, J., dissenting) (arguing that a magazine publisher that innocently publishes an article that infringes another copyrighted work should be enjoined, "[a]s soon as [he] learns that his original was a copy," and should be liable in restitution, but not for pre-notice compensatory damages). In the *DeAcosta* case itself, however, the majority held that the publisher was liable even for the latter class of damages. See *id.* at 410-12; see also *Lipton v. Nature Co.*, 71 F.3d 464, 471 (2d Cir. 1995) (holding that one who copies another's copyrighted work, as embodied unlawfully in an intermediate product, is liable to the copyright holder).

gested as much, stating that section 287 “serves three related purposes: (1) helping to avoid innocent infringement; (2) encouraging patentees to give notice to the public that the article is patented; and (3) aiding the public to identify whether an article is patented.”<sup>15</sup>

The preceding discussion overstates our case, however, in at least two respects. First, a patent owner who does not market any products that embody his patent may recover damages for infringing conduct that occurs prior to the defendant’s receipt of notice. Thus, the owner of an infringed *process* patent may be able to recover damages accruing from the beginning of the infringement, regardless of whether the defendant is on notice or has knowledge of the patent prior to the service of the complaint.<sup>16</sup>

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15. *Nike*, 138 F.3d at 1443; *see also Lans*, 252 F.3d at 1327. In *Lans*, the court noted:

Besides alerting the alleged infringer to avoid further infringement, the notice requirement also permits the alleged infringer to contact the patentee about an amicable and early resolution of the potential dispute. Thus, without knowledge of the patentee’s identity, an alleged infringer may lose the benefit of this primary purpose of the notice requirement. An alleged infringer may lose the opportunity to consult with the patentee about design changes to avoid infringement. Similarly, without knowledge of the patentee, an alleged infringer may lose the chance to negotiate a valid license. In sum, knowledge of the patentee’s identity facilitates avoidance of infringement with design changes, negotiations for licenses, and even early resolution of rights in a declaratory judgment proceeding.

*Id.*

16. *See* *Crystal Semiconductor Corp. v. Tritech Microelectronics Int’l, Inc.*, 246 F.3d 1336, 1353 (Fed. Cir. 2001) (citing *Am. Med. Sys.*, 6 F.3d at 1538); *Bandag, Inc. v. Gerrard Tire Co.*, 704 F.2d 1578, 1581 (Fed. Cir. 1983). The rationale for not requiring marking in the case of process patents is that processes cannot be marked. *See Am. Med. Sys.*, 6 F.3d at 1538. Patent law nevertheless could restrict the process patent owner from recovering damages attributable to “innocent” infringement—or else provide for some other form of constructive notice of a process patent—but at present it does not. *See infra* notes 111-113 and accompanying text.

When the patent contains both product and process claims, however, the patent owner’s failure to mark his patented products sometimes may prevent him from recovering damages attributable to the pre-notice infringement of either type of claim. For example, in *American Medical Systems*, the patent contained, and the patent owner asserted claims for the infringement of, both product claims (relating to a prosthesis) and process claims (relating to the manufacture and sterilization of the prosthesis); the patent owner had shipped almost 2,000 patented prostheses before it began marking those products. *See Am. Med. Sys.*, 6 F.3d at 1527-28, 1529, 1534-35. The Federal Circuit held that the patent owner could not recover damages attributable to the infringement of either the product or process claims, for the period of time preceding the defendant’s receipt of actual or constructive notice. *See id.* at 1537-39. With respect to the process claims in particular, the court stated:

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Similarly, the owner of an idle patent may recover damages for conduct occurring prior to the receipt of notice,<sup>17</sup> although typically these damages will take the form of a reasonable royalty, rather than lost profits.<sup>18</sup> In

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Where the patent contains both apparatus and method claims . . . to the extent that there is a tangible item to mark by which notice of the asserted method claims can be given, a party is obliged to do so if it intends to avail itself of the constructive notice provisions of section 287(a).

In this case, both apparatus and method claims of the '765 patent were asserted and there was a physical device produced by the claimed method that was capable of being marked. Therefore, we conclude that AMS was required to mark its product pursuant to section 287(a) in order to recover damages under its method claims prior to actual or constructive notice being given to [the defendant].

*Id.* at 1538-39. *American Medical Systems* nevertheless leaves several questions unanswered. What if, for example, the patent contains both product and process claims, the patentee sells unmarked articles embodying the product claims, but he alleges the infringement of only the process claims? What if he alleges infringement of both types of claims, but prevails only on the process claims? Earlier decisions of the Federal Circuit point in opposite directions. *Compare* *Devices for Medicine, Inc. v. Boehl*, 822 F.2d 1062, 1066 (Fed. Cir. 1987) (arguably standing for the proposition that the patent owner may recover for the infringement of the process claims if the complaint alleges infringement of only the process claims, but not if it alleges infringement of both product and process claims), *with* *Hanson v. Alpine Valley Ski Area, Inc.*, 718 F.2d 1075, 1083 (Fed. Cir. 1983) (arguably standing for the proposition that the patent owner may recover for the infringement of the process claims if the patent owner prevails upon only those claims at trial; the opinion is unclear, however, as to whether the complaint alleged the infringement of the product claims as well); *see also* Joel Voelzke, *Patent Marking Under 35 U.S.C. § 287(a): Products, Processes, and the Deception of the Public*, 5 FED. CIR. B.J. 317, 328-36, 341 (1995) (providing a thorough textual analysis of the three preceding cases, and noting that the logical conclusion of *Hanson* would be to make the patent owner worse off, in some cases, for having “won” on his product claims). Moreover, as Voelzke notes, in many instances the rationale that a process cannot be marked is weak: a competent patent attorney can often draft both product and process claims for the same invention, and in many cases a patented process necessarily results in the production of a tangible item that could be marked with the process patent number. *See* Voelzke, *supra*, at 325-28, 338-39; *see also infra* note 107 (discussing ambiguities in the case law, and the strategies these ambiguities may engender).

17. *See* *Wine Ry. Appliance Co. v. Enter. Ry. Equip. Co.*, 297 U.S. 387, 398 (1936).

18. *See* Roger D. Blair & Thomas F. Cotter, *Rethinking Patent Damages*, 10 TEX. INTELL. PROP. L.J. 1, 29-37 (2001). If, however, the patent owner markets a nonpatented product in competition with the infringing product, and can prove that the infringing product has caused him to lose profits on the sale of the nonpatented product, he may be able to recover those lost profits. *See* *King Instruments Corp. v. Perego*, 65 F.3d 941, 947-53 (Fed. Cir. 1995); *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1544-49 (Fed. Cir. 1995) (en banc); *see also* Blair & Cotter, *supra*, at 32-33 n.150, 35 n.170 (discussing the interplay of these two cases and § 287(a)); 7 CHISUM, *supra* note 6, § 20.03[7][c][ii] (similar).

these examples, patent infringement is a strict liability tort in all relevant respects. Second, many patent owners who sell products that embody their patents make use of the marking provision, meaning that in many cases defendants are on at least constructive notice from the date they begin to infringe. Since constructive notice does not necessarily imply actual knowledge, an “innocent” defendant may still be liable for damages, as under a true strict liability regime. But for a variety of reasons,<sup>19</sup> not every

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19. Commentators have noted a number of reasons *why* patent owners may fail to comply with the statute. First, in cases in which the patent owner licenses someone else to manufacture the patented article, the patent owner may encounter problems in monitoring the licensee’s compliance with section 287. *See* 35 U.S.C. § 287(a) (1994) (imposing the marking requirement upon patentees “and persons making, offering for sale, or selling within the United States . . . for or under them”); *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1111-12 (Fed. Cir. 1996) (holding that a patentee that makes “reasonable efforts” to ensure the licensee’s compliance may recover damages); *Amsted Indus.*, 24 F.3d at 185 (holding that compliance is not excused when the patent owner manufactures and sells only a component of the patented invention, which its customers then combine with other elements to make the invention; and suggesting that the patentee should mark the component with the words “for use under U.S. Pat. No. X,XXX,XXX”); Preston Moore & Jackie Nakamura, *The United States Patent Marking and Notice Statute*, 22 AIPLA Q.J. 85, 91-93 (1994) (discussing what constitutes “reasonable efforts”). Second, in cases in which the patent owner begins marketing its product before the patent issues, it may be expensive to add the required notice to existing products after issuance. *See* Michael J. McKeon, *The Patent Marking and Notice Statute: A Question of “Fact” or “Act”?*, 9 HARV. J.L. & TECH. 429, 462 (1996). Although firms sometimes mark their products with the words “patent pending” prior to the issuance of an actual patent, the use of these words does not constitute sufficient notice for purposes of section 287. *See* 35 U.S.C. § 287 (1994) (requiring the patentee to mark the product with the patent number, which is impossible unless and until a patent issues); *State Indus. v. A. O. Smith Corp.*, 751 F.2d 1226, 1236 (Fed. Cir. 1985); Kenneth W. Dam, *The Economic Underpinnings of Patent Law*, 23 J. LEGAL STUD. 247, 265 n.73 (1994). *But see* *Steinthal v. Arlington Sample Book Co.*, 94 F.2d 748 (3d Cir. 1938) (affirming denial of damages recovery, where licensee failed to mark “patent pending” prior to issuance of patent, but did comply with marking provision thereafter). Falsely marking an unpatented product as if it were patented is, not surprisingly, unlawful, if accompanied by an intent to deceive. *See* 35 U.S.C. § 292 (1994); Moore & Nakamura, *supra*, at 90 (citing cases). Third, even after the patent issues, it may be difficult or expensive to comply with section 287—for example, by correctly marking a product that embodies many discrete patents, especially if the product design changes over time. *See* McKeon, *supra*, at 462-63; Moore & Nakamura, *supra*, at 97-98. Fourth, it is not clear what constitutes sufficient marking under every conceivable fact pattern, thus leaving open the possibility that patent owners’ good faith attempts to comply with section 287 will sometimes fail. *See* Carl Oppedahl, *Patent Marking of Systems*, 11 SANTA CLARA COMPUTER & HIGH TECH. L.J. 205, 222-26 (1995) (posing hypotheticals concerning what would constitute sufficient marking for a patented system that embodies multiple, possibly geographically dispersed, machines); *see also infra* note 73 (discussing sufficiency of marking). Finally, there may be strategic reasons not to mark in some cases. *See* ROBERT P. MERGES, PATENT LAW AND POLICY: CASES AND

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manufacturing or selling owner does mark.<sup>20</sup> In cases in which they do not mark, damages accrue only from the date of actual notice. Thus, there are some instances when using the term “strict liability” in connection with patent law can be misleading and perhaps should be abandoned.<sup>21</sup> The standard of liability in patent law simply is what it is and does not need a label.

The question that naturally arises is whether “what it is” can be improved upon. In theory, there are at least four possible liability standards that could apply to patent infringement. First, one could devise a system in which independent discovery is a valid defense to a charge of patent infringement; this type of system would transform patent infringement largely (though not entirely) into an intentional tort.<sup>22</sup> A second possibility would be to employ a negligence standard, meaning that a person would be liable for infringement only if she knows or should have known of the patent’s existence and that her conduct infringes. Third, one could employ

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MATERIALS 1097 (2d ed. 1997) (stating that lawyers sometimes advise their clients not to mark, either “to plan a ‘sneak attack’ on competitors” against whom an injunction will be sought after the latter have invested in plants and equipment, or to avoid calling attention to a patent that will be easy to invent around); Voelzke, *supra* note 16, at 320-21.

20. A Westlaw search of the terms (287 w/3 (patent marking 35)) discloses eighteen reported or otherwise accessible Federal Circuit opinions over the past ten years (since January 1, 1992) in which the sufficiency of marking was an issue on appeal. *See, e.g.*, *Gart v. Logitech, Inc.*, 254 F.3d 1334, 1345-46 (Fed. Cir. 2001) (reversing judgment that letters from patent owner to defendant complaining about the latter’s TRACKMAN products did not constitute actual notice in conformity with section 287, but affirming judgment as to defendant’s MOUSEMAN products; at all relevant times, patent owner’s authorized licensee failed to mark patented products); *Lans*, 252 F.3d at 1327-28 (holding that notice provided by patent owner’s assignor was insufficient to comply with section 287, and that defendants were not liable for any damages given that (1) patent owner’s licensee marketed unmarked products, and (2) patent owner did not provide actual notice until after patent had expired); *see also* Oppedahl, *supra* note 19, at 205 n.2 (noting the author’s awareness of several unreported cases in which the amount of damages varied significantly depending on whether section 287 was satisfied, as well as his participation in settlements in which the amount “was more strongly influenced by marking (or the lack thereof) than by any other single factor”).

21. *Cf.* RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 1 cmt. a (1998) (noting that use of the term “strict liability” in connection with liability for design defects and failures to warn, as opposed to manufacturing defects, is a common misnomer).

22. Presumably, the defendant might still be liable for unconscious copying, as in copyright law; thus, even with an independent discovery defense, patent infringement does not become a purely intentional tort. We suppose that one could advocate a standard of liability that requires the plaintiff to show intentional copying, although the costs of implementing such a system are likely to be prohibitive. *See infra* notes 48-52 and accompanying text (arguing that, even without requiring proof of intent, requiring proof of copying would have undesirable consequences).

a (true) strict liability standard, under which the plaintiff may recover damages for conduct occurring even before the defendant has (or could be expected to have) knowledge or notice that the conduct infringes. Fourth, one could employ a standard similar to the one we actually have, in which damages liability is conditioned upon notice or knowledge. This possibility in turn could take different sub-forms, including: a rule under which the defendant is not liable for damages accruing before the receipt of actual notice; a rule exempting her from damages in the absence of constructive notice, whether of the type contemplated by the marking statute or otherwise; a rule permitting the recovery of damages against defendants who have actual *knowledge*, regardless of the presence of actual or constructive *notice*; or some combination of these principles.

We shall demonstrate that each of these liability standards has its peculiar advantages and disadvantages. In Part II, we present several reasons, grounded more in practice than in theory, for rejecting the Maurer-Scotchmer thesis that patent law should adopt an independent discovery defense. In Part III, we show that a strict liability standard is generally preferable to a negligence standard in the patent infringement context. In Part IV, we argue that a system requiring damages to be conditioned upon the infringer's possession of notice or knowledge that her conduct infringes is an improvement over a system of pure strict liability. We also argue that the marking statute, in its present form, is incoherent, and we suggest some reforms. Finally in Part V, we present some closing remarks.

## II. INDEPENDENT DISCOVERY

In a provocative recent paper, Stephen Maurer and Suzanne Scotchmer argued that the recognition of an independent discovery defense in patent law would, in at least some cases, provide the patentee with a sufficient reward while simultaneously reducing the potential deadweight loss from the assertion of patent rights.<sup>23</sup> In the following paragraphs, we shall

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23. Stephen M. Maurer & Suzanne Scotchmer, *The Independent-Invention Defense in Intellectual Property* (John M. Olin Working Paper Series, No. 98-11, Boalt Hall School of Law, Berkeley, Cal., 1998), available at <http://socrates.berkeley.edu/~scotch/>. This paper will be published in a forthcoming issue of *Economica*. For a paper that foreshadows some aspects of the Maurer-Scotchmer analysis, see Douglas Gary Lichtman, *The Economics of Innovation: Protecting Unpatentable Goods*, 81 MINN. L. REV. 693 (1997). Lichtman argues that state laws forbidding the copying of unpatentable inventions do not conflict with federal patent law, as long as the cost of inventing a noninfringing substitute is sufficiently low in comparison with the R&D cost of the original invention. See *id.* at 720-23 (presenting model). In this context, the inventor of the nonpatentable invention would be expected to license the invention to competitors and to earn a

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sketch out the intuition behind the Maurer-Scotchmer thesis; readers who are interested in a more detailed analysis are directed to the working paper itself, cited below. We then address what we view as the (mostly practical) shortcomings of the thesis.

At first blush, the thesis that an independent discovery defense could improve social welfare may seem counterintuitive. After all, the most common justification for the existence of the patent system is that the provision of exclusive rights in inventions is necessary to induce inventors to invent and to disclose the fruits of their inventive efforts.<sup>24</sup> In the absence of a patent system, so the argument goes, free riders would undermine the incentive to invent and disclose by appropriating the benefits of invention without sharing in the concomitant research and development costs.<sup>25</sup> Patent rights, therefore, induce invention and disclosure by facilitating inventors' ability to internalize the benefits of these activities for a period of time.<sup>26</sup> By threatening to reduce these benefits, an independent discovery defense seems antithetical to the premise on which the system is based.

On closer inspection, however, the case against independent discovery is not quite so airtight, even if one accepts the conventional wisdom that patents are necessary to induce the socially optimal level of invention and disclosure. For one thing, independent discovery is legal in both trade secret and copyright law; thus, any argument that independent discovery *necessarily* reduces the incentive to create socially useful things to an unacceptable level must account for why the practice is permitted in other bodies of intellectual property law. There are some obvious differences between the subject matter of copyrights and trade secrets, and the subject matter of patents that may explain the discrepancy. With respect to copyright, for example, although it is legal for someone to independently create a work of authorship that is substantially similar to an existing work, in practice this may be rare and therefore unlikely to affect the copyright owner's incentives.<sup>27</sup> In addition, First Amendment considerations may

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reward that does not exceed his R&D costs. *See id.* Implicitly, if the cost of R&D and the cost of independent discovery are about equal and the invention is patentable, a patent law that forbids copying but permits independent discovery would result in the patentee earning a reward in excess of his R&D costs, a result consistent with the Maurer-Scotchmer analysis. *See infra* text accompanying notes 36-43.

24. *See* Blair & Cotter, *supra* note 18, at 45.

25. *See id.*

26. *See id.*

27. *See id.* at 69 n.299 (making this point); David Nimmer & Eaton S. Drone, *Copyright in the Dead Sea Scrolls: Authorship and Originality*, 38 HOUS. L. REV. 1, 38-39 (2001) (similar); *see also* William P. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325, 345-46 (1989) (arguing that the relative un-

play a role in the law's decision not to empower the copyright owner to enjoin the independent creation of substantially similar works.<sup>28</sup> In patent law, on the other hand, the probability of independent development of an invention containing all the elements of a patented invention may be relatively high, as demonstrated by the fact that, at any given time, multiple researchers *are* working on the very same engineering and scientific problems.<sup>29</sup> Therefore, having to determine whether such cases involve copying or independent discovery might impose more administrative costs and have a more serious effect upon incentives to invent than in a copyright system.<sup>30</sup> With respect to trade secrets, the limited nature of the right as

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unlikelihood of the independent creation of substantially similar works of authorship, as well as the relative difficulty of conducting a search of existing works of authorship, explains why patent and copyright law treat independent discover differently). This observation is reinforced by the fact that copyright does not subsist in things such as facts, ideas, short phrases, and *scènes à faire*, and by the merger doctrine. See Thomas F. Cotter, *Intellectual Property and the Essential Facilities Doctrine*, 44 ANTITRUST BULL. 211, 220-21 (1999) (discussing these doctrines).

28. Cf. Blair & Cotter, *supra* note 18, at 60 n.268 (suggesting that First Amendment considerations may explain why copyright liability does not extend to certain uses of copyrighted works); Thomas F. Cotter, *Gutenberg's Legacy: Copyright, Censorship, and Religious Pluralism* (March 14, 2002), at 7-8 n.26-28 (unpublished manuscript, on file with authors) (noting that various copyright doctrines are traditionally viewed as preventing a conflict between copyright and the First Amendment).

29. A famous example of independent discovery of a pioneering invention is the near-simultaneous invention of the telephone by Alexander Graham Bell and by Elisha Gray. See EDWIN S. GROSVENOR & MORGAN WESSON, *ALEXANDER GRAHAM BELL: THE LIFE AND TIMES OF THE MAN WHO INVENTED THE TELEPHONE* 45-49 (1996). Outside the realm of patent law, the two most famous examples of the independent discovery of major scientific principles are the discovery by Newton and Leibniz of calculus, and by Charles Darwin and Alfred Russell Wallace of the principle of natural selection. See ROBERT S. WESTFALL, *NEVER AT REST: A BIOGRAPHY OF ISAAC NEWTON* 514-20 (1980) (discussing the Newton-Leibniz controversy); ROBERT WRIGHT, *THE MORAL ANIMAL: EVOLUTIONARY PSYCHOLOGY AND EVERYDAY LIFE* 301-10 (1994) (discussing the Darwin-Wallace episode); see also William F. Ogburn & Dorothy Thomas, *Are Inventions Inevitable? A Note on Social Evolution*, 37 POL. SCI. Q. 83, 93-98 (1922) (listing prominent inventions and discoveries independently made) (cited in *Kewanee Oil Co. v. Bicorn Corp.*, 416 U.S. 470, 490 (1974)). But see Richard H. Stern, *A Reexamination of Preemption of State Trade Law After Kewanee*, 42 GEO. WASH. L. REV. 927, 950 (1974) (pointing out that, as of 1974, no one had yet succeeded in proving Fermat's Last Theorem). Cf. SIMON SINGH, *FERMAT'S ENIGMA: THE QUEST TO SOLVE THE WORLD'S GREATEST MATHEMATICAL THEOREM* 283-84 (1997) (discussing Steven Wiles's 1994 proof of the theorem, which relies upon twentieth-century developments in mathematics, and noting the opinion of some skeptics that Fermat's proof, whatever it was, was flawed). See also *infra* notes 63-64 and accompanying text (discussing patent races).

30. See Blair & Cotter, *supra* note 18, at 60 n.268; see also *infra* notes 48-51 and accompanying text (discussing administrative cost of distinguishing copying from inde-

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traditionally understood<sup>31</sup> might itself explain why more defenses should be available to an alleged misappropriation. We return to this point below.<sup>32</sup> Finally, it may be relevant that the cost of searching, prior to creation, for substantially similar copyrighted works or for identical trade secrets would be enormous. Given the relatively low level of originality necessary for copyright protection, copyrighted works are ubiquitous,<sup>33</sup> and U.S. law does not require copyright registration except as a precondition to litigation.<sup>34</sup> And for obvious reasons there is no way to search for another person's trade secrets. Patent searches are at least possible because all patents are public records, although this does not suggest that the cost of conducting a patent search prior to engaging in the manufacture or sale of a new product is minimal.<sup>35</sup> Indeed, the preceding discussion only highlights some *possible* reasons for adopting a different rule for patents than for copyrights and trade secrets; it does not prove that patent law must eschew independent discovery to induce the optimal amount of invention.

The Maurer-Scotchmer paper provides a valuable contribution by describing the circumstances under which an independent discovery defense may, or may not, have a material effect upon the incentive to invent. The

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pendent discovery). Patent scope also tends to be broader than copyright scope, in the following sense. As noted above, a patent reads on any device that contains all of the functional elements of the patented device; and under the doctrine of equivalents, the patent may also read on devices that perform substantially the same function in substantially the same way to produce the substantially same result, even though the elements are not identical. *See Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 35, 38, 40 (1997) (citations omitted). Copyright protects only the author's original expression, selection, or arrangement, and not functional or utilitarian aspects of a work, *see* 17 U.S.C. § 102 (1990), although copyright protection for computer software tends to blur this distinction somewhat. To the extent that patent rights are typically "stronger" or broader than copyright rights, perhaps it is not surprising that patent law affords fewer defenses than copyright; but on closer analysis appeals to the relative strength of patent rights beg the question of whether patent rights *need* to be as strong they are, particularly with respect to independent discovery.

31. That is to say, trade secret law is more an outgrowth of contract and tort law than of property law. A trade secret owner's rights are not valid against the world, but rather only against persons who have acquired the secret in certain ways or who stand in a confidential relationship to the owner. *See UNIF. TRADE SECRETS ACT* §§ 2-3, 14 U.L.A. 437 (1990 & Supp. 2001). Moreover, trade secret protection is, by design, less powerful than patent protection, a point to which we shall return shortly. *See infra* notes 53-58 and accompanying text.

32. *See infra* notes 54-58 and accompanying text.

33. *See* Roger D. Blair & Thomas F. Cotter, *An Economic Analysis of Seller and User Liability in Intellectual Property Law*, 68 U. CIN. L. REV. 1, 31-32 (1999).

34. *See* 17 U.S.C. § 411(a) (1994).

35. In some industries, it would be quite high, *see infra* text accompanying notes 69-70, and anecdotal evidence suggests that such searching is not frequently done.

authors begin with a model in which the costs of research and development, as well as the cost of independent invention, are relatively low.<sup>36</sup> On the basis of this assumption, the authors demonstrate that a patentee can deter entry on the part of an independent inventor (who would otherwise enter and compete as a Cournot duopolist<sup>37</sup>) by licensing his patent to  $n$  licensees for a royalty that is less than the cost each licensee would face if she were to independently invent.<sup>38</sup> Using this strategy, the patentee can ensure that the licensees will be better off as licensees than they would have been as independent inventors/competitors.<sup>39</sup> At the same time, the patentee is better off than he would be if the licensees were to independently invent and compete against him.<sup>40</sup> Of course, the patentee earns a lower profit than he would have earned under a regime without an independent invention defense, but his licensing revenue will exceed his own research and development costs.<sup>41</sup> His reward therefore is sufficient to induce him to undertake R&D but will result in a lower deadweight loss.<sup>42</sup> Maurer and Scotchmer also show that, under these assumptions, the threat of ex post competition will deter some firms from entering the race to invent the patented item, thus potentially reducing wastefully duplicative research and development costs.<sup>43</sup>

The limitations imposed by the model's assumptions suggest extreme caution in deriving any practical policy recommendations from it. First, as Maurer and Scotchmer recognize, their proposal does not improve social welfare if the patentee's cost of research and development is high relative to the cost of independent discovery—for example, when the ex ante probability of inventive success is low.<sup>44</sup> To make up for this potential de-

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36. See Maurer & Scotchmer, *supra* note 23, at 4-5.

37. In a Cournot duopoly, firms compete by setting quantities. See DENNIS W. CARLTON & JEFFREY M. PERLOFF, MODERN INDUSTRIAL ORGANIZATION 153-93 (3d ed. 2000)

38. Maurer & Scotchmer, *supra* note 23, at 4-5.

39. See *id.* at 4-5.

40. See *id.*

41. See *id.* at 4-6.

42. See *id.*

43. See *id.* at 7-9.

44. See *id.* at 14. Maurer and Scotchmer explain:

There are two basic reasons that the costs of duplication can be lower. First, merely knowing that someone has invented a product can be important for expected costs of duplication in cases where significant *ex ante* doubts exist about whether the proposed product can be made at all. (The atomic bomb is a particularly notorious example.) Second, competitors can cheat by claiming that they independently invented what they surreptitiously copied. . . .

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fect, Maurer and Scotchmer suggest that Congress could enact a series of exemptions from the independent-discovery defense for certain classes of inventions.<sup>45</sup> One problem with this approach, however, is that it would be sure to encourage rent-seeking on the part of industries claiming an entitlement to the exemption. Moreover, those industries in which R&D costs are sufficiently high that they ought to be exempt from the independent discovery defense<sup>46</sup> may well be the same ones in which the deadweight loss attributable to patent protection is highest, because there are fewer nonpatented alternatives to their patented products. In industries where R&D costs are lower, the probability that a patent will confer monopoly rights in an economically meaningful sense is probably much lower, or, to put it another way, designing around the patent to create a competing but noninfringing product is probably more feasible.<sup>47</sup> This means that the

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Pharmaceuticals are probably the best example of an industry with significant *ex ante* uncertainty about success. The probability of achieving a marketable, FDA-approved drug is about 1/5, conditional on having sunk the development costs. If the cost of every pharmaceutical that comes to market is \$.2b, firms must anticipate \$1b in revenues in order to cover costs on average. The effective cost of each new drug is therefore \$1b, since this is the minimum compensation needed to induce firms to invest. On the other hand, an independent invention defense could let imitators avoid “dry holes” and cut their R&D costs by 80%. In such a case, the threat of duplication would undermine the patent-holder’s profit to the point where he could no longer cover his costs.

*Id.*

45. *See id.* at 15. Alternatively, Maurer and Scotchmer suggest that, “in cases with significant *ex ante* uncertainty of success (*e.g.*, pharmaceuticals) judges would rule that independence is impossible”; or that “courts should set patent breadth so that the costs of imitation approximate the original inventor’s effective cost averaged over an appropriate number of dry holes.” *Id.* Judges may be less susceptible to regulatory capture than legislators or administrative agencies, but we still find ourselves somewhat skeptical over the courts’ institutional capacity to pick the right industries, or to set patent breadth, with such precision.

46. Maurer and Scotchmer suggest that the pharmaceutical industry is one of these industries. *Id.*

47. *See, e.g.*, Thomas F. Cotter, *Is This Conflict Really Necessary? Resolving an Ostensible Conflict Between Patent Law and Federal Trademark Law*, 3 MARQ. INTELL. PROP. L. REV. 25, 32-33 (1999) (noting that most patents do not confer monopoly power). Moreover, even when patents confer a degree of market power, long-run strategic considerations may constrain the patent owner from charging the price that would maximize profits in the short run. *See* Ian Ayres, *Pushing the Envelope: Antitrust Implications of the Envelope Theorem*, 17 MISS. C. L. REV. 21, 24 (1996) (suggesting that the possibility of incurring antitrust liability may in some cases constrain patent owners from charging the monopoly price for their products); F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 MINN. L. REV. 697, 730-32 (2001) (suggesting that patentees have an incentive not to charge the monopoly price, in order to

deadweight loss attributable to patent protection may be relatively low even in the absence of an independent discovery defense. If this is so, however, then under the Maurer-Scotchmer proposal the independent discovery defense would apply only in cases in which there is the least need for it. Such limited benefits must then be offset against the social cost of effecting change, which would include not only the rent-seeking noted above but also administrative costs and other problems discussed below.

A second problem with an independent discovery defense is that the patentee's competitors may have an incentive to copy but claim independent discovery, and that the attendant cost of determining whether a competing product is the result of copying or independent discovery could be substantial.<sup>48</sup> In response, Maurer and Scotchmer suggest that competitors could borrow the practice of software companies, which typically use "clean room" procedures to isolate their code-writing engineers from contact with the code embedded in products with which the companies wish to compete.<sup>49</sup> Presumably, firms that do not adopt clean room procedures

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maintain market share); Edmund Kitch, *Patents: Monopolies or Property Rights?*, 8 RES. L. & ECON. 31, 38-39 (1986) (similar).

48. See Maurer & Scotchmer, *supra* note 23, at 15-16. As several readers of an earlier draft of this paper have pointed out, however, state of mind is an issue in many patent cases—for example, in the common instance in which the patent owner alleges willful infringement. See *infra* notes 102-103 and accompanying text (discussing willful infringement). To the extent that state of mind is already a frequently litigated issue, the additional litigation cost imposed by an independent discovery defense may not be as great as suggested above. The question remains whether the social benefits of permitting state of mind to be litigated to the extent permitted under current law justify the resulting cost; maybe patent law already departs farther than is optimal from the strict liability model. A related question is whether a patent regime that made the infringer's state of mind irrelevant in all respects—thus doing away not only with notice as a precondition to the recovery of damages, but also with enhanced damages for willful infringement—would result in less infringement, by making the recovery of some damages more certain, or more infringement, by reducing the penalty for willful violations. Finally, it may be worth considering whether the prospect of enhanced damages for willful infringement serves as a counterweight to the unavailability of pre-notice damages, as well as other circumstances in which state of mind is relevant under existing law and how these problems interact with the liability standard. We would like to address these questions in future work but do not attempt to do so here.

49. See *id.* at 13; see also Douglas K. Derwin, *Licensing Software Created Under 'Clean Room' Conditions*, 276 PLI/Pat 439, 450-54 (July 1, 1989) (discussing clean room techniques). Conceivably, the actual use of clean room would not be necessary if the Maurer-Scotchmer plan worked as intended. A would-be user could merely threaten to use a clean room to independently invent, in the event that the patentee refused to license her, thus inducing the licensing transaction that promises to make both parties better off. In addition, presumably a competitor would be able to take advantage of the clean room

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would have a difficult time proving independent discovery.<sup>50</sup> Once again, however, we question whether the proposed modification would be practical as applied to patentable inventions. In the software industry, an engineer may be relatively unlikely to come into contact accidentally with a competitor's code. As other commentators have pointed out, however, limiting exposure to a wide variety of patented inventions is not so easy.<sup>51</sup> Creating an incentive to avoid contact with existing patents might also have perverse consequences, inasmuch as the information contained in existing patents might inspire researchers to discover new and better ways of achieving the same result, or new avenues of research altogether.<sup>52</sup> Absent a practical means of avoiding such contact, however, cheating may be rampant, and the resulting administrative costs of detecting it must be weighed against any potential benefits of independent discovery.

Third, even if an independent discovery defense leaves intact the incentive to invent, it might undermine the inventor's incentive to disclose the fruits of his invention, encouraging him to rely upon trade secret protection.<sup>53</sup> Thus, even if a regime that recognizes an independent-discovery

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procedure only if it did not give the clean room-sequestered employees "hints" as to how the problem is to be solved. We thank Stephen Maurer for clarifying these points.

50. The above discussion assumes that independent discovery is a defense, that is, that the plaintiff must prove an unauthorized manufacture, use, or sale of the patented invention, and that the defendant then may assert independent discovery as a defense. This framework would parallel the rule applied in copyright law. Although the plaintiff in a copyright action must prove copying, evidence that the defendant's work is similar to the plaintiff's and that the defendant had access to the latter is sufficient to shift the burden of proving independent discovery to the defendant. *See* *Three Boys Music Corp. v. Bolton*, 212 F.3d 477, 486 (9th Cir. 2000); *Herzog v. Castle Rock Entm't*, 193 F.3d 1241, 1249 (11th Cir. 1999).

51. *See* Martin J. Adelman, *Property Rights Theory and Patent-Antitrust: The Role of Compulsory Licensing*, 52 NYU L. REV. 977, 984 (1977).

52. *But see infra* note 53 (noting some commentators' skepticism over the disclosure rationale of patents).

53. *See, e.g.,* Blair & Cotter, *supra* note 18, at 78-80 (noting that the four most common justifications for the patent system are that it encourages invention, disclosure, and commercialization, and that it may facilitate the efficient coordination of follow-up inventions). The disclosure rationale can be criticized on various grounds. One is that the Patent Act requires the patentee to provide an enabling disclosure and to set forth his "best mode" as of the date he files the application, *see* 35 U.S.C. § 112; 3 CHISUM, *supra* note 6, § 7.05[1][a]; Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 287 (1977) [hereinafter Kitch, *Nature and Function*], but not to disclose any subsequent improvements he may discover in the manner of making or using the invention, *see* Kitch, *Nature and Function, supra*, at 287. This latter information may qualify as a trade secret, however; and Professor Kitch argues that the patent framework facilitates the transfer of this latter information, by reducing the problems associated with Arrow's information paradox. *See* Kitch, *Nature and Function, supra*, at 287-88; Ed-

defense offers a reward that is sufficient to cover the patentee's R&D costs, the inventor might opt for trade secrecy if the latter offers the prospect of a higher reward. Of course, independent discovery of a trade secret is lawful as well, but the inventor does not have to disclose his information to the world in exchange for trade secret protection.<sup>54</sup> In some cases, then,

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mund W. Kitch, *The Patent Policy of Developing Countries*, 13 UCLA PAC. BASIN L.J. 166, 171-76 (1994); see also Rebecca S. Eisenberg, *Patents and the Progress of Science*, 56 U. CHI. L. REV. 1017, 1029-30 (1989) (arguing that the patent system promotes disclosure by making it easier for inventors to sell or license their inventions to others). Second, one might argue that, if the inventor believes he can keep his invention secret, he is better off relying upon trade secret than patent protection, because trade secret protection is of potentially infinite duration. See posting of Professor Dan Burk, University of Minnesota Law School, to ipprofs listserv (Feb. 13, 2001) (on file with authors) (making this argument). On this reasoning, the inventor who expects that his discovery will be independently discovered or reverse-engineered within, say, two years has an incentive to apply for a patent, which if granted will extend his exclusive rights for up to twenty years, rather than to rely upon trade secret protection, which is likely to terminate upon the date of independent discovery. In such a case, however, the patent system does not induce any additional disclosure than would otherwise occur, because by hypothesis the invention is expected to be independently discovered or reverse-engineered within two years. This argument nevertheless ignores several relevant factors. First, independent discovery or reverse engineering is not necessarily the same thing as public disclosure. Information can remain a trade secret, even though it is known to two or more competitors within a given industry, as long as it is not readily ascertainable by proper means by others. See RESTATEMENT (THIRD) OF UNFAIR COMPETITION § 39 cmt. f (1995). Second, if in the preceding example the expected date of independent discovery or reverse engineering is earlier than what the actual date of independent discovery or reverse engineering would have been, the patent system has succeeded in inducing early disclosure (although this benefit must be weighed against the greater social costs of patent protection). More generally, suppose that the expected date of independent discovery or reverse engineering is uncertain, but that the inventor expects this event to occur within five years. Whether he is better off choosing patent or trade secret protection may depend on other facts (for example, the obsolescence rate of the technology, the inventor's taste for risk, the probability of successfully obtaining a valid patent, and so on). In some cases, it may be rational for the inventor to apply for a patent, despite the fact that patent protection risks disclosing his invention "early," to the relative uncertainties of trade secret protection.

54. If the invention is a product that the inventor sells to the public, it is likely that someone will discover the trade secret through reverse engineering sooner or later. See Adelman, *supra* note 51, at 981-82. Reverse engineering or independent discovery may not be inevitable, however; witness Coca-Cola's long-held trade secret on the formula for its soft drink. See also Stern, *supra* note 29, at 950. Moreover, if the invention is a process, reverse engineering of the resultant product does not necessarily reveal the nature of that process. See Joan E. Schaffner, *Patent Preemption Unlocked*, 1995 WIS. L. REV. 1081, 1122 (citing Martin J. Adelman, *Trade Secrets and Federal Pre-emption—The Aftermath of Sears and Compco*, 49 J. PAT. OFF. SOC'Y 713, 725-27 (1967)); Leon Radomsky, *Sixteen Years After the Passage of the U.S. Semiconductor Chip Protection Act*:

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the existence of an independent discovery defense in patent law might encourage secrecy, and it is unclear whether the expected reduction in the deadweight loss outweighs the social cost of secrecy. Alternatively, an independent discovery defense in patent law might undermine the rationale of the Supreme Court's decision in *Kewanee Oil Co. v. Bicron Corp.*<sup>55</sup> that federal patent law does not preempt state trade secret law.<sup>56</sup> One of the factors the Court cited in support of its conclusion that trade secret law is sufficiently weak in comparison with patent law to avoid preemption with the latter, is that trade secret law permits independent discovery.<sup>57</sup> The recognition of independent discovery as a defense to patent infringement therefore might lead to the preemption of trade secret law. It is far from certain, however, that this would be a good result, since many analysts be-

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*Is International Protection Working?*, 15 BERKELEY TECH. L.J. 1049, 1078 (2000) (citing Robert L. Risberg, Jr., Comment, *Five Years Without Infringement Litigation Under the Semiconductor Chip Protection Act: Unmasking the Spectre of Chip Piracy in an Era of Diverse and Incompatible Process Technologies*, 1990 WIS. L. REV. 241, 256 (1990)).

55. 416 U.S. 470 (1974).

56. *Id.* at 492-93.

57. *See id.* at 489-90. To be more precise, the Court separately considered four cases in which patent and trade secret law might conflict; first, when the subject of the trade secret comprises nonpatentable subject matter; second, when it comprises patentable subject matter that the inventor "knows will not meet the standards of patentability"; third, when it comprises patentable subject matter but the inventor "has a legitimate doubt" as to the invention's patentability; and fourth, when it comprises a "clearly patentable invention." *See id.* at 482-92. The arguments in favor of permitting trade secret protection for the first three categories are relatively straightforward. *See id.* at 482-89 (concluding that, in the first two cases, trade secret law does not frustrate the federal policy in favor of disclosure of inventions and may encourage some innovation; and that, in the third case, trade secret law reduces the social cost of prosecuting and defending patents of dubious validity). When the inventor chooses trade secret over patent protection for a clearly patentable invention, however, his choice does tend to undermine the federal goal of disclosure. *See id.* at 489. The majority in *Kewanee* nevertheless concluded that this conflict between federal and state law is minimal, because patent protection is so much stronger than trade secret protection that few inventors prefer trade secret to patent protection when both forms are available for the same invention. *See id.* at 490. As others have pointed out, however, this conclusion is not necessarily true; sometimes inventors may prefer trade secret protection, despite its potential infirmities, because it permits them to keep their inventions secret. *See supra* note 53 (discussing disclosure); *see also* Stern, *supra* note 29, at 946-52. As the Court also noted in *Kewanee*, however, a rule preempting trade secret law only with respect to patentable inventions would be difficult to administer. *See Kewanee Oil*, 416 U.S. at 492. *But see* Stern, *supra* note 29, at 986-88 (expressing doubt that a partial-preemption regime would be infeasible). But if preemption must be an all-or-nothing proposition in the present context, and if the availability of trade secret protection offers some social benefits that total preemption would destroy, then there must remain some distinctions between patent and trade secret law; and the lack of an independent discovery defense in patent law is one obvious candidate.

lieve that trade secret law provides a useful complement to patent protection.<sup>58</sup>

A fourth problem is that the Maurer-Scotchmer thesis depends upon the patentee being able to license the invention, but licensing is not always a feasible choice in the real world. The transaction costs of and other obstacles to licensing can be burdensome for a number of reasons, including asymmetric information; the potential for competition from substitutes for the patented invention; the interdependence of potential licensees' demand curves; and the fact that licensees are free to challenge the patent's validity.<sup>59</sup> As a result, licensors typically receive only a portion of the total profit that is theoretically available from the exploitation of their inventions, with one study showing an average of just forty percent.<sup>60</sup> Of course, licensing can be a rational strategy when the licensee can produce or market the patented good at lower cost than can the patentee, or have other advantages. Nevertheless, to the extent that Maurer and Scotchmer assume away the transaction costs of licensing,<sup>61</sup> their proposal may overestimate the social benefits to be gained from an independent discovery defense.

The following hypothetical illustrates the fifth problem. Suppose that, in a system that recognizes the independent discovery defense, A patents an invention, B independently discovers the same invention, and C then markets yet another embodiment of the same invention. If B's invention is not patentable and C is therefore free to copy from B,<sup>62</sup> the value of A's

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58. See David D. Friedman et al., *Some Economics of Trade Secret Law*, 5 J. ECON. PERSP. 61, 64 (1991); Kitch, *Nature and Function*, *supra* note 53, at 288; cf. Dan Burk, *Muddy Rules for Cyberspace*, 21 CARDOZO L. REV. 121, 172 (1999) (suggesting that trade secret law economizes on self-help expenses that businesses would otherwise incur to keep information secret); Stern, *supra* note 29, at 970 (questioning this rationale for trade secret law). *But see* Robert G. Bone, *A New Look at Trade Secret Law: Doctrine in Search of Justification*, 86 CALIF. L. REV. 241, 260-83 (1998).

59. See Roger D. Blair & Thomas F. Cotter, *The Elusive Logic of Standing Doctrine in Intellectual Property Law*, 74 TUL. L. REV. 1323, 1404-05 (2000); Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 1052-66 (1997) (arguing that transaction costs may inhibit some otherwise beneficial licensing transactions from going forward).

60. See Blair & Cotter, *supra* note 59, at 1405 (citing Richard E. Caves et al., *The Imperfect Market for Technology Licenses*, 45 OXFORD BULL. ECON. & STAT. 249, 258 (1983)).

61. See Maurer & Scotchmer, *supra* note 23, at 3-4.

62. B's independently discovered invention would *not* be patentable, absent further modifications of the law. See 35 U.S.C. § 102 (1994) (stating that a person is not entitled to a patent if, *inter alia*, before his date of invention another had already obtained a patent

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patent plummets further. Of course, B will not independently invent, and C therefore will not copy from B, if A follows the licensing strategy suggested by Maurer and Scotchmer. But if for some reason that strategy turns out to be impracticable, A risks having his patent become worthless. (C also would have an incentive to cheat, by claiming to have copied from B and not A, even if he actually copied from A). Alternatively, if B's independently discovered invention *were* patentable, this would create problems of its own. For one thing, this policy would prolong the eventual date on which the invention falls into the public domain, unless in cases such as this the law provided that all patent terms for the same invention must end on the same date. Furthermore, it would complicate matters for potential users or licensees of the invention. Would potential licensees have to license from both A and B? If so, would this deter the optimal use of the invention? Or would it cut into the incentive to invent, by lowering the expected rewards of both A and B?

Sixth, as Maurer and Scotchmer themselves recognize, there is considerable debate over whether patent races are, on balance, a bad thing.<sup>63</sup> Although patent races may give rise to wastefully duplicative research and development expenses, they also may accelerate the production of the invention—or give rise to new insights along the way.<sup>64</sup> To the extent that patent races may confer benefits upon society, an independent discovery rule designed to reduce incidences of these races may be counterproductive. Finally, recognition of an independent discovery defense in patent law, whatever its merits may be, would probably be unlawful under article

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on the same invention or otherwise disclosed the invention in a printed publication, or the invention was known or used in the United States).

63. See Maurer & Scotchmer, *supra* note 23, at 17.

64. Professor Scotchmer herself has written on the division of opinion regarding the desirability of patent races. See Suzanne Scotchmer, *Incentives to Innovate*, in PALGRAVE ENCYC. OF LAW & ECON. 273, 275 (1998) (noting “two views on patent races: that they inefficiently duplicate costs, and that they efficiently encourage higher aggregate investment”); see also JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* 400 (1988) (noting that the loser in a patent race may benefit from positive spillovers, may develop another product, and may gain experience for future races); Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 870-79 (1990) (arguing that empirical evidence is more consistent with the theory that competition in the market for improvements spurs innovation, despite possible efficiency losses attributable to rivalrous invention); Jennifer F. Reinganum, *The Timing of Innovation: Research, Development, and Diffusion*, in 1 HANDBOOK OF INDUSTRIAL ORGANIZATION 849, 853-68 (Richard Schmalensee & Robert D. Willig eds., 1989) (discussing literature on patent races).

28 of the TRIPs Agreement.<sup>65</sup> While this is not an argument against the proposal on the merits, it does highlight the practical difficulty of implementing it.

### III. NEGLIGENCE VERSUS STRICT LIABILITY

A second alternative to an intent-based standard would be a negligence standard, under which an infringer would be liable only if she did not conduct an efficient amount of searching. This might be less harmful to the patentee than an independent discovery rule, since some independent discovery would remain illegal. As explained below, however, a negligence standard would also impose high administrative costs, because the stan-

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65. Member nations are obligated to confer upon patent owners the exclusive right to prevent others from making, using, offering for sale, selling, or importing the patented invention. Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, art. 28, LEGAL INSTRUMENTS—RESULTS OF THE URUGUAY ROUND vol. 31, 33 I.L.M. 1197 (1994) [hereinafter TRIPs]. Nations may provide limited exceptions to these rights, “provided that such exceptions do not unreasonably conflict with a normal exploitation of the patent and do not unreasonably prejudice the legitimate interests of the patent owner, taking account of the legitimate interests of third parties.” *Id.* art. 30. Although we have found no authority addressing the issue of whether an independent discovery defense would conflict with TRIPs, our research has uncovered no evidence that any other country currently recognizes this defense. This fact by itself might suggest that such an exception would “unreasonably conflict with the normal exploitation of the patent.” Exceptions that are commonly viewed as falling within the scope of article 30 include (1) prior use (i.e., a person who has made a secret use of an invention prior to another’s invention and patenting thereof may in some circumstances be permitted to continue using it after the issuance of the patent); (2) private noncommercial use; (3) some experimental, research, and teaching uses; (4) pharmaceutical preparation for individual doses of medicine according to prescription; (5) acts done in reliance that they were not prohibited by a valid patent claim as initially granted, but that come within the scope of the patent as subsequently amended; (6) governmental use; and (7) (probably) importation of a patented product that has been marketed in another country with the consent of the patent owner. See CARLOS M. CORREA & ABDULQAWI A. YUSUF, INTELLECTUAL PROPERTY AND INTERNATIONAL TRADE, THE TRIPs AGREEMENT 207-08 (1998); CARLOS M. CORREA, INTELLECTUAL PROPERTY RIGHTS, THE WTO AND DEVELOPING COUNTRIES 75-76, 240-41 (2000); MARKUS NOLFF, TRIPs, PCT AND GLOBAL PATENT PROCUREMENT 19-21 (2001); see also Maureen O’Rourke, *Toward a Doctrine of Fair Use in Patent Law*, 100 COLUM. L. REV. 1177, 1201 (2000) (arguing that TRIPs would permit a limited fair use defense to claims of patent infringement). Technically, the TRIPs Agreement only obligates member nations to impose TRIPs’s minimum standards with respect to the nationals of other member nations, and not with respect to members’ own nationals. See TRIPs, *supra*, art. 1(3). Nevertheless, it seems unlikely that many nations would find it politically popular to impose an independent discovery defense upon their own patent owners if they lacked the ability to do so with respect to foreign patent owners.

## STRICT LIABILITY IN PATENT LAW

dard of care would vary from one case to another. For this reason, we conclude that strict liability is superior to negligence in this context.

In this analysis, we shall consider the case of unintentional (i.e., inadvertent or accidental) patent infringement, as opposed to “knowing” infringement. In other words, a firm invests time, money, and talent in order to invent a new product or process; it independently discovers something that has already been patented by another firm; and in total ignorance of the prior discovery, it proceeds to market its new product and thereby infringes the valid patent issued to another firm. There are a variety of liability rules that could be implemented. These include strict liability and various negligence standards: simple negligence, contributory negligence, and comparative negligence. Liability rules have allocative significance regarding the expenditure of resources to avoid infringement. They also have distributive significance regarding the identity of the party who bears the risk of infringement. We examine these issues below.

### A. Strict Liability

A rule of strict liability for patent infringement allows no accommodation can be made for unintentional infringement. Irrespective of the fact that the infringer took measures—even substantial measures—to avoid patent infringement, if she infringed a valid patent, the infringer will be liable for the full economic injuries that the infringement caused. In principle, the patentee will receive full compensation for any injury due to the infringement.<sup>66</sup>

Presumably, unintentional infringement occurs because information regarding extant patents is imperfect. The infringer must have been unaware that her “new” product or process infringed a valid patent held by another party for the infringement to be inadvertent. Acquiring perfect information regarding the existence of valid patents would eliminate inadvertent infringement.<sup>67</sup> Combing the Patent Office records and carefully analyzing the existing patents can reduce the probability of inadvertently infringing a valid patent. But these search efforts are costly and, therefore,

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66. This is problematic. *See infra* note 74 and accompanying text.

67. This may be too strong, since there can be an honest difference of opinion as to whether something infringes a valid patent. Indeed, until a court definitively construes the patent claims and decides whether the accused device infringes, the best that either patentee or alleged infringer can do is to assess the probability of infringement. *See* Carl Shapiro, Antitrust Limits to Patent Settlements, available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=273552](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=273552), at 9 (describing patents as “*partial* or *probabilistic* property right[s]”).

a complete search, i.e., perfect information, is not optimal. A simple economic model demonstrates this.<sup>68</sup>

Suppose that the patent infringement causes an economic injury represented by  $D$ . The probability of infringing a valid patent is a function of the search efforts expended by the potential infringer, i.e.,  $P = P(S)$  where  $P$  denotes the probability of infringement and  $S$  denotes the units of search. Presumably,  $P(S)$  declines as  $S$  increases ( $dP(S)/dS < 0$ ). The expected damage is the probability of infringing times the injury if infringement occurs:  $P(S)D$ . The costs of search result from having to pay knowledgeable people to review and evaluate patent files. These can be described as  $wS$  where  $w$  is the wage rate and  $S$  represents the units of search. For society, the total costs of possible infringement are equal to the sum of the expected damage award plus the cost of avoiding infringement:

$$TC = P(S)D + wS.$$

Given a rule of strict liability, the potential infringer bears these costs and will search at a privately optimal, i.e., profit maximizing, level. This level is found where

$$dTC/dS = (dP/dS)D + w = 0$$

or where

$$w = -(dP/dS)D.$$

Thus, the potential infringer will expand her search efforts to the point where the marginal cost of further searching equals the marginal benefit of further searching. The left-hand side is the marginal cost of further searching as one more unit of search costs  $w$ . The right-hand side is the marginal benefit of further searching—the reduction in the probability of infringing that results from further searching ( $dP/dS$ ) times the damage ( $D$ ) if infringement occurs. Thus, the marginal benefit of further searching is the marginal decrease in the expected damage award.

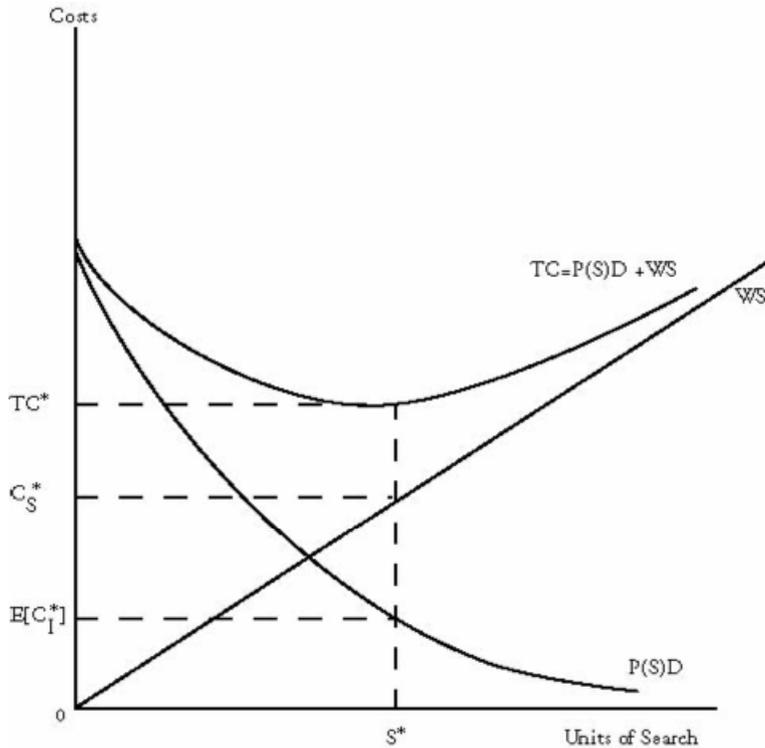
These results are summarized in Figure 1. The expected damage,  $P(S)D$ , declines as search increases because the probability of infringing declines with expanded search. The cost of search,  $wS$ , increases with increases in search because the searchers have to be paid. The total cost ( $TC$ ) is the vertical sum of  $P(S)D$  and  $wS$ . A potential infringer will minimize her expected total cost by engaging in  $S^*$  units of search. At the minimum point on  $TC$ , the slope of  $wS$  equals the absolute value of the slope of  $P(S)D$ , which is the optimality condition expressed above.

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68. What follows is an adaptation of the model of precaution presented in ROBERT COOTER & THOMAS ULEN, LAW AND ECONOMICS 347-60 (1988).

## STRICT LIABILITY IN PATENT LAW

Figure 1



Since the total costs to the potential infringer are all of the costs borne by anyone, these are also the social cost associated with possible infringement. Thus, a rule of strict liability leads to the *socially* optimal amount of search ( $S^*$ ), i.e., the social cost minimizing quantity of search. Strict liability for patent infringement is allocatively efficient in the sense that the socially efficient quantity of resources is allocated to searching patent records and analyzing them for possible infringement.

As a distributive matter, all of the risk associated with possible patent infringement falls on the potential infringer. No matter how extensive her search efforts, if infringement occurs, the infringer bears all of the costs. The patentee bears none of the risk of loss due to infringement.

At the cost minimizing search level ( $S^*$ ), the total cost is  $TC^*$ , which is composed of the search costs ( $wS^*$ ) plus the expected infringement damages,  $P(S^*)D$ . Since  $P(S^*)D$  is positive, this means that the optimal amount of search does not reduce the probability of infringement to zero. There is, in other words, a socially (and privately) optimal amount of infringement, which is not zero. This makes sense because reducing the probability of infringing such that  $P(S)D$  is lower than  $P(S^*)D$  is neither socially nor privately cost justified—it would cost more than it is worth.

This, however, raises a question about what one means by *inadvertent* or *unintentional* infringement. The potential infringer deliberately proceeds knowing full well that her search was imperfect because a perfect search would not be cost-justified. Even *ex ante*, the decisionmaker knows that the probability that his invention will infringe a valid patent is not zero. While he does not proceed knowing for certain that infringement will occur, he surely knows that it is a possibility.

## B. Simple Negligence

Under a simple negligence rule, a firm engaged in R&D could protect itself from a patent infringement suit by meeting some standard of care regarding search. That is, a potential infringer has the burden of taking care not to infringe. If we define this duty in terms of search,  $S = S^I$ , then a potential infringer will not be liable for inadvertently infringing a valid patent if his actual search efforts are greater than or equal to  $S^I$ . In that event, no matter how great the economic loss to the patentee, the infringer will not be liable for damages. In contrast, if the infringer has not met his burden, i.e., if  $S$  is less than  $S^I$ , then the inadvertent infringer will be fully liable for the actual damages suffered. In this case, a miss is as good as a mile. If  $S$  just falls short of  $S^I$ , the innovator will be liable if his product or process infringes a valid patent.

If judicial precedent establishes a socially optimal duty of care ( $S^I = S^*$ ) then we will have the same allocatively efficient result as we had with strict liability. The privately optimal amount of search will be  $S^*$ , which we know to be socially efficient. The major difference is that the risk of injury shifts to the patentee. No matter how extensive the economic harm associated with infringement, if  $S$  equals or exceeds  $S^*$ , the burden of the loss falls on the patentee rather than on the infringer.

The optimality of simple negligence requires the equality of the judicially determined standard of precaution,  $S^I$ , and  $S^*$ . Suppose that  $S^I$  exceeds  $S^*$  as shown in Figure 2. In that event, the potential infringer's cost coincides with  $TC$  until  $S = S^I$ , at which point the infringer's cost drops to  $wS$ . The potential infringer will invest in search up to  $S^I$ , which is socially excessive albeit privately optimal. Although the additional search ( $S^I - S^*$ ) is *privately* cost justified, it is not *socially* cost justified and, therefore, is excessive. There are, of course, limits on how far past  $S^*$  the duty to search can be set. The critical value is at  $S^{II}$  where  $wS^{II} = TC(S^*)$ :

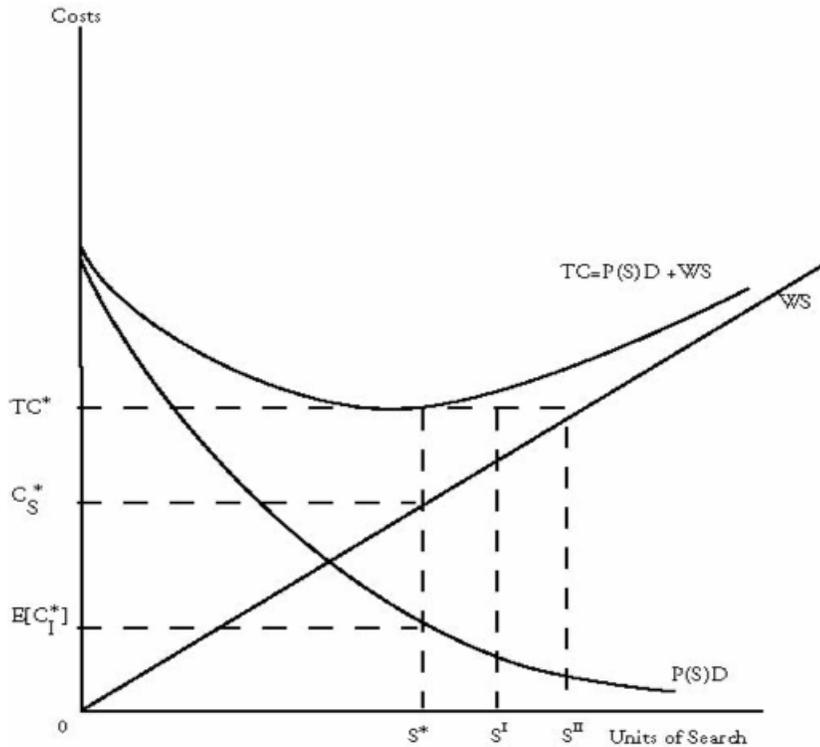
$$wS^{II} = wS^* + P(S^*)D.$$

When the duty of care is above  $S^{II}$ , the private search cost will exceed the combination of search cost and expected damage payment at a search level of  $S^*$ . Thus, if the standard of care exceeds  $S^{II}$ , the potential infringer will

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behave as though there were a rule of strict liability. In that event, the potential infringer will invest in search at the optimal level:  $S = S^*$ .

Figure 2



The practical problem is that under a negligence standard, courts must determine the optimal amount of search, which varies from case to case, presenting an administrative nightmare. The socially optimal value of  $S$  depends upon the values of  $w$  and  $D$ . The more expensive the search (i.e., the higher the  $w$ ), the lower the socially optimal value of  $S$ . Some products or processes may have fairly low search costs, but the costs may be quite substantial for other products. For example, in the semiconductor industry, there are literally thousands of patents, which are often quite complex and, therefore, quite expensive to analyze. In fact, there is a “patent thicket” in this industry that would paralyze any R&D effort.<sup>69</sup> Industry participants

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69. See, e.g., Bronwyn H. Hall & Rosemarie Ham Ziedonis, *The Patent Paradox Revisited: An Empirical Study of Patenting in the U.S. Semiconductor Industry, 1979-1995*, 32 RAND J. ECON. 101, 102 (2001) (discussing increase in semiconductor-related patents since the early 1980s).

have responded by entering into broad cross-licensing agreements that protect them from patent infringement suits.<sup>70</sup>

The damage due to infringement will vary from case to case as well. Obviously, the greater the value of  $D$ , the larger the socially optimal value of  $S$  will be. The more serious the possible injury, the greater the effort to avoid it will be.

In summary, a simple negligence approach to assigning fault is complicated because the cost of search will vary from case to case, as will the harm inflicted by patent infringement. This means that the socially optimal extent of search will vary from case to case. As a result, the jury would have to decide whether a specific case of inadvertent infringement should be excused because the defendant acted reasonably. This, of course, is difficult to do *ex poste* in the harsh light of day because the defendant acted *ex ante*. If juries tend to impose too severe a standard of precaution ( $S > S^*$ ), then some resources will be wasted on excessive search.<sup>71</sup> If the standard tends to be too low ( $S < S^*$ ), then search will be inadequate and *permissible* (i.e., excused) patent infringement will be socially excessive.

### C. Contributory Negligence

Strict liability and simple negligence impose no burden whatsoever on the patentee. If the patent is valid, the patentee's behavior does not affect liability (except in the rare case in which the patentee has engaged in conduct rising to the level of an antitrust violation or patent misuse).<sup>72</sup> In some circumstances, however, a burden can be put on the patentee. For example, if a patentee has a duty to provide notice and fails to do so, he will have contributed to the infringement problem and will not be able to recover losses due to infringement should that occur.

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70. *See id.* at 109.

71. For empirical evidence consistent with the common belief that juries are more pro-patent owner than are judges, see Kimberly A. Moore, *Judges, Juries, and Patent Cases—An Empirical Peek Inside the Black Box*, 99 MICH. L. REV. 365, 386-89 (2001). Another potential weakness of the negligence approach is that, as under the independent invention regime, the social cost of determining what the defendant knew and when she knew it will arise in at least some cases. To illustrate, suppose that the defendant (1) made, used, or sold the patented invention without permission, but (2) claims not to be liable because she only made, used, or sold after having conducted an adequate search that failed to turn up the patent. Once again, the court would have to determine whether the defendant independently invented or copied the invention.

72. If the parties behave in a privately optimal fashion, there is no allocative significance as either rule results in the socially optimal extent of search. The difference is that the risk of loss in instances when infringement occurs anyway falls not on the infringer with strict liability, but on the patentee with a simple negligence rule.

## STRICT LIABILITY IN PATENT LAW

The notice requirement is a duty to inform potential infringers. Suppose the notice requirement—the adequacy of the notice—is  $N^*$  and that the standard for adequate search is  $S^*$ , then the liability rules can be explained as follows:

1. If  $S \geq S^*$ , then the potential infringer is not negligent and cannot be liable for any harm no matter what the patentee does. Even if  $N \geq N^*$ , the infringer will not be liable.
2. If the patentee fails to meet his burden, i.e., if  $N < N^*$ , then the patentee cannot recover for infringement. Even if  $S < S^*$ , i.e., the potential infringer has not met his burden, the patentee cannot recover.

Imposing a notice requirement on the patentee can be seen as a means of reducing the search costs for a potential infringer. To the extent that it is relatively cheaper for the patentee to provide notice than it is for a potential infringer to search patent records, it is socially beneficial to impose notice requirements, as resources will be saved. If, however, it is relatively costly for the patentee to provide adequate notice, this may lead to a waste of resources. We should note, however, that a contributory negligence standard also poses administrative difficulties. For example, it would not seem to be easy to select the appropriate value of  $N$ , i.e., the value that will minimize social costs. This value is not unique because the cost of providing notice will vary from case to case, depending on the size of the article, its method of distribution, and other factors.<sup>73</sup> In addition, the contributory

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73. In fact, the existing statutory scheme does require courts on occasion to consider whether the patentee has provided sufficient constructive notice under § 287. First, the notice itself must be legible. *See, e.g., Trussell Mfg. Co. v. Wilson-Jones Co.*, 50 F.2d 1027, 1030 (2d Cir. 1931) (holding that marking must be legible without resort to a magnifying glass). Second, it must be sufficient to “notify the public concerning the patent status of items in commerce.” *Amsted Indus.*, 24 F.3d at 185. For a sampling of cases discussing whether the patentee’s marking was sufficient, see, e.g., *Douglas Press, Inc. v. Arrow International, Inc.*, No. 95 C 3863, 1997 WL 441329, at \*5-7 (N.D. Ill. July 30, 1997) (holding that the owner of patents on lottery-type card games, consisting of a master game card and individual playing cards, complied with § 287 even though it marked the master game cards only); *Shields-Jetco Inc. v. Torti*, 314 F. Supp. 1292, 1303-04 (D.R.I. 1970) (holding that marking on the inner surface of a device was appropriate, because marking on the outer surface would wear away), *aff’d on other grounds*, 436 F.2d 1061 (1st Cir. 1971); *see also Amsted Indus.*, 24 F.3d at 185 (suggesting that the patentee should have marked the center plate component it sold to customers, for the latter to assemble into the patented railroad car underframe); Steven C. Seberoff, *New Requirements in Patent Marking and Notice*, 76 J. PAT. & TRADEMARK OFF. SOC’Y 793, 799 (1994) (interpreting *Amsted Indus.* to mean that the patentee must provide a marking

negligence approach also requires a determination of the search standard, which is complicated.

We can employ familiar principles to explore the optimal decision to provide notice. For simplicity, we shall assume that if a patentee sues for lost profits suffered as a result of patent infringement, he will win and will be awarded the full lost profits. This, of course, is somewhat unrealistic because the probability of prevailing in court is not one. Moreover, there is some chance that the jury will under compensate the patentee or that the defendant will be unable to pay the full damage award. Even under these simplifying assumptions, however, there will still be the costs associated with the litigation.<sup>74</sup>

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sufficient to put “potential copyists” on notice, since the public generally would never observe the underframe of a railroad car). Third, as noted above the patentee must make reasonable efforts to ensure that its licensees comply with the marking requirement. *See Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1111-12 (Fed. Cir. 1996).

The interplay of these requirements can be complex. Consider, for example, the case of a patent on a component that is used in the interior of a common product, such as a television set. In light of the above authorities, does the patent owner have a duty to ensure that its licensee (the manufacturer of the completed television set) mark the outside of the set, so as to notify every potentially liable party in the chain of distribution (including not only the manufacturer of the television, but also distributors, retailers, and consumers)? Or is it sufficient for the patentee to mark the components themselves, on the theory that potential copiers of the component will take the set apart to view the component?

Finally, when marking the product itself is not feasible (for example, because of the product’s size) the patentee may mark the product packaging instead. *See* 35 U.S.C. § 287(a) (1994). Courts therefore sometimes must determine whether marking the product is feasible and, if not, whether the marking on the package is sufficient. *See, e.g.*, *Sessions v. Romadka*, 145 U.S. 29, 49-50 (1892) (noting uncertainty over whether the patentee could have legibly marked the smaller sizes of its patented trunk catches, and stating that “in a doubtful case something must be left to the judgment of the patentee”); *Rutherford v. Trim-Tex, Inc.*, 803 F. Supp. 158, 162-64 (N.D. Ill. 1992) (discussing various factors that are relevant to this determination, including the size of the article, the expense of marking the article in comparison with the expense of marking its packaging, whether marking would deface the product, the custom of the industry, and whether the article bears any other marking). For further discussion of the case law on marking sufficiency, see 7 CHISUM, *supra* note 6, §§ 20.03[7][c][iii]; 1 ETHAN HORWITZ & LESTER HORWITZ, PATENT LITIGATION: PROCEDURE & TACTICS, §§ 1.02[4][d][vi], [ix] (2001); Oppedahl, *supra* note 19, at 213-15; Jessica Siegel, Comment, *The Patent Marking & Notice Statute: Invitation To Infringe or Protection for the Unwary?*, 36 HOUS. L. REV. 583, 597-600 (1999).

74. Unless the infringement is willful, an aggrieved patentee must pay his own costs of litigation—attorneys’ fees, expert fees, and so on. *See Blair & Cotter, supra* note 18, at 7, 50-51. Moreover, the cost of distracting key employees in the litigation process is similarly uncompensated. And in some cases, the cost to the patentee of detecting infringement may be substantial; *cf. Wanlass v. Gen. Elec. Co.*, 148 F.3d 1334, 1341 (Fed. Cir.

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We shall denote the litigation costs as  $L$ . These costs will only occur if infringement occurs and this, of course, is not certain. Let  $p$  represent the probability that a latecomer will independently discover and market the same invention. Since we are dealing with inadvertent infringement, we assume that the latecomer will not go to market (and thereby infringe a valid patent) if she knows that a valid patent already exists. The patentee can reduce the probability of inadvertent infringement by investing in notice  $N$  at a cost of  $C(N)$ . From the patentee's perspective, the question is what value of  $N$  will minimize the costs of litigation and notice:

$$TC = p(N)L + C(N).$$

The optimal value of  $N$  solves the first-order condition

$$dTC/dN = Ldp(N)/dN + dC(N)/dN = 0.$$

The optimal value of  $N$  occurs where the marginal cost of additional notice  $dC(N)/dN$  equals the marginal benefit of reducing the expected litigation costs,  $Ldp(N)/dN$ . This does not mean that  $N$  is necessarily positive. It can be optimal for the patentee to invest no resources in notice, i.e., it is possible for  $N^* = 0$ .<sup>75</sup>

### IV. STRICT LIABILITY WITH NOTICE OR KNOWLEDGE AS A PRECONDITION TO DAMAGES RECOVERY

Yet another variation on the theme would be to apply a strict liability standard, but to condition the patentee's ability to obtain a remedy upon the infringer's actual knowledge or receipt of notice that his conduct infringes the plaintiff's patent. This framework is similar to the contributory negligence standard discussed above, except that the defendant would be liable for infringement regardless of how much (or how little) search he engaged in, if he made, used, or sold the patented invention with knowledge or after receipt of notice. In the following sections, we provide some reasons why this type of system—a form of which is embodied in our current Patent Act—may be superior to a “true” strict liability system. We also suggest, however, that the optimal form of such a rule is elusive, thus

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1998) (Rader, J., dissenting) (arguing that laches should not bar a patent owner from enforcing a patent against the defendant, despite evidence that the burden of policing potential infringers was in this case excessive).

75. This will occur if  $p(N)L$  evaluated at  $N = 0$  lies below  $p(N)L + C(N)$  for all values of  $N > 0$ . What drives this outcome are large fixed costs of providing notice. That is, the cost of notice function is of the form  $C(N) = a + \omega(N)$ , where  $a$  is a fixed cost that can be avoided if no notice is given (i.e., if  $N > 0$ ). If  $a$  is sufficiently large, it is possible for  $p(N)L$  at  $N = 0$  to be below  $p(N)L + C(N)$  for all values of  $N > 0$ .

leaving open the question of whether section 287 should be amended in any significant way.

### A. The Relevant Considerations<sup>76</sup>

We begin our analysis of a “pure” versus modified strict liability regime by assuming that A is the leader in a patent race between A and B. A therefore must decide (1) at time  $t_1$  whether to invest in creating a new invention which, if invented, will be patented and marketed at time  $t_2$ ; and (2) at time  $t_2$  whether to attempt to put B on notice of A’s patent.<sup>77</sup> Whether or not A is obligated to provide notice to potential infringers, A will choose to do so if the expected benefit—deterring infringement, which otherwise may cause A to incur uncompensated losses—outweighs the expected cost. As above, A will invest in providing notice up to the point at which  $dC(N)/dN = -Ldp(N)/dN$ .<sup>78</sup> We assume further that if B receives actual notice of the patent at time  $t_2$ , B will decide not to invest in creating the same invention, and that her expected return will be zero. Unless B can be sure of receiving actual notice of every relevant patent, however, at time  $t_2$  B must decide, if she has not yet received any actual notice, whether to conduct her own independent search of the prior art before investing in the new invention. As discussed above, we would expect B to search up to the point at which  $w = -(dP/dS)D$ .<sup>79</sup>

On these assumptions, the total social cost of infringement would include  $p(N)L + C(N) + w(S)$ . Ideally, a social planner would construct a rule that would minimize this cost, but this is easier said than done for several reasons. The first is that the values of  $w(S)$  and  $C(N)$  are likely to be related: the more that A invests in notice, the less that B will need to invest in search, and vice versa. Unless we know *how* these variables are

76. The analysis presented in this subsection is adapted from our discussion in Blair & Cotter, *supra* note 18, at 59-66.

77. A further variation on this model might involve A’s decision whether to provide notice at time  $t_1$ , that is, during the R&D stage. Although a public disclosure at this time might reduce A’s expected return from invention, because the disclosure will count as prior art for purposes of novelty and the statutory bar, it may reduce B’s expected return as well. See 35 U.S.C. § 102(a)-(b) (1994). If B is the straggler in a patent race with A, disclosure might increase A’s net payoff by inducing B to drop out of the race altogether. See generally Douglas Lichtman et al., *Strategic Disclosure in the Patent System*, 53 VAND. L. REV. 2175 (2000) (outlining strategic reasons for early disclosure); Gideon Parchomovsky, *Publish or Perish*, 98 MICH. L. REV. 926 (2000) (suggesting that the benefit of eliminating potential competitors through early disclosure outweighs the risk of borrowing one’s own attempt to secure a patent). Adding this complication would not affect the analysis above, however, and we therefore omit it from our discussion.

78. See Part III.C *supra*.

79. See Part III.A *supra*.

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related, however, any effort to reduce social cost will be at most an educated guess. A second problem is that these variables are likely to differ, both in absolute terms and in relation to one another, from one case to another, thus further complicating the task of crafting an optimal rule to cover all situations. Third, it is conceivable that in some cases the choice of the “wrong” rule could deter invention on the part of either A or B. For example, A might be deterred if the cost of requiring A to notify potential infringers is so high as to make it pointless for A to seek any damages for conduct occurring prior to the commencement of litigation, if the possibility of recovering such pre-notice damages, in addition to (1) injunctive relief and (2) post-notice damages, is a necessary component of the patent incentive system.<sup>80</sup> For analogous reasons, B might be deterred though, if she had more complete information, she would know that in some cases there was no serious risk of infringement.<sup>81</sup>

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80. See Blair & Cotter, *supra* note 18, at 62 (discussing this issue).

81. In our article on patent damages, we provide the following heuristic example of how the choice of a pure strict liability rule might deter B from investing in invention in some cases. Under such a rule, B’s expected return if she does not search is

$$E[R] = \pi_B - r(D + s + L_B),$$

where  $\pi_B$  is B’s expected profit from marketing her invention;  $r$  is B’s subjective probability that her invention will infringe a valid patent and that she will be sued successfully;  $D$  represents the expected damages award that B will incur if she infringes;  $s$  represents certain sunk costs; and  $L_B$  is B’s litigation costs if she is sued. If B searches, her expected return is equal to the probability that her invention does not infringe a valid patent ( $1 - r$ ), times the profit that she could earn by marketing her invention minus the cost of the search. This can be written as

$$E[R] = (1 - r)\pi_B - c_B,$$

where  $c_B$  is B’s cost of conducting a search (for example, by reviewing existing patents). B will search only if the expected return from doing so exceeds the expected return without a search:

$$(1 - r)\pi_B - c_B > \pi_B - r(D + s + L_B).$$

If A and B are equally efficient manufacturers of the product that embodies the patent,  $\pi_B$  will equal  $D$ , because  $\pi_B$  will equal A’s lost profit. In that event, a search will occur provided that  $c_B < r(s + L_B)$ . If A is more efficient than B, the damages award ( $D$ ) should exceed B’s profit ( $\pi_B$ ). In that event, a search will be optimal if  $r(\pi_B - D) + c_B < r(s + L_B)$ . Since  $(\pi_B - D)$  is negative,  $r(\pi_B - D) + c_B < c_B$ , and a search is more likely than when B expects her potential competitor A to be only equally efficient.

Depending on the values of some of these variables, B may decide not to undertake investment in the new invention even though, if she had complete information, she could do so safely. For example, suppose that B expects a hypothetical competitor’s profit on the sale of products embodying the contemplated invention to be high in comparison with B’s own expected profit; that the probability of independent discovery is low; and that the probability of infringement, the cost of searching, and expected litigation costs are moderately high. For example, assume that  $\pi_B$  is \$2,000;  $D$  is \$10,000;  $r$  is .50;  $c_B$  is \$1,000;  $L_B$  is \$1000; and, for simplicity, that B would incur no sunk costs prior

What, then, can we say about the relative merits of a pure strict liability system versus a system that conditions the recovery of damages upon the provision of notice? Our intuition is that a rule requiring the patentee to provide *some* sort of notice is preferable to one that does not. First, we suspect that in many cases the cost of searching will be substantial, given both the length of the patent term<sup>82</sup> and the number and complexity of patents that may be relevant to a given undertaking. Even if B has an incentive to conduct some search anyway—for example, to reduce the risk of a lawsuit that might lead only to injunctive relief—creating an incentive for more extensive searching may be socially wasteful if A can reduce the likelihood of inadvertent infringement at lower cost.<sup>83</sup> The second, and related, point is that A may be capable of doing precisely that, at least if some form of constructive notice is deemed sufficient.<sup>84</sup> Third, as long as the notice requirement is not too severe, it seems unlikely that some restriction upon A's ability to recover damages for pre-notice conduct will have a substantial impact upon A's incentive to invent. The empirical evidence to date suggests that the patent incentive may be relatively important only in a minority of industries;<sup>85</sup> even in these industries, the ability to recover *all* damages proximately caused by the infringement, including those that accrue prior to notice, may not be material. On the other hand, given the existing state of our knowledge, and the possibility that the ability to recover damages for conduct occurring prior to the commencement of litigation *may* provide a significant incentive for inventive activity in

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to the entry of an injunction. Absent notice from A, B's expected payoff if she does not search is  $(2,000) - (10,000 + 1,000)(.50) = -\$3,500$ , whereas her expected payoff if she searches is  $(2,000)(1 - .50) - 1,000 = \$0$ . B therefore prefers not to invest in the invention at all, even though half the time she would create a marketable, noninfringing product. *Id.*

82. The standard patent term runs from the date of issuance to a date twenty years after the date on which the patent application was filed. *See* 35 U.S.C. § 154(a)(2) (1994). As Mark Lemley has pointed out, however, about two-thirds of patents are allowed to lapse before their termination date, for failure to pay patent maintenance fees. *See* Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1503-04 (2001).

83. *See* Blair & Cotter, *supra* note 18, at 65-66.

84. *See id.* at 66. Of course, the question arises whether some form of constructive notice ought to be sufficient; maybe actual notice should be required in all cases. Balanced against this possibility, however, are the concerns that (1) at least in some cases the ability to recover full damages may be material to the patent owner's incentives, and (2) the cost of detecting and pursuing infringers can further eat into that incentive. The problem is that both patentee and infringer face information costs if the law requires each to discover the other's existence. Although we can make an educated guess concerning the best way to resolve this problem while maintaining the proper incentives, ultimately the problem may not admit of any firm conclusions.

85. *See id.* at 79 n.345.

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some cases, we do not recommend doing away with such damages altogether; far from it.<sup>86</sup> We do suspect, however, that the system may be able to accommodate the competing interests we have identified by requiring some form of notification as a condition for recovering pre-litigation damages.<sup>87</sup>

The precise form that a modified strict liability rule should take nevertheless eludes economic analysis, for the reasons suggested above. Perhaps in some instances the principal benefit of economic analysis may be to tell us how much we *don't* really know about things that seem familiar. In any event, in the following section we point out some of the advantages and disadvantages of various types of notice rules—including the one embodied in section 287—under a modified strict liability standard. At all times, however, we remain aware that the relevant costs and benefits cannot be precisely quantified.

### B. Section 287 and Other Alternatives

If we wish to create a system in which patent owners are encouraged to invest, to some degree, in providing notice, there is still a variety of ways to implement such a system. At one extreme, one could argue that since patents are, by definition, public records, potential infringers are always on constructive notice; therefore, the patent owner should always be entitled to recover damages attributable to infringing conduct. This was the perspective embodied in the earliest patent acts in this country,<sup>88</sup> and it

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86. *See id.* at 66, 79.

87. In our patent damages article, we also suggest two other, less significant reasons for some form of notice requirement:

A third consideration is that placing the burden on the patentee in effect allows patentees to signal whether they are interested in maximizing their potential damages recovery. Those who choose not to put potential infringers on notice may, in some cases, induce some degree of pre-injunction infringement; but if the losses attributable to this interim infringement have no effect on the patentee's ex ante incentives, this interim infringement benefits the public by reducing price and increasing output. Fourth . . . the case for allowing nonmanufacturing patent owners to recover lost profits on sales of goods that compete with infringing products is a close one. To the extent there are good reasons to permit this recovery, however, those reasons are significantly weaker if the infringer is not aware that his product infringes (and the potential anticompetitive effect of this rule is more serious).

*Id.* at 66.

88. *See Nike, Inc. v. Wal-Mart Stores, Inc.*, 138 F.3d 1437, 1443 (Fed. Cir. 1998) (stating that, under the early case law, "patents were public records and all were 'bound to take notice of their contents'" (quoting *Boyden v. Burke*, 55 U.S. (14 How.) 575, 582 (1852)); 7 CHISUM, *supra* note 6, § 20.03[7][c][i] (noting that the Patent Act imposed no

is not a trivial position; requiring the public disclosure of patented inventions surely reduces the cost of searching for those inventions. That cost may still be substantial, given the sheer volume and complexity of existing patents. The question therefore arises whether conditioning an award of damages upon compliance with a more rigorous notice standard makes sense, given that (1) the more costly the standard is to comply with, the greater the potential is for decreasing the patent owner's incentive to invent; and (2) the less costly notice is in comparison with search, the greater the potential is for reducing social costs and having a chilling effect upon the inventive efforts of latecomers.

Section 287 of the Patent Act attempts to resolve these issues by conditioning the patent owner's recovery of damages upon his provision of actual or (by marking) constructive notice to the infringer,<sup>89</sup> but the way in which the statute applies in several common situations is problematic. Notwithstanding the statute's intended purpose of "helping to avoid innocent infringement,"<sup>90</sup> it may sometimes leave "innocent" infringers vulnerable to substantial damages liability. At the same time, section 287 allows knowledgeable (even willful) infringers to remain immune from damages liability, unless and until the patent owner provides them with actual notice of information already in their possession.

As for innocent infringers, as noted above, the statute does not apply unless the patentee or his licensee manufactures products covered by the patent.<sup>91</sup> As a result, an infringer of a process patent—or of any patent that the owner holds idle—can be liable for all damages proximately caused by the infringement, even if she had no notice prior to the filing of the complaint that the invention was patented.<sup>92</sup> Moreover, even as to non-idle, nonprocess patents, the mere fact that the patentee has marked his articles in conformity with section 287 is no guarantee that an innocent infringer will actually encounter the mark—thus leaving open the possibility that an "innocent" defendant who independently discovers an invention already subject to patent protection can be liable for substantial damages, even if she ceases infringing immediately upon receipt of actual notice. Taken to

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marking requirement until 1842, and did not condition the recovery of damages upon compliance with actual notice or marking until 1861).

89. See 35 U.S.C. § 287 (1994). The Federal Circuit has "caution[ed] . . . that once marking has begun, it must be substantially consistent and continuous in order for the party to avail itself of" section 287. *Am. Med. Sys.*, 6 F.3d at 1537.

90. *Nike*, 138 F.3d at 1443.

91. See *supra* notes 16-18 and accompanying text.

92. See *id.* But see *supra* note 11 (noting that actual knowledge or notice is a precondition for recovering damages for the use, sale, offer to sell, or importation of an unpatented product of a patented process).

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its logical conclusion, this principle would suggest that a patent owner could comply with section 287 by making, marking, and marketing just a few “token” articles. In such a case, his lost profits probably would be minimal, but the infringer could be liable for a reasonable royalty—and in some cases, lost profits on the sales of other products the patentee marketed.<sup>93</sup> For that matter, a literal reading of the statute would allow a patent owner who uses the patented product solely in his own business, and does not sell it to third parties, to recover damages from the beginning of the infringement, as long as he properly marks the patented product, even though the product never makes its way to the marketplace and the infringer has no way of encountering it. In such a case, compliance with the marking requirement is an empty formality in light of the statutory policy, but could have serious consequences in terms of the appropriate remedy.<sup>94</sup>

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93. See Blair & Cotter, *supra* note 18, at 29-37.

94. See 7 CHISUM, *supra* note 6, § 20.03[7][c][ii]. Chisum notes:

Section 287 literally specifies “making *or* selling,” and it can be argued that marking is required even if the patentee neither sells nor authorizes others to sell (e.g. when a patent owner makes and uses a patented machine and sells only the unpatented products thereof), but that literal reading is contrary to the rationale behind the statute . . . to wit, to protect against the deception of the public by the distribution of unmarked patented articles.

*Id.* As Chisum notes, the Supreme Court has never expressly decided the issue. See *id.* at § 20.03[7][c][i] (noting that the Court raised but did not decide this issue in *Coupe v. Royer*, 155 U.S. 565 (1895)). In at least one case, however, a court appears to have applied the statutory language literally and therefore limited a damages recovery to a patent owner that failed to mark products it used exclusively in its own business operations. See *T.D. Williamson, Inc. v. Laymon*, 723 F. Supp. 587, 606 (N.D. Okla. 1989), *aff’d mem.*, 923 F.2d 872 (Fed. Cir. 1991) (cited in Edward W. Remus et al., *Prerequisites to Recovery of Damages: Importance of Marking and Notice of Infringement*, CA15 ALI-ABA 413, 427 (Nov. 9, 1995)); see also Siegel, *supra* note 73, at 606 (appearing to advocate the literal approach); Voelzke, *supra* note 16, at 323-24 (suggesting that damages would not accrue until the patent owner marked under these facts, but arguing that this result does not advance the policy of the statute).

Another situation in which an innocent infringer may nevertheless be liable for pre-notice damages would occur when a patentee licenses another to make and sell products covered by the patent; he expends reasonable efforts to ensure the licensee’s compliance with the marking statute, see *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1111-12 (Fed. Cir. 1996) (discussing “reasonable efforts” requirement); but these efforts are unsuccessful, such that the licensee markets unmarked goods. Presumably, an innocent infringer could be liable for pre-notice damages under these circumstances. See *Moore & Nakamura*, *supra* note 19, at 100 (arguing that this outcome is probably correct); cf. *Analytical Controls v. Am. Hosp. Supply Corp.*, 518 F. Supp. 896, 899 (S.D. Ind. 1981) (holding that a patent owner was not barred from recovering damages, in a case in which its licensee properly marked and sold the patented product in bulk to a third party, who then re-

A second difficulty is that the statute partially immunizes from damages liability some persons who *knowingly* infringe patents, but who have not received actual or constructive notice prior to the filing of the complaint.<sup>95</sup> At first blush, this rule seems troubling for two reasons. First, requiring the patentee to provide actual notice to knowing infringers imposes an unnecessary cost, although we probably should not overemphasize this point. Providing actual notice to infringers of whom the patentee is aware is not costly,<sup>96</sup> and (at least in some cases) neither is the provision of constructive notice by compliance with the marking statute.<sup>97</sup> A second problem is that the rule provides knowing infringers with a perverse incentive to continue infringing up until the receipt of actual notice,<sup>98</sup> but this point too should not be overstated. The cost of complying with an injunction forbidding future use of an invention can be high, particularly if the defendant has incurred significant sunk costs in connection with the use of the infringing product or process. Persons with knowledge of the patent therefore already have some incentive not to infringe, even absent actual or constructive notice.

Moreover, in defense of the current rule, one can imagine that holding knowing infringers liable for damages accruing prior to their receipt of actual or constructive notice could itself have some undesirable consequences. First and foremost is the possibility that an “actual knowledge” standard might require courts and litigants to bear substantial administrative costs in determining whether the defendant in a particular case had the requisite state of mind.<sup>99</sup> Furthermore, an actual knowledge rule might

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packaged and sold it without marking) (cited in Moore & Nakamura, *supra* note 19, at 92-93).

95. *See Nike*, 138 F.3d at 1446 (“In determining whether the patentee marked its products sufficiently to comply with the constructive notice requirement, the focus is not on what the infringer actually knew, but on whether the patentee’s actions were sufficient, in the circumstances, to provide notice in rem.”); *Amsted Indus. v. Buckeye Steel Castings Co.*, 24 F.3d 178, 187 (Fed. Cir. 1994) (“For purposes of section 287(a), notice must be of ‘the infringement,’ not merely notice of the patent’s existence or ownership. Actual notice requires the affirmative communication of a specific charge of infringement by a specific accused product or device.”).

96. *But see supra* note 74 (noting that the cost of locating unknown infringers may be burdensome).

97. *But see supra* note 73 (noting some of the problems in interpreting precisely what the marking statute requires, as well as the burden of ensuring compliance on the part of licensees).

98. *See Blair & Cotter, supra* note 18, at 65; Siegel, *supra* note 73, at 605-06.

99. In an analogous context, the Federal Circuit has cited enforcement costs as a reason to require that actual notice must come from the patentee and to reject a rule under which notice from someone closely associated with the patentee would suffice:

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give some potential infringers an incentive to avoid searches that could lead to the acquisition of actual knowledge—unless the rule were further modified to penalize infringers who “know or should have known” of the patent’s existence, which then would give rise to further administrative costs.<sup>100</sup> Perhaps this incentive too is minimal, in light of the availability of injunctive relief, as remarked above.<sup>101</sup> In addition, if an actual knowledge standard were coupled with the existing constructive notice rule, the task of determining whether the defendant had actual knowledge would arise only in cases in which the patent owner failed to mark (or in cases involving process and idle patents, if the rules relating to these patents were also amended), which may be a minority of cases—although under such a system the incentive to mark would also be reduced, thus making the ultimate consequences even more difficult to predict.

Even if a rule that exempts knowing infringers from damages liability until the receipt of actual or constructive notice is generally sound, the application of this rule in certain recurring situations is nonsensical. To illustrate, suppose that the patent owner proves that the infringer began infringing on January 1, 1998; that he provided actual or constructive notice to the infringer on January 1, 1999; and that the infringement was willful<sup>102</sup>

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[A] looser notification rule would present notable enforcement problems. Courts would have to decide the degree of association sufficient to satisfy the rule. Must the notifying party control the patentee, or simply have an interest in the patentee? Indeed, how much control or interest would suffice? Agency principles would not likely ease this problem because the notifying party would not likely even purport to act on behalf of the patentee. Accordingly, a looser rule would both frustrate the purpose of notification and present difficult, if not unworkable, enforcement problems.

*Lans v. Digital Equip. Corp.*, 252 F.3d 1320, 1327 (Fed. Cir. 2001). The problem is also analogous to the hypothetical problem that we encountered above in our discussion of the independent discovery defense, *see supra* notes 48-52 and accompanying text, although in the present context the difficulties might not be as severe. The incentive for defendants to cheat by feigning independent discovery would be less substantial than with an independent discovery defense, because both cheating and non-cheating defendants would be enjoined from future use and would be liable for damages that occur after receiving notice.

100. *But see infra* notes 102-107 and accompanying text (noting some common situations in which the Patent Act requires the patentee to bear analogous costs anyway, in order to prevail on its substantive claim).

101. *See* Part IV.A *supra*.

102. In *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 826-28 (Fed. Cir. 1992), the Federal Circuit listed nine factors that may “assist the trial court in evaluating the degree of the infringer’s culpability and in determining whether to exercise its discretion to award enhanced damages and how much the damages should be increased.” These include:

from the very beginning, i.e., from January 1, 1998. On these facts, the patent owner is entitled to damages for the period beginning January 1, 1999, and a court may increase these damages on account of the infringer's willfulness—but the patent owner is not entitled to damages for the year 1998, despite the fact that the evidence demonstrates the defendant's willfulness during that period.<sup>103</sup> Applying the actual and constructive notice rules in a case like this does not reduce administrative costs—proof of what the infringer knew and when she knew it is essential to a claim of willful infringement—and permits the knowing infringer to escape some damages liability, even though the purpose of the notice requirement is to protect innocent infringers. Or consider a case in which the patent owner sues the defendant for contributory infringement or for actively inducing another person to infringe. In both cases, in order to prove his substantive claim, the patent owner must prove that the defendant knew or should have known that her activity would cause another to infringe the patent,<sup>104</sup> but the patent owner may not recover damages for any

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“whether the infringer deliberately copied the ideas or design of another;” “whether the infringer, when he knew of the other's patent protection, investigated the scope of the patent and formed a good-faith belief that it was invalid or that it was not infringed;” “the infringer's behavior as a party to the litigation;” “defendant's size and financial condition;” “closeness of the case;” “duration of defendant's misconduct;” “remedial action by the defendant;” “defendant's motivation for harm;” and “whether defendant attempted to conceal its misconduct.” *Id.* at 826-28. *See also* *State Indus. v. Mor-Flor Indus.*, 883 F.2d 1573, 1581 (Fed. Cir. 1989) (stating that the “standard for proving willfulness . . . is ‘whether, under all the circumstances, a reasonable person would prudently conduct himself with any confidence that a court might hold the patent invalid or not infringed,’” and that “[a]ctual knowledge [of the patent] is not required”) (quoting *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 1428 (Fed. Cir. 1988)).

103. These are, in essence, the facts and outcome of the *Amsted* case. *See Amsted Indus.*, 24 F.3d at 181-88.

104. Contributory infringement occurs when a person sells a material component of a patented invention, “knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use.” 35 U.S.C. § 271(c) (1994); *see also* *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469 & n.4 (Fed. Cir. 1990) (stating that § 271(c) makes “clear that . . . proof of a defendant's *knowledge* . . . that his activity cause infringement was necessary to establish contributory infringement,” and that the plaintiff must prove that the defendant has “knowledge of the patent which proscribed that use”). Active inducement, which in some cases may overlap with contributory infringement, occurs when a person intentionally causes another to infringe. *See* 35 U.S.C. § 271(b) (1994); *Hewlett-Packard*, 909 F.2d at 1469 (requiring “proof of actual intent to cause the acts which constitute the infringement”). As in the former case, the plaintiff must prove that the defendant acted with knowledge. *See* *Manville Sales Corp. v. Paramount Sys.*, 917 F.2d 544, 553 (Fed. Cir. 1990) (stating that “the alleged infringer must be shown to have *knowingly* induced infringement”); 4 CHISUM, *supra* note 6, § 17.04[2]

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period preceding the defendant's receipt of actual or constructive notice.<sup>105</sup> Once again, this result is difficult to square with the policy underlying section 287. If one reason for requiring actual or constructive notice is to avoid the expense of having to prove the defendant's state of mind, shouldn't this requirement be waived in cases in which the plaintiff must prove that state of mind in order to prevail on its substantive claim?<sup>106</sup> In these cases, the evidence that the defendant had knowledge may be clear, and yet a literal reading of the statute can result in an avoidance of damages liability.<sup>107</sup>

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(stating that the "requirement that the defendant have some knowledge of the patent as well as the nature of his acts and their consequences would seem to apply equally to Section[s] 271(b) and 271(c)").

105. See *Amsted Indus.*, 24 F.3d at 180, 184-88 (holding that plaintiff was not entitled to damages against a *contributory infringer* for the period of time preceding the contributory infringer's receipt of actual or constructive notice).

106. One can imagine other cases in which there will be little doubt that the defendant had actual knowledge of the patent. For example, consider the case of a terminated licensee who continues using the now-unlicensed patent. Surely this type of defendant knows what she is doing—and yet she too will escape damages liability until the receipt of actual or constructive notice, even though she is likely to be a willful infringer. See *Loral Fairchild Corp. v. Victor Co. of Japan*, 906 F. Supp. 813, 817 (E.D.N.Y. 1995) (Rader, J., sitting by designation) (cited in Siegel, *supra* note 73, at 602-03); *Gen. Elec. Co. v. George J. Hagan Co.*, 40 F.2d 505, 507 (W.D. Pa. 1929) (cited in McKeon, *supra* note 19, at 451).

Even worse, consider the case of a defendant who is sued for patent infringement, ceases her use in response, and then resumes infringing the very same patent. Under a strict interpretation of the notice requirement, the defendant avoids incurring any damages liability for her second round of infringement, until the receipt of actual or constructive notice. Of course, if the first infringement resulted in the entry of an injunction against the defendant, she may be liable for contempt of court when she resumes infringement; so perhaps this last example is more hypothetical than real. Moreover, in the only reported decision we are aware of discussing this fact pattern, the court stated that the defendant's receipt of the complaint filed in response to first bout of infringement constituted sufficient notice. See *Warner v. Tenn. Prods. Corp.*, 57 F.2d 642, 646 (6th Cir. 1932). As McKeon notes, however, the *Warner* court took the view that actual knowledge sufficed under section 287, and this is not the standard under current law. See McKeon, *supra* note 19, at 453-54 (arguing, however, that current law would be better if it followed *Warner*). Thus, if this issue were to arise today in a case in which the previous act of infringement did not result in the entry of an injunction, we think there is a good chance that a court would strictly apply the actual notice standard.

107. Another possible consequence of the applicability of section 287 to products but not processes is that the statute may affect the way in which patent attorneys draft and prosecute patent applications and litigate patent cases. As noted above, when a patentee alleges that a defendant has infringed both the product and process claims of a single patent, the patentee's manufacture or sale of unmarked products covered by the patent precludes him from recovering pre-notice damages relating to either the product or process

At the end of the day, just as we are reluctant, in the absence of strong empirical evidence on the incentive effects on patents, to advocate the adoption of a full-blown strict liability system, we are hesitant to propose the adoption *tout court* of an “actual knowledge” standard. We can nevertheless suggest some reforms that would make the current system more coherent. The first set of reforms relates to some specific situations in which an actual knowledge standard would make sense. The second relates to process and idle patents, the third to constructive notice.

A first set of reforms would entail adopting an actual knowledge standard in a few discrete situations in which the policies that otherwise may favor an actual or constructive notice standard do not apply. In light of our discussion above, we think it is relatively easy to justify a rule permitting the patent owner to recover damages from a knowing infringer when the infringer’s state of mind is necessarily at issue in light of the nature of the claims (e.g., willful or contributory infringement).<sup>108</sup> In addition, one could probably specify certain other cases in which it might make sense to apply an actual knowledge standard, such as when the infringer is a former

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claims. *See supra* note 14. But what if the patentee sues only for infringement of the process claim, even though the defendant’s product reads on a product claim of the same patent? *Compare* Oppedahl, *supra* note 19, at 220-21, 226 (arguing that the patentee may be able to recover pre-notice damages for infringement of the process claim under these circumstances), and Georgia E. Kralovic, Comment, *The Principle of Fair Notice: Is It Prudent Guidance for the Future of Patent Law?*, 26 PEPP. L. REV. 89, 113 (1999) (same), and Voelzke, *supra* note 16, at 331 (same), with Remus et al., *supra* note 94, at 427 (suggesting the opposite). Even if Oppedahl, Kralovic, and Voelzke are correct, could the defendant force the issue, by asserting a counterclaim for a declaratory judgment of noninfringement as to the product claim? Having once asserted a claim involving a product claim, could a patentee amend his complaint or dismiss the product claim, and recover damages for only the process claim? *See* Voelzke, *supra* note 16, at 335 (raising this issue).

Another possible strategic maneuver involves an applicant who divides his original patent application into two, one covering a product, the other a process. Suppose that he subsequently sells unmarked products covered by the product patent, and that the defendant infringes both patents. If the patentee sues for infringement of both patents, can he recover pre-notice damages for infringement of the process patent? *Compare* James M. Markarian, *Can the Marking Requirements for a Patented Article Be Circumvented by Obtaining a Process Patent?*, 17 J. PAT. & TRADEMARK OFF. SOC’Y 365, 370 (1997) (arguing that the answer is probably no), with Oppedahl, *supra* note 19, at 221 n.70 (suggesting that the answer may be yes). What should the outcome be if there were two applications to begin with, or if the patentee sues for infringement of the process patent only? *See* Voelzke, *supra* note 16, at 336-37 & n.85 (noting the uncertainty). Yet another consequence of the statute is that it may encourage the parties to argue counterintuitive positions—with the patentee arguing that his own products do not embody the patent, and the defendant arguing that they do. *See* Moore & Nakamura, *supra* note 19, at 94-95.

108. *See supra* notes 102-107 and accompanying text.

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licensee under the patent at issue (and therefore *must* have had actual knowledge).<sup>109</sup> More controversially, one might consider adopting an actual knowledge standard when the possibility of liability for “innocent” infringement seems particularly troubling. In previous work, we have suggested that such a standard might make sense when patent owners seek damages against nonmanufacturing infringers, that is, against sellers and users who may lack knowledge that the manufacturer has infringed another’s patent by manufacturing the product without authorization.<sup>110</sup>

A second set of reforms would center around patented processes and idle patents. Under the current system, there is some risk that strict liability will deter potential defendants from undertaking inventive activity (for example, in industries in which process patents predominate, such as biotechnology), or otherwise lead to socially wasteful searches.<sup>111</sup> One possible response would be to condition damages liability in these cases upon the receipt of actual notice. Balanced against this recommendation, however, is the possibility (however slight) that the resultant reduction in the patent owner’s expected return could have an impact upon his incentive to invent (particularly, perhaps, when we factor in the cost of detection). In addition, if there is no tangible product to mark, constructive notice may not be an option<sup>112</sup> and the cost of providing actual pre-infringement notice to all potential infringers is likely to be high. Perhaps no reform is necessary with respect to these cases, if they represent only a small fraction of all patent disputes—or if, in the case of process patents, it is relatively uncommon for someone to infringe a process patent and *not* a related product patent as well.<sup>113</sup> In this regard, further empirical research on

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109. *See supra* note 106.

110. *See Blair & Cotter, supra* note 33, at 25 n.87. As we argued in that article, the need to extend liability from infringing manufacturers to mere sellers and users in order to preserve the patentee’s incentives is somewhat attenuated, even if the latter would have a right of indemnification from the former. If so, the adoption of an actual knowledge standard with regard to sellers and users may help to reduce the likelihood that the latter will be victimized by a fly-by-night manufacturer. *See id.* at 15-27. On the other hand, a review of the reported decisions disclosed relatively few cases in which mere sellers and users were ordered to pay infringement damages. *See id.* at 3-4.

111. *See supra* note 81 and accompanying text.

112. *But see supra* note 11 (noting that a process patent owner can constructively notify users, sellers, offerors, and importers of unpatented products made by the unauthorized use of the process, by marking with the process patent number all products made by the authorized use of the process and sold, offered, or imported into the United States); *infra* note 113 (suggesting another possibility).

113. *But see supra* note 107 (noting that, under current law, patent attorneys may have an incentive to favor drafting process over product claims, to draft separate product and process patents for the same invention, or in some cases to assert only process claims

the incidence and magnitude of damages awards in cases involving process-patent and idle-patent infringement might be a helpful addition to the literature.

A third set of reforms would target some of the inconsistencies in the current marking regime. One obvious change would be to amend § 287 so as to clarify that marking applies only when the patent owner *sells* a product embodying the patent, and not when he only makes and uses the product for his own internal business.<sup>114</sup> Even if one takes the view that an actual knowledge standard would be preferable to strict liability, there is no

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at trial). To reduce these incentives for strategic behavior, Voelzke suggests eliminating § 287's disparate treatment of product and process claims by adopting a rule that would preclude the patent owner from recovering pre-notice damages if he "place[d] into the hands of the public unmarked articles from which the public can learn the claimed invention." Voelzke, *supra* note 16, at 341. In other words, if the article is one which teaches the claimed invention—whether a process or a product—the patent owner could recover infringement damages only if he marked the article or provided actual notice; if the article does not teach the invention, then the patent owner could recover damages from the beginning of the infringement. *See id.* at 341-42. Voelzke argues that the additional costs incurred in determining whether an article teaches the invention would be less than the strategic costs incurred under the current rule. *See id.* at 343.

We agree that the goal of reducing these strategic costs is desirable. Thus, if a product does teach the process by which it was created, there may be merit to a rule that appropriately marking the product constitutes constructive notice of the process. As the text above suggests, however, we are less sanguine about Voelzke's proposal to the extent that it would impose strict liability damages upon an "innocent" infringer of a patented process, when the articles made publicly available do not teach the process. In such a case, it might be more sensible to go in the opposite direction and require actual notice, or at least actual knowledge, as a precondition to damages liability for the process claim. On the other hand, to the extent that this latter rule would make it easier to recover damages for the infringement of product claims, it might create an incentive (directly opposite to that which exists today) to draft and litigate a proliferation of product claims.

An alternative rule that would unite the standard for product and process patents would be for marking to constitute effective constructive notice in cases in which the article teaches the invention—whether it be a product or a process—and for actual notice or actual knowledge to be a precondition to damages liability when the article does not teach the invention. Indeed, in some cases this might provide a more "unitary" standard than Voelzke's proposal. For example, suppose that an unmarked article teaches the product but not the process claim of a given patent. Under Voelzke's proposal, as we understand it, the patent owner could recover pre-notice damages for infringement of the process, whereas under the alternative rule just described he could not recover pre-notice damages for the infringement of either claim. On the other hand, if the article is marked and it teaches the product but not the process, under Voelzke's proposal the patent owner could recover pre-actual notice damages for the infringement of both claims, whereas under the alternative rule he could recover these damages only for the product claim. We leave it to the interested reader to work out the remaining permutations.

114. *See supra* note 94 (discussing this problem).

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reason in this particular fact setting to condition the patent owner's damages on his having complied with a pointless formality.<sup>115</sup> In addition, two other, more sweeping reforms may be worth considering, although these are likely to be more costly and, hence, controversial: the adoption of uniform federal regulations on marking, and, in lieu of a marking requirement, the adoption of a federal registry for commercialized inventions.

In theory, the adoption of uniform regulations, dictating in advance where to mark a product, how large the marking must be, and so on, would not be difficult to achieve. The main problems would be the familiar ones: that regulators may not foresee all possible situations and may therefore opt for a standard that is suboptimal, or that the regulatory process may become subject to industry capture. These possibilities, however, must be evaluated in light of the uncertainty that currently exists regarding compliance with the statute in many other cases. Federal regulations on copyright notice placement would be the obvious model to draw upon,<sup>116</sup> and may not be difficult to modify for use in the present setting. At the

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115. Alternatively, the rule could be that in a case of this nature the defendant is not liable for damages for conduct occurring prior to the receipt of actual notice or actual knowledge. The point is that requiring the patent owner to mark as a precondition to recovering damages is, in this instance, absurd.

116. Although the Copyright Act does not require the inclusion of copyright notice on works published on or after March 1, 1989, *see* 17 U.S.C. §§ 401(a), 402(a), 405(a), it offers some benefits to authors who include the notice on published copies of their works. *See* 17 U.S.C. § 401(d) (1994) (stating that the inclusion of copyright notice on published copies to which the defendant had access defeats a defense of innocent infringement in mitigation of actual or statutory damages); *id.* § 402(d) (same rule, with respect to copyrighted sound recordings embodied in phonorecords). Moreover, the inclusion of notice on copies published prior to that date can still affect a work's copyright status. *See id.* § 405(a); *Estate of King v. CBS, Inc.*, 194 F.3d 1211, 1214-16 (11th Cir. 1999). Federal regulations set forth some detailed rules for the placement of copyright notice. *See* 17 U.S.C. § 401(c) (1994) (stating that "notice shall be affixed to the copies in such manner and location as to give reasonable notice of the claim of copyright," and authorizing the Register of Copyright to prescribe by regulation, as examples, a nonexhaustive list of "specific methods of affixation and position so the notice on various types of works that will satisfy this requirement"); *id.* § 402(c) (stating that, with respect to copyrighted sound recordings embodied in phonorecords, "notice shall be placed on the surface of the phonorecord, or on the phonorecord label or container, in such manner and location as to give reasonable notice of the claim of copyright"); 37 C.F.R. § 201.20 (setting forth various examples of adequate notice, pursuant to § 401(c)); *id.* § 202.2 (listing "common defects" in copyright notice, including "a notice is permanently covered so that it cannot be seen without tearing the work apart;" "a notice is illegible or so small that it cannot be read without the aid of a magnifying glass;" "a notice is on a detachable tag and will eventually be detached and discarded when the work is put in use;" and "a notice is on the wrapper or container which is not a part of the work and which will eventually be removed and discarded when the work is put in use").

very least, it would be helpful to know, for example, whether, in our television component hypothetical,<sup>117</sup> the patent notice must be placed on the final product or only on the interior component, in order to be effective.

A more radical proposal would be to create a registry for commercialized patented inventions and to provide that registration, rather than marking, constitutes constructive notice for purposes of assessing damages against infringing manufacturers. This proposal is designed to avoid the problem of technical compliance with the marking statute that nevertheless fails to convey actual notice to potential infringers. Suppose, for example, that the patent owner who wishes to register his invention must provide evidence of his actual use of the invention in products or processes. Theoretically, this type of system might provide more effective notice than marking, in cases in which the patent owner markets only a small number of products that might otherwise evade a potential infringer's attention. Moreover, since only a portion of all patents ever result in commercial products,<sup>118</sup> the burden upon manufacturers to check the registry may well be manageable—certainly more manageable than trying to monitor all existing patents would be under the current system. (Registration also would allow someone to use patents that are not listed on the registry without having to worry about incurring damages liability, unless and until the receipt of actual notice; and perhaps this sort of “efficient” infringement should be encouraged.) Balanced against these benefits, however, would be the cost of maintaining the registry. These would include not only the costs of setting up and maintaining the system, but also of monitoring its operation so as to preclude patentees from registering

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117. See *supra* note 73.

118. One study from the 1950s concluded that approximately sixty percent of all patented inventions result in some commercial uses, contradicting earlier estimates that were much lower. See Joseph Rossman & Barkev S. Sanders, *The Patent Utility Study*, in NURTURING NEW IDEAS: LEGAL RIGHTS AND ECONOMIC ROLES 106, 130 & n.29 (L. James Harris ed. 1969) (cited in Brent Rabowsky, Note, *Recovery of Lost Profits on Unpatented Products in Patent Infringement Cases*, 70 S. CAL. L. REV. 281, 282-83 (1996)). We doubt that more recent studies would disclose a percentage anywhere near 50%. See generally Lemley, *supra* note 82, at 1501, 1503, 1507 n.53, 1514 (stating that “[t]he limited data . . . suggest that the overwhelming majority of patents are neither litigated nor licensed,” noting that about two-thirds of patents are allowed to lapse before their expiration date, and speculating that the percentage of commercially valuable patents is quite low). Although the latter paper does not disprove Barkev and Sanders—it studies different things—the evidence presented therein seems to us inconsistent with what one would expect if the Barkev-Sanders data were correct. We are not aware, however, of any research that expressly confirms or disproves the Barkev and Sanders study.

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merely token uses.<sup>119</sup> On balance, it seems doubtful that the problem merits such a costly solution.

### V. CONCLUSION

We have argued that patent infringement is not a strict liability tort after all, if one considers the effect of section 287 upon the patent owner's ability to recover compensatory damages—and that maybe this is a good thing, inasmuch as it gives the patent owner an incentive to put potential infringers on notice. The way the statute operates nevertheless leaves much to be desired, in that it is both overinclusive (sometimes “innocent” infringers *are* strictly liable) and underinclusive (sometimes requiring the provision of notice to knowing infringers). We have suggested some modest reforms to cure the latter problem. We have also suggested some less modest reforms that would address the former problem, but the cost-effectiveness of these solutions is less certain.

We have also considered various alternatives to the present regime of modified strict liability, including a regime under which independent discovery is a defense; a negligence regime; and a comparative negligence regime. Although there is a good theoretical case for the first of these regimes, we are skeptical about its practical applicability. The latter two regimes suffer from much the same problem, in that courts (and juries) are likely to be imperfect assessors of the socially optimal amount of search or notice.

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119. As noted above, under the current system marketing and marking a few token items would appear to suffice under section 287. We view this as a drawback of the current system. If, however, the registry is open only to patent owners who are willing to verify a certain amount of commercialization, akin to (but perhaps more substantial than?) the amount of use that is necessary for establishing federal trademark rights, the administrative cost of this system may well outweigh any potential benefits, as discussed above.

# JURY DEMANDS: WHO'S ASKING?

By *Kimberly A. Moore*<sup>†</sup>

## ABSTRACT

This Article presents the results of a large-scale empirical study of jury demands made in patent cases and their impact on patent litigation. This Article uses party characteristic data and data about the litigation itself to examine two important questions: 1) who is demanding the jury; and 2) what impact this demand has on the litigation. Jury demands are made in 78% of all patent cases and they are made in predictable ways. Plaintiff-patent holders demand juries with greater frequency than do defendant-infringers; domestic parties demand juries more often than foreign parties; individuals demand juries more often than corporations; and in-state parties demand juries more often than out-of-state parties. This Article does not attempt to prove or disprove the accuracy of these perceptions by looking at case outcomes. Instead, it focuses on how the parties incorporate these perceptions into their strategic decisionmaking about the case. Perhaps the most interesting discovery regarding the impact of the jury demand on the litigation process is that there is no real impact. There is no increase in settlement or trial rates that can be attributed to jury demands.

## I. INTRODUCTION

This Article undertakes a large-scale empirical study of jury demands and analyzes their impact on patent litigation. Extensive scholarly literature questions the wisdom of jury decisionmaking in patent cases.<sup>1</sup> Schol-

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1. *See, e.g.*, ADVISORY COMM'N ON PAT. LAW REFORM, A REPORT TO THE SECRETARY OF COMMERCE 107-110 (1992) [hereinafter ADVISORY REPORT] (discussing prob-

ars are concerned with the competence of lay juries to resolve technically complex patent cases,<sup>2</sup> and whether juries will replace rationality with emotion in adjudicating patent disputes.<sup>3</sup> These popular perceptions of juror incompetence and bias have caused commentators to argue that the

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lems with jury trials of patent cases); *Fourth Biennial Patent System Major Problems Conference*, 34 IDEA 77 (1994) [hereinafter *Major Problems Conference*] (documenting the debate on the role of the jury in patent cases between twenty-nine prominent patent practitioners and professors); John B. Pegram, *Should the U.S. Court of International Trade Be Given Patent Jurisdiction Concurrent with That of the District Courts?*, 32 HOUS. L. REV. 67, 70-84 (1995) (reporting the principal complaints regarding adjudication of patent suits, including unpredictability, delay, and expense); Edmund L. Andrews, *A 'White Knight' Draws Cries of 'Patent Blackmail'*, N.Y. TIMES, Jan. 14, 1990, § 3, at 5 (calling a jury trial of a patent case “a ‘judicial lottery,’ an often unpredictable system that can yield huge rewards for those who are sufficiently aggressive”); Richard B. Schmitt, *Juries' Role in Patent Cases Reconsidered*, WALL ST. J., Feb. 18, 1994, at B6 (quoting patent attorney Donald Dunner as saying, “[g]ive [jurors] a complicated biotechnology case or one involving lasers or computers, and their eyes glaze over,” and Professor Martin J. Adelman as saying that jury confusion has created “a system of justice that is basically a lottery”); Robert J. Shillman, *Defending Patents*, FORTUNE, June 25, 2001, at 30 (recommending the elimination of jury trials in patent cases because of the complexity of the technology).

2. See *Judicial Panel Discussions on Science and the Law*, 25 CONN. L. REV. 1127, 1145 (1993) (statement of Judge Covello, U.S. District Court for the District of Connecticut) (“Honest to God, I don’t see how you could try a patent matter to a jury. Goodness, I’ve gotten involved in a few of these things. It’s like somebody hit you between your eyes with a four-by-four. It’s factually so complicated.”); Matt Krantz, *Patent Suits Try Patience of High-Tech Companies*, INV. BUS. DAILY, Dec. 9, 1996, at A6 (citing patent attorney Michael Bednarek as stating that jurors on patent trials typically have the education of sixth-graders and because patent trials can last up to three months, better-educated potential jurors are excused from serving); Schmitt, *supra* note 1 (suggesting that patent cases are resolved by “unemployed laborers and housewives [who] did not understand that stuff”); *Jury Cases on Patent Infringement on Trial*, CHI. TRIB., June 12, 1995, at 6, available at 1995 WL 6216112 (“Corporate defendants and patent lawyers have long griped that intellectual property litigation is too complex to leave to plumbers, housewives, mailmen and music teachers.”).

3. See Krantz, *supra* note 2 (reporting that the parties settled before the jury verdict because “the jury was going to be filled with retired people—this is not a jury of peers . . . In a situation like this, you have to break the case down to a simple “good guy versus bad guy” story for the jury”); *Jury Cases on Patent Infringement on Trial*, *supra* note 2, at 6 (quoting GE as stating that the jury “apparently acted on emotion, not facts or law”). In 1999, as part of another project, I conducted a survey of Chief Patent Counsels. See Kimberly A. Moore, *Judges, Juries & Patent Cases—An Empirical Peek Inside the Black Box*, 99 MICH. L. REV. 365, 373-74 (2000) (describing the survey). Many of the Chief Patent Counsels believed tangential or emotional issues swayed jury decisionmaking. One Chief Patent Counsel with thirty-five years experience commented, “I have won and lost cases with juries, and in both situations, the jury reasoning was not related to the facts.” *Id.* at 373 n.33.

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jury's role in patent litigation should be severely limited. Commentators and participants in this Symposium have proposed many alternatives and reforms, including: specialized trial judges or special masters;<sup>4</sup> specialized trial courts;<sup>5</sup> alternative dispute resolution;<sup>6</sup> expert ("blue ribbon") juries;<sup>7</sup> or Patent Office reexamination or opposition procedures.<sup>8</sup>

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4. See ADVISORY REPORT, *supra* note 1, at 99 (discussing designation of patent cases to patent "expert" judges or assignment of a single judge in each district to hear all patent cases); cf. Edward V. Di Lello, Note, *Fighting Fire with Firefighters: A Proposal for Expert Judges at the Trial Level*, 93 COLUM. L. REV. 473, 493-503 (1993) (proposing the creation of a new adjunct judicial office for magistrate judges who are specialists in technical fields).

5. See, e.g., Gregory D. Leibold, *In Juries We Do Not Trust: Appellate Review of Patent-Infringement Litigation*, 67 U. COLO. L. REV. 623, 623 n.4, 624 (1996) (recommending the creation of a specialized trial court or panels of expert juries to resolve patent cases); Pegram, *supra* note 1, at 91 (discussing inadequacies in patent infringement adjudication system and proposing that the U.S. Court of International Trade be given patent case jurisdiction); *Major Problems Conference*, *supra* note 1.

6. See, e.g., Richard P. Cusick et al., *A Critical Analysis of the Proposed National Patent Board*, 13 OHIO ST. J. ON DISP. RESOL. 461 (1997) (endorsing a proposal for an industry-sponsored National Patent Board ("NPB") to resolve patent infringement disputes); Tom Arnold, *Why Is ADR the Answer?*, COMPUTER LAW., July 1998, at 13 (suggesting that forms of alternative dispute resolution would be better than a judge or jury resolution of patent cases).

7. See, e.g., Davin M. Stockwell, *A Jury of One's (Technically Competent) Peers?*, 21 WHITTIER L. REV. 645 (2000) (advocating use of expert juries to resolve patent cases); Franklin Strier, *The Educated Jury: A Proposal for Complex Litigation*, 47 DEPAUL L. REV. 49 (1997) (proposing use of specially qualified juries in cases such as patent litigation where the lay jury is ill-equipped to deal with the complexity of the issues being tried).

8. Of course, reexamination procedures exist as a present alternative to litigation, but they are infrequently chosen because of their estoppel effects on litigating validity issues. Opposition proceedings prior to patent issuance presently do not exist. However, if enacted, they could help reduce subsequent litigation by minimizing the issuance of invalid patents. See, e.g., Rochelle Cooper Dreyfuss, *Dethroning Lear: Licensee Estoppel and the Incentive to Innovate*, 72 VA. L. REV. 677, 754 n.277 (1986); Gregory Gelfand, *Expanding the Role of the Patent Office in Determining Patent Validity: A Proposal*, 65 CORNELL L. REV. 75, 98-102 (1979); Mark D. Janis, *Rethinking Reexamination: Toward a Viable Administrative Revocation System for U.S. Patent Law*, 11 HARV. J.L. & TECH. 1 (1997) (suggesting further examination of foreign nullity, opposition, and revocation proceedings as potentially advantageous over the present scheme of resolving validity disputes via litigation); Mark A. Lemley, *Rationale Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1525 (2001) (discussing the costs and benefits of an opposition proceeding for patents); 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, 610-12 (1999); Craig Allen Nard, *Legitimacy and the Useful Arts*, 10 HARV. J.L. & TECH. 515, 557 (1997) (suggesting that the PTO is better suited to resolve patent validity issues than a judge or lay jury); Joel M. Freed & Thomas C. Reynolds,

Despite the skepticism regarding a lay jury's ability to comprehend and adjudicate patent cases, parties have increasingly called upon juries to resolve patent disputes. As Figure 1 demonstrates, jury trials of patent cases have risen dramatically in recent years.<sup>9</sup> Figure 1 compiles the only publicly available data on increased jury involvement in patent cases prior to this study. It reports the percentage of patent trials adjudicated by a jury from 1940-2000. This data is a useful starting point for comparing judge and jury outcomes in tried cases,<sup>10</sup> and may indicate whether the parties are increasingly demanding jury resolution. Are parties demanding juries more frequently or are parties simply less adept at estimating outcome when juries are involved? Because tried cases are not a random or a representative sample of all patent disputes,<sup>11</sup> this data does not provide insight into the impact of the jury demand itself on patent litigation. The absence of data on jury demands and their impact on patent litigation has handicapped analysis of reforms aimed at jury adjudication of patent cases. This Article's empirical study on jury demands attempts to correct that problem.

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*The New Patent Landscape*, 18 COMPUTER & INTERNET LAW., Dec. 2001, at 1, 2-4 (reporting on a Congressional bill which would establish opposition proceedings for business method patents).

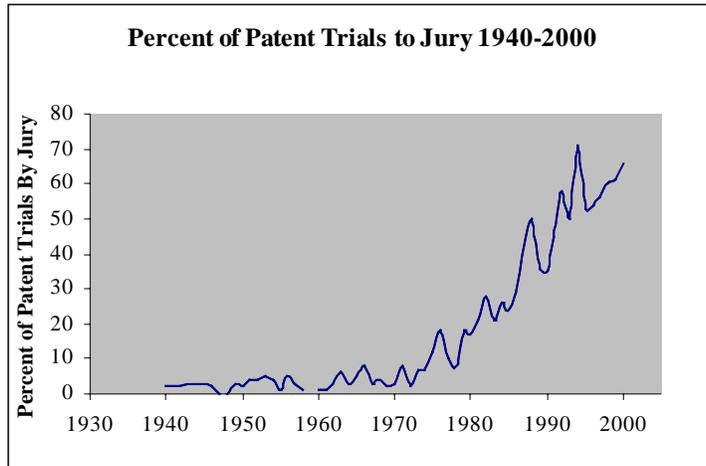
9. The underlying data for this chart was compiled from Table C-4 in the sixty Annual Reports of the Director of the Administrative Office of the U.S. Courts spanning years 1940-2000. Table C-4 in each Annual Report provides statistics on terminated civil U.S. district court cases organized by the nature of suit and action taken.

10. My prior research compares judge and jury outcomes in tried patent cases. See Moore, *supra* note 3, at 386-94.

11. See, e.g., KARL N. LLEWELLYN, *THE BRAMBLE BUSH: ON OUR LAW AND ITS STUDY* 62 (3d ed. 1960) (commenting that litigated cases bear the same relationship to the underlying pool of disputes "as does homicidal mania or sleeping sickness, to our normal life"); Robert Cooter et al., *Bargaining in the Shadow of the Law: A Testable Model of Strategic Behavior*, 11 J. LEGAL STUD. 225 (1982) (suggesting the strategic bargaining impacts the pool of tried cases); Theodore Eisenberg, *Litigation Models and Trial Outcomes in Civil Rights and Prisoner Cases*, 77 GEO. L.J. 1567, 1568 (1989) (describing "expectations theory," which suggests that tried cases might not reflect the pool of all disputes); Robert H. Mnookin & Lewis Kornhauser, *Bargaining in the Shadow of the Law: The Case of Divorce*, 88 YALE L.J. 950 (1979) (positing that strategic bargaining is a significant factor in determining the outcome of conflicts); George L. Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. LEGAL STUD. 1 (1984) (discussing generally that tried cases are not a random sample of all disputes and only result when the parties make inconsistent and self-serving outcome estimations).

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Figure 1



This Article presents the empirical results of an original dataset of all patent cases adjudicated in the two-year period, 1999-2000 (4258 cases). This Article uses party characteristic data and data about the litigation itself to examine two important questions: 1) who is demanding the jury; and 2) what impact this demand has on the litigation. This Article also examines jury demands and the characteristics of the parties to the lawsuit and the patents at issue to ascertain whether perceptions of bias can be documented. The study measures only perceptions of relative jury bias, i.e., bias relative to a judge's decision-making. For example, even if juries are thought to be biased against foreign corporations, those foreign corporations would still demand a jury if they believed that judges are even more biased against them. This Article does not attempt to prove or disprove the accuracy of these perceptions by looking at case outcomes. Instead, it focuses on how the parties incorporate these perceptions into their strategic decisionmaking about the case.<sup>12</sup>

With the increasing complexity of both technology and the patents that protect it,<sup>13</sup> the high percentage of jury demands found (78%) may at first

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12. This is like an event study—a complicated opinion poll. *See, e.g.*, Roberta Romano, *The Need For Competition in International Securities Regulation*, 2 THEORETICAL INQUIRIES L. 387 (2001) (using event studies to conclude that when companies reincorporate in Delaware their stock prices go up indicating that people perceive Delaware as better for corporate law (not that it actually is better)).

13. *See* John R. Allison & Mark A. Lemley, *The Growing Complexity of the United States Patent System*, 82 B.U. L. REV. 77 (2002) (finding that patents have become in-

blush seem puzzling because prevailing wisdom is that juries are not competent to resolve patent cases. The answer, however, is quite straightforward. A jury adjudicates a case if either party demands one at the outset of the litigation.<sup>14</sup> In short, this means that either party can unilaterally demand a jury and thereby subject their adversary to a jury. It is not a system wherein both sides must agree to allow a jury to adjudicate their dispute.

If juries are unable to understand the technology or apply the law, their decisions will be based on less meritorious influences such as bias, likeability, or emotion.<sup>15</sup> If juries seem biased in favor of patent holders, then it should not surprise anyone that patent holders disproportionately request jury trials. Similarly, if juries appear to favor individuals over large corporations, domestic over foreign parties, and local, in-state folk over out-of-state companies, we would expect these characteristics to influence the circumstances in which jury demands are made. By examining these factors I can report how they influence the parties' perceptions of jury competence and bias. Jury demands thus reflect perceptions of the patent process and are useful as a way of gauging that process.

## II. THE EMPIRICAL PROJECT

The Administrative Office of the United States Courts compiles statistics on terminated cases by subject matter. The dataset is the population of patent cases from 1999-2000. This data reflects 4258 cases and more than 6800 separate claims.<sup>16</sup> When a patent case is terminated, the district court

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creasingly complex by comparing a sample of patents from the 1970s with a sample of patents from the 1990s).

14. Federal Rule of Civil Procedure 38(b) specifies:

Any party may demand a trial by jury of any issue triable of right by a jury by (1) serving upon the other parties a demand therefore in writing at any time after the commencement of the action and not later than 10 days after the service of the last pleading directed to such issue, and (2) filing the demand as required by Rule 5(d). Such demand may be indorsed upon a pleading of the party.

FED. R. CIV. P. 38(b).

15. This may explain both the preference for jury trials and the trend toward more jury demands. It could be that the increasing complexity in the underlying technology has caused the party most likely to be favored by a jury's bias to prefer juries with greater frequency. As the complexity increases, the jury may be more inclined to allow nonmeritorious influence and prejudices to impact their decisionmaking. In short, the less a jury understands about the technology, the more likely unrelated issues will influence decisionmaking.

16. Some cases involved more than one patent. In many cases, the patent holder would file suit against the defendant claiming infringement of more than one patent or alternatively, the defendant-infringer would file a counterclaim that the plaintiff-patentee

## JURY DEMANDS: WHO'S ASKING?

files a form with the Administrative Office<sup>17</sup> that includes: data regarding the dates of filing and termination of the suit; the judicial district; the procedural stage of the termination (whether termination was prior to any court action, mid-litigation, or at trial); the method of disposition (default judgment, consent judgment, settlement, summary judgment motion, jury verdict, court trial, etc.); and whether a judge or jury tried the case. Because of the high error rate in the Administrative Office data, I verified or independently researched every variable included in this study.<sup>18</sup>

Unfortunately, the data obtained from the Administrative Office did not contain any information on jury demands or any characteristic data regarding the parties. In order to collect this data, I obtained the docket sheets and complaints for the cases in the dataset. For purposes of this study, I researched the following: whether a jury trial was demanded; who demanded the jury (plaintiff, defendant, or both); which party was the patent holder (plaintiff or defendant);<sup>19</sup> whether the parties were foreign or domestic;<sup>20</sup> whether the parties were individuals or corporations;<sup>21</sup> and whether the parties were in-state or out-of-state.<sup>22</sup>

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infringed the defendant's own patent. In the latter case, the court would be deciding patent infringement by the plaintiff and patent infringement by the defendant.

17. See 11 ADMIN. OFFICE OF THE U.S. COURTS, TRANSMITTAL NO. 64, GUIDE TO JUDICIARY POLICIES AND PROCEDURES, at II-19-II-28 (1985).

18. Occasionally, a case will be reported as a patent case and not actually involve patent issues. For example, it will be a trade secret or copyright case which is inaccurately reported. I eliminated these from the dataset. The Administrative Office reporting of the procedural process and disposition of the case also turned out to be inaccurate in some instances. I corrected each of these variables through verification by obtaining the relevant case documents (complaints, summary judgment rulings, special verdicts forms, etc.). Thus all cases are included in this empirical analysis. Finally, the reporting of outcome (who won) was inaccurate or otherwise deficient with such frequency that I cut it from the dataset and independently obtained all outcome statistics by external research. The extent of inaccurate reporting and its ramifications are the subject of a future paper.

19. In 15% of the cases in the dataset, the accused infringer, rather than the patent holder, filed suit in the form of a declaratory judgment action.

20. The plaintiff is considered foreign if the plaintiff itself (party bringing suit) is foreign. There is a separate variable which considers whether the inventors on the patents involved in the suit are foreign or domestic. The defendant is considered foreign if any of the defendants are foreign. For example, if there are three defendants and one of them is foreign, they are considered a foreign defendant.

21. If any of the parties are corporations, the party is considered a corporation. For example, suppose a lawsuit were brought against an infringer by a patent holder who is an individual and the exclusive licensee for the patent which is a corporation. These parties are considered a corporation. If there is more than one defendant and any of the defendants is a corporation then the party is considered a corporation.

22. If any of the parties are incorporated in a particular state or have their headquarters/principal place of business in the state where the action was filed then they are con-

The Administrative Office data is similarly devoid of any of the characteristics of the patents at issue in each suit and in fact, do not even report the patent numbers themselves.<sup>23</sup> I collected each patent number involved in the lawsuits in the dataset by obtaining each complaint and obtained characteristic data on the patents from the National Bureau of Economic Research database which is an extensive empirical project undertaken by Bronwyn Hall, Adam Jaffe, and Manual Trajtenberg on the characteristics of all issued patents from 1975-1999.<sup>24</sup> This characteristic data permitted comparison of patents by technological field, the number of claims, citations made by the patent to other U.S. patents, and citations of this patent received by the U.S. patents.

### **III. JURY DEMANDS: EMPIRICAL RESULTS ON THE CHARACTERISTICS OF WHO MAKES THE JURY DEMAND**

#### **A. Plaintiff v. Defendant**

Parties demanded a jury trial in 78% of the 4258 separate patent cases terminated in the 94 U.S. district courts during the two-year period 1999-2000. Such a high percentage of jury demands suggests that in patent cases, often at least one of the parties thinks the jury will be a more favorable adjudicator than the court. The breakdown of who is doing the asking is contained in Table 1.

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sidered an in-state party. Of course, this means that in cases where several defendants are sued for infringement one or more of the defendants could be out-of-state, but get classified as in-state simply because one defendant is in-state.

23. Although there is a database entitled LITALERT which reports the patent numbers of patents involved in litigation, only about 55% of all litigated patents are actually recorded in this dataset. See Jean Lanjouw & Mark Shankerman, *Enforcing Intellectual Property Rights* (Working Paper, Oct. 2001) (on file with author) (finding that throughout the 1990s about 55% of all patent litigations are reported to LITALERT). I obtained all of the patent numbers involved in all of the litigations during this time period by resorting to the actual complaints for each suit.

24. See Bronwyn Hall et al., *The NBER Patent Citation Data File: Lessons, Insights and Methodological Tools* (Nat'l Bureau of Econ. Research, Working Paper No. 8498, 2001).

## JURY DEMANDS: WHO'S ASKING?

**Table 1**

**Which Party Demands the Jury**

Plaintiff	49%
Defendant	7%
Both Parties	22%
Neither Party	22%

As Table 1 indicates, plaintiffs demanded a jury significantly more often than did defendants; plaintiffs demanded a jury in 71% of all cases. Although Table 1 suggests that defendants only demanded a jury in 29% of the cases, this number is misleading because many cases are resolved before the defendant would have had a chance to make the demand. Since the defendant ordinarily files its jury demand with its pleadings (answer or counterclaim), if the case terminates prior to the defendant's involvement, the defendant has no opportunity to make a jury demand.<sup>25</sup> In those cases in which the defendant had an opportunity to demand a jury, the defendant's jury demand rate was 42%.

It is also possible that this 42% may not accurately reflect the defendant's true preference regarding adjudicator because of what I call the "me too" phenomena.<sup>26</sup> Because the plaintiff demands a jury trial in 71% of the cases, very seldom does defendant have the opportunity to make a demand that would impact whether a jury adjudicates the case. In cases where the plaintiff has demanded a jury, the defendant may not request a jury because it would be redundant to the plaintiff's demand. This is especially true because withdrawal of the jury demand requires consent by both parties even though plaintiff alone makes the demand.<sup>27</sup> According to this logic, 42% may actually be lower than defendants' actual preference. However, the pointlessness of defendant's jury demand—the "me too" phenomena—has not eliminated defendant jury demands because in 32% of the cases the defendants demanded a jury notwithstanding plaintiff's request. The "me too" phenomena could alternatively suggest that the 42% rate of demand by defendant is artificially high. It is not particularly diffi-

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25. Thirty-five percent of the cases were resolved before the defendant filed an answer in the case, either by settlement, voluntary dismissal by the plaintiff, or on a Rule 12(b) motion to dismiss.

26. The "me too" phenomena is the propensity of a defendant to demand a jury even though the plaintiff has already made a demand—when the defendant's demand is meaningless. A defendant would do this because there is no cost to make the demand. Additionally, a defendant may gain some settlement leverage if a plaintiff perceives that a defendant is willing and confident to try their case before a jury.

27. FED. R. CIV. P. 38(d).

cult or onerous to write “Jury Demanded” in one’s answer and in the cases where the plaintiff has already made the request, making the demand is costless. This costlessness of defendant’s jury demand could inflate the defendant’s jury demand statistic. In these cases, the defendant may make a redundant jury demand for strategic negotiating reasons to avoid the appearance of weakness for settlement purposes.

The most accurate reflection of defendant’s preference for a jury could come from limiting the data to those cases where the plaintiff made no demand and the defendant had an opportunity to make a demand. In this subset of the dataset, the defendant’s choice matters. The defendant requests a jury in 40% of these cases.<sup>28</sup>

A significant amount of literature discusses the hypothesis that juries favor plaintiffs.<sup>29</sup> Table 1 supports the existence of these perceptions and their application in the litigation context. Although Table 1 does not prove or disprove this hypothesis because it is not testing for outcome, it supports the existence of this perception. The empirical results prove that plaintiffs prefer juries, not necessarily that juries prefer plaintiffs. Why then aren’t plaintiffs demanding a jury in 100% of the cases? There are several possible explanations. First, not all plaintiffs are likely to be repeat players in patent litigation and therefore there may be an information asymmetry. One-time litigants or new litigants may be unaware of the otherwise predictable behavior of juries. Although it is possible that a particular party may be ignorant of the biases of the jury, it seems implausible

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28. Of course, even this statistic can be questioned because the parties have until ten days after the last pleading to file a jury demand. In short, although it is standard practice to attach a jury demand to the pleading (complaint, answer, or counterclaim), it is not required. Accordingly, the absence of a demand for a jury by the plaintiff in their complaint does not absolutely bar them from demanding a jury later in the pleading process. This means that when the defendant makes the jury demand first, they are not entirely certain that the plaintiff has decided not to make a demand.

29. See, e.g., NEIL VIDMAR, *MEDICAL MALPRACTICE AND THE AMERICAN JURY: CONFRONTING THE MYTHS ABOUT JURY INCOMPETENCE, DEEP POCKETS AND OUTRAGEOUS DAMAGE AWARDS* 11-25 (1995) (reviewing claims that juries have a pro-plaintiff bias); Roger W. Kirst, *The Jury’s Historic Domain in Complex Cases*, 58 WASH. L. REV. 1, 11-12, 18-20, 31 (1982) (“In ordinary negligence cases it assumes juries will exercise a consistent pro-plaintiff, anti-corporation, anti-insurer bias.”); *Corporate Citizenship: A Conversation Among the Law, Business and Academia*, 84 MARQ. L. REV. 723, 787 (2001) (statement of Dr. Valerie P. Hans) (suggesting that the “civil jury is thought to be extraordinarily pro-plaintiff and quite anti-business”).

## JURY DEMANDS: WHO'S ASKING?

that this could account for 29% of the plaintiffs not demanding a jury. This is especially true when patent litigation is such an expensive endeavor.<sup>30</sup>

Parties are unlikely to spend millions of dollars litigating disputes and not research which adjudicator may favor them.<sup>31</sup> Even if the party is not a repeat player, generally the attorneys who litigate patent cases are familiar with the litigation process and jury behavioral patterns.<sup>32</sup> Second, perhaps all litigants do not share the perception that juries are biased in favor of plaintiffs or patent holders.<sup>33</sup> This could result in significantly different outcome estimations by the parties, thereby impeding settlement.

Third, the fact that jury trials take longer and are more expensive than bench trials may also explain why plaintiffs may not be demanding a jury even if they are aware of the advantage of doing so.<sup>34</sup> It is surely more expensive and time-consuming to educate a jury that is seeing the technology for the first time at the trial than to educate a judge who has presided over the litigation since its inception and who has rendered a claim construction along the way.<sup>35</sup>

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30. See AMERICAN INTELLECTUAL PROP. LAW ASS'N, REPORT OF ECONOMIC SURVEY 2001, at 84 (reporting that an average suit will cost each party \$1.5 million in transaction costs).

31. Since only recent empirical work has substantiated popular perceptions that juries favor patent holder plaintiffs on outcome statistics, it is possible that this information was not researchable. Cf. John Allison & Mark Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185, 212 tbl. 3 (67% of 73 patents valid after jury trials, 57% of 143 patents valid after bench trials); Moore, *supra* note 3, at 403 (substantiating that juries resolve cases in favor of patent holder plaintiffs overall, and on most major issues, more often than judges).

32. In fact, several successful jury consultation firms such as DecisionQuest and Trial Behavior Consulting, Inc. exist to help parties make predictions about jury behavior.

33. I surveyed corporate Chief Patent Counsels in 1999. The results of my survey showed that 86% of the Chief Patent Counsels believed that juries were biased in favor of the patent holders. The flip side of this statistic is that 14% did not believe that juries held this prejudice. Accordingly, these 14% would make different outcome estimations than 86% of their colleagues. See Moore, *supra* note 3, at 373-74 (reporting survey results).

34. John B. Attanasio, *Foreword: Juries Rule*, 54 SMU L. REV. 1681, 1682 (2001) ("Jury trials are generally longer, more cumbersome, and more expensive than bench trials."); William C. Whitford, *The Role of the Jury (and the Fact/Law Distinction) in the Interpretation of Written Contracts*, 2001 WIS. L. REV. 931, 944 (2001) (noting that jury trials are thought to be more expensive than court trials because they last longer and discovery can be more expensive because parties prepare more thoroughly). Of course, this same rationale would likely make defendants averse to juries as well.

35. In *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 388-91 (1996), the Supreme Court held that judges, not juries, must construe patent claim terms.

Another plausible explanation for why plaintiffs do not demand juries in all cases is that plaintiffs do not perceive juries as biased in only one dimension. Put simply, juries are complex and while one may form generalizations about their biases and preferences, it is not normally a single attribute inquiry. For example, if the plaintiff and defendant were virtually identical and the only difference in the way that they believed the jury would perceive them is that one was a plaintiff and the other a defendant, then a perception of pro-plaintiff jury bias would cause the plaintiff to demand a jury. However, if the plaintiff were a foreign corporation and the defendant were an in-state individual patent holder, the plaintiff may not believe that a jury would favor it because other biases may overcome the pro-plaintiff bias. Additionally, there are likely idiosyncratic case-specific factors that likely influence the decision to demand a jury in many cases.<sup>36</sup> The remainder of Part III addresses other possible perceptions that may be impacting jury demands and outcome estimates.

### **B. Patent Holder v. Infringer**

In most fields of civil law such as products liability and medical malpractice, the plaintiff is normally the sympathetic aggrieved party seeking justice—the injured individual. The same is true in patent cases where the plaintiff is generally the patent holder seeking compensation for the defendant’s infringement of its property right. In 15% of the cases in the dataset, however, the patent holder is actually the defendant. These cases are declaratory judgment actions where the natural defendant, the accused infringer, actually initiates the lawsuit and requests a “negative declaration” of noninfringement, invalidity and/or unenforceability. To further analyze who demanded the jury, Figures 2 and 3 present the jury demand results by patent holder and accused infringer.<sup>37</sup>

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36. Bias based upon party characteristics is not likely to tell the whole jury demand story. For example, even if the parties believe that juries favor patentees (and all other party characteristics are equal), the patentee may not demand a jury if it believes the defendant will present a strong case of inequitable conduct. Inequitable conduct evidence suggesting that the defendant wrongfully acquired its patent by withholding material evidence from the PTO with the intent to deceive, is strong “bad guy” evidence which is likely to affect the juries image of the patentee. This issue and the kind of evidence the infringer/defendant could present might cause the infringer to want a jury and the patentee not to want a jury in a particular case even though the party characteristics suggest otherwise.

37. The patent holder jury demand statistics were derived by looking at all cases in the dataset in which the patent holder initiated the lawsuit and demanded a jury plus all cases in which the accused infringer initiated the lawsuit limited by procedural progress at termination to ensure that the patent holder (defendant) had an opportunity to make a

## JURY DEMANDS: WHO'S ASKING?

Figure 2

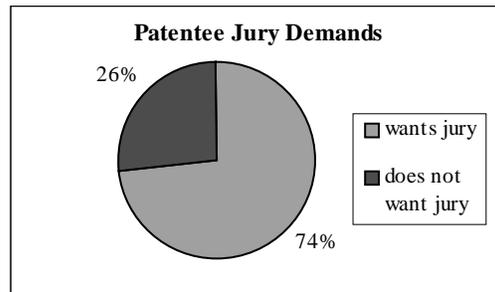
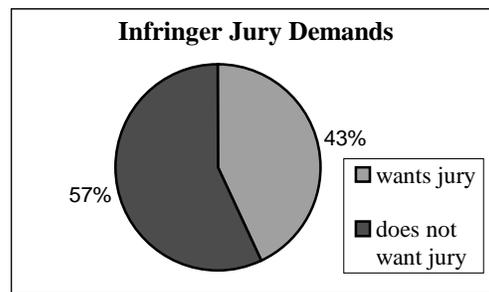


Figure 3



The patent holder demanded a jury in 74% of the cases and the accused infringer demanded a jury in 43% of the cases. Given these percentages, it is clear that the patentee perceived an advantage to a jury trial. This is a perception that my own prior empirical work validates.<sup>38</sup>

### C. Infringement v. Declaratory Judgment Action

Figure 4 shows that the patent holder's jury demand rate rose to 76% after isolating those cases in which the patent holder initiated suit. By contrast, when the patent holder is the defendant (i.e., when the accused infringer initiates the lawsuit by filing a declaratory judgment action), the patent holder demanded a jury in 53% of the cases.<sup>39</sup> When the declaratory

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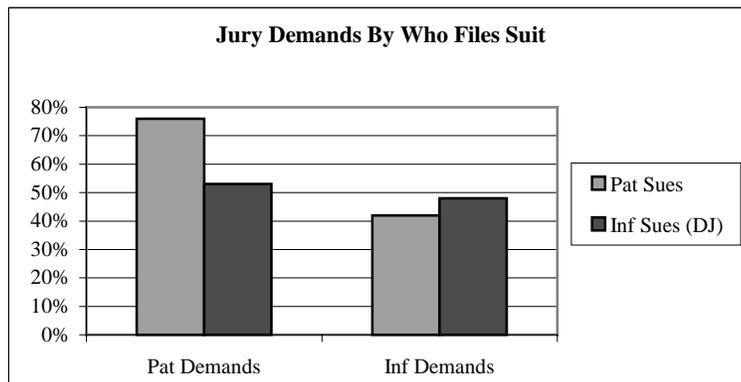
jury demand and did demand one. The infringer jury demand statistics were derived in the same manner.

38. See Moore, *supra* note 3, at 386, 390 (substantiating empirically a significant advantage for the patent holder with juries rather than judges in overall win rate and on the individual issues of validity, infringement, and willfulness).

39. The result was controlled to look only at the cases in which the patent holder as defendant had an opportunity to make such a demand—cases that were not resolved prior to an answer being filed—in order to avoid statistical bias. For example, if I did not iso-

judgment plaintiff did not demand a jury (so the defendant patent holder's choice matters), the defendant patent holder demanded a jury in 54% of the cases. When the infringer is sued, it demanded a jury in 42% of the cases. However, when the infringer is sued and the plaintiff patent holder did not demand a jury (so the defendant infringer's choice matters), the defendant infringer asks for a jury in 36% of the cases. When the infringer initiated suit by filing a declaratory judgment action (usually asking the court to declare that there is no infringement and that the patent is invalid and/or unenforceable), the infringer demanded a jury in 48% of the cases. These results indicate that while there is a perception of an advantage with the jury for the patent holder, that advantage is substantially modified by who initiates the lawsuit. The patent holder plaintiff is much more confident about its chances with a jury than is the patent holder defendant. Similarly the infringer is more likely to favor a jury when it initiates suit.

Figure 4



These empirical results contradict some popular notions about jury demands.<sup>40</sup> Accused infringers generally bring declaratory judgment actions when they believe they have a strong case on the merits. Why initiate suit if you estimate your chances of success as very low? Since commentators suspect that the party who demands a jury in a patent case has a weaker case on the merits,<sup>41</sup> one would expect the jury demand rates for

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late the data in this manner, the patent holder jury demand rate for all declaratory judgment actions (where the patentee is the defendant) would be 28%, though the accurate jury demand rate (where the patentee had the chance to make the demand) was 51%.

40. It may be that declaratory judgment plaintiffs demand more juries because they believe that the plaintiff bias cancels out some of the patentee bias.

41. See ETHAN HORWITZ & LESTER HORWITZ, PATENT LITIGATION: PROCEDURE & TACTICS § 2.02[6] (1971 & Supp. 2001) (“[C]ourts suspect some weakness on the merits

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infringers to go down and jury demand rates for the patentees to go up in declaratory judgment actions. Taking into account existing perceptions, the party with the weaker case on the merits would be more eager to have an adjudicator who they perceive to be less likely to focus on the merits—a jury. However, the empirical result defies this prediction.

One possible explanation for the infringer's increased preference for juries in declaratory judgment actions could be that these cases are more frequently focused on validity. If the infringer's primary defense to infringement is that the patent is invalid because it lacks novelty or is obvious, then the adjudicator must compare the patent claims to prior art in order to determine whether there are any differences between them. The less knowledgeable factfinder is more likely to think that the technical documents look the same because they are less likely to find meaning in small technical distinctions. This increases the chances that the patent will be invalidated. Perhaps this explains why infringers prefer juries in these circumstances. Similarly, patent holders may prefer juries for infringement claims because the juries are less likely to distinguish between the patent claims and the accused device. The less sophisticated adjudicator is less likely to focus on technical distinctions. For validity issues this would favor the infringer, for infringement issues, this would favor the patent holder.<sup>42</sup>

Another explanation as to why a party is more likely to demand a jury if they are the one bringing suit is what I call the "forum effect." The parties believe that there is an advantage to selecting forum and that this advantage is greatest when they get to pick their jury pool. In a previous study, I reported that the patent holder win rate when juries adjudicate cases falls from 68% when the patent holder initiates the suit to 38% when the infringer initiates the suit.<sup>43</sup> There is no difference in win rate statistics in bench trials; if the patent holder initiates suit the win rate is 49% and if the infringer initiates suit the win rate is 49%.<sup>44</sup> This win rate data suggests that infringers fare substantially better with a jury when they initiate

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of the case of the party who puts a patent case on the jury docket."); Richard B. Schmitt, *Court To Consider Limits On Juries' Role in Patent Suits*, WALL ST. J., Feb. 18, 1994, at B6 (quoting Wayne State University professor Martin J. Adelman, "there are many lawyers who believe they can benefit by jury confusion). Of course, the jury is not told which party demanded the jury trial.

42. Unfortunately, there is no way to verify this theory because all cases raise noninfringement and invalidity claims, whether they are declaratory judgment actions or infringement actions.

43. Moore, *supra* note 3, at 368.

44. *Id.* at 406 (reporting patentee win rates by who filed suit in judge and jury trials in Figure 12).

the lawsuit—hence plaintiff infringers are behaving rationally by demanding juries more often.

The data in this study suggest that plaintiffs are filing suit in the state where they have a connection—plaintiffs file suit in their home state in 64% of the cases.<sup>45</sup> If parties believe that juries are prone to decide cases on tangential factors, they may believe there is a home-court advantage with a jury. The data show that in-state plaintiffs demand a jury in 73% of the cases and out-of-state plaintiffs demand a jury in 67% of the cases. In-state plaintiff demands rise even higher (75%) when they are up against an out-of-state defendant. The data in this study suggests that there is a perceived advantage to forum selection, especially when a jury is involved. My prior work substantiates a real advantage to forum selection because there is significant forum-dependent variation in procedural and substantive resolution of patent cases.<sup>46</sup>

#### **D. Other Potential Biases (Size and Location)**

The strategic advantage of having a jury is likely a multifactor inquiry. For example, if the defendant is foreign the plaintiff may only perceive an advantage to a jury if it is domestic. Because there are many variables that could affect whether a party perceives an advantage with a jury and therefore demands a jury trial, I ran a multivariate regression that factored in several independent variables and their impact on whether the party demanded a jury trial. This regression model analyzes the circumstances in which the plaintiff demanded a jury trial. The dependent variable is whether the plaintiff demanded a jury. The independent variables are: whether the plaintiff is an individual or a corporation (*Pcorp*); whether the defendant is an individual or a corporation (*Dcorp*); whether the plaintiff is domestic or foreign (*Pfor*); whether the defendant is domestic or foreign (*Dfor*); whether the plaintiff is located out-of-state or in-state (*Pin-state*); whether the defendant is located out-of-state or in-state (*Din-state*); whether the plaintiff is the patent holder or the accused infringer (*Patentee*); the year the litigation was filed (*Filed*); and dummy variables for the district court (*DCt*). With multivariate regression I can examine the separate effect of each independent variable on the dependent variable or

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45. A state is considered the party's home state if the corporation is incorporated in that state or the company's principle place of business (headquarters) is located in the state.

46. See Kimberly A. Moore, *Forum Shopping in Patent Cases: Does Geographic Choice Impact Innovation*, 79 N.C. L. REV. 889, 907-920 (2001) (substantiating significant variation in the procedural and substantive resolution of patent cases by the district courts).

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the statistical significance of each independent variable in predicting plaintiff jury demands. Multivariate regression only considers cases that contain information on all of the selected independent variables.

**Table 2**  
**Impact of Possible Biases on Plaintiff Jury Demands**

Independent Variable	Coefficient	Standard Error	Significance
<i>Pcorp</i> <sup>47</sup>	-0.076	0.024	0.002
<i>Dcorp</i> <sup>48</sup>	0.177	0.043	0.000
<i>Pfor</i> <sup>49</sup>	-0.123	0.023	0.000
<i>Dfor</i> <sup>50</sup>	0.030	0.019	0.107
<i>Pin-state</i> <sup>51</sup>	0.024	0.016	0.020
<i>Din-state</i> <sup>52</sup>	-0.072	0.015	0.000
<i>Patentee</i> <sup>53</sup>	0.279	0.019	0.000
Filed <sup>54</sup>	0.008	0.004	0.061
<i>DCt</i> <sup>55</sup>	See discussion below		
Constant	-14.822	8.313	0.75
Adjusted $R^2 = 0.106$ ; <sup>56</sup> Number of Observations = 4231			

47. 0 = plaintiff is an individual, 1 = plaintiff is a corporation.

48. 0 = defendant is an individual, 1 = defendant is a corporation.

49. 0 = plaintiff is domestic, 1 = plaintiff is foreign.

50. 0 = defendant is domestic, 1 = defendant is foreign.

51. 0 = plaintiff is wholly out-of-state, 1 = plaintiff is either incorporated or has their principle place of business in the state where the suit is brought.

52. 0 = defendant is wholly out-of-state, 1 = defendant is either incorporated or has their principle place of business in the state where the suit is brought.

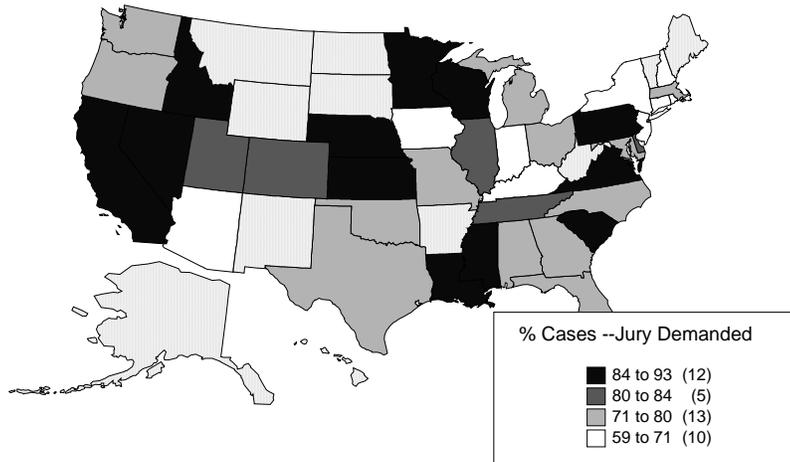
53. 0 = plaintiff is the infringer, 1 = plaintiff is the patent holder.

54. This is the filing year of the litigation. Since this is a study of all cases terminated during 1999-2000, their origination dates can vary substantially. In fact, the oldest case was filed on March, 18, 1983 and the youngest case was filed on December 6, 2000. As Figure 1 indicates, jury involvement in patent cases has changed quite dramatically in recent years. This regression confirms that in cases filed more recently there is a significantly greater chance of jury demand by plaintiff.

55. *DCt* is a series of dummy variables (ninety-four to be exact) for the U.S. district courts. The Northern District of California was left out of the regression.

56.  $R^2$  is called the coefficient of determination. It represents the percentage in variation of the dependent variable explained linearly by variation in the independent variables. PETER KENNEDY, A GUIDE TO ECONOMETRICS 26-27 (4th ed. 1998). The “adjusted  $R^2$ ” is the  $R^2$  statistic adjusted to account for degrees of freedom. *Id.* at 82. In this model, the independent variables only explain 10.6% of the variation. A low  $R^2$  is common for limited dependent models since the models often predict probabilities between 0 and 1 while the observations are actually at either extreme. *Id.* at 233. In addition to the limitation of linear probability models in general, Kennedy notes the limitations of  $R^2$  as

Figure 5  
 Geography and Jury Demands



The regression results detailed in Table 2 show significance ( $p \leq 0.05$ )<sup>57</sup> for the variables *Pcorp*, *Dcorp*, *Pfor*, *Din-state* and *Patentee*. The regression model that contained dummy variables for the ninety-four district

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a measure of goodness of fit for them. *Id.* at 26-28, 90-91. However, a more sophisticated model would likely yield similar results. *See, e.g.*, G.S. MADDALA, INTRODUCTION TO ECONOMETRICS 330 (2d ed. 1992) (noting similar coefficient results in the logit, probit and linear probability models).

57. In this study, I test a null hypothesis that posits “no difference” in outcome or “no relationship” between the independent variable and whether the plaintiff demanded a jury. The significance level is the probability of rejecting the null hypothesis when it is actually true. A rejection of null hypothesis with a  $p$  value  $p < 0.001$  indicates that there is less than one chance in a thousand of erroneously rejecting the null hypothesis of equal predicted win rates. This would translate into a confidence level of 99.9%. Hence we could reject the null hypothesis with 99.9% confidence. A rejection of the null hypothesis with  $p < 0.01$  has 99% confidence. A rejection of the null hypothesis with  $p < 0.05$  is 95% confidence. Throughout this Article, I use the term “significant” in the formal statistical sense, indicating that the null hypothesis can be rejected with at least 95% confidence ( $p \leq 0.05$ ). If  $p > 0.05$ , the relationships are not statistically significant; the null hypothesis cannot be rejected in these cases. *See* JEFFREY M. WOOLDRIDGE, INTRODUCTORY ECONOMETRICS: A MODERN APPROACH 129, 730-734 (2000) (providing an overview on the calculation of  $p$  values).

## JURY DEMANDS: WHO'S ASKING?

courts<sup>58</sup> also showed that in some districts there was a greater likelihood of plaintiff demanding a jury than other districts.<sup>59</sup> Figure 5 maps jury demands by state.<sup>60</sup> There does not appear to be a geographic explanation for jury demands. Jury demands are not more prevalent on the East Coast, West Coast, North, South, or Midwest. Moreover, jury demand rates do not correlate to the number of patent suits in a given judicial district.<sup>61</sup> This means that each of these variables significantly impacted plaintiff's decision to demand a jury. In sum, plaintiffs were more likely to demand a jury when:

- plaintiff is the patent holder;
- plaintiff is an individual;
- defendant is a corporation;
- plaintiff is domestic;
- defendant is out of state; and
- the case is brought in particular districts.

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58. The frequency of jury demands varied by jurisdiction. For example, among districts with a hundred or more patent cases, the rate of jury demands varied from 59.5% in the Southern District of New York to 89.2% in the Northern District of California. When dummy variables are created for all possible districts, one district must be left out of the regression. I left out the Northern District of California. The regression runs by comparing each of the ninety-three districts to the left out district and reports whether the plaintiff was more or less likely to demand a jury in each of the reported districts than they did in the left out district. Hence, the Northern District of California became the point of comparison against which jury demands in other jurisdictions were measured.

59. The following district courts were significantly less likely to have plaintiff jury demands: District of Columbia, Massachusetts, Puerto Rico, Northern District of Florida, Southern District of Florida, Southern District of Georgia, Connecticut, Northern District of New York, Southern District of New York, Eastern District of New York, Delaware, New Jersey, Maryland, Western District of North Carolina, Western District of Virginia, Northern District of West Virginia, Northern District of Texas, Southern District of Texas, Western District of Kentucky, Western District of Michigan, Northern District of Ohio, Southern District of Ohio, Northern District of Illinois, Northern District of Indiana, Southern District of Indiana, Southern District of Iowa, Western District of Missouri, Arizona, and Western District of Washington. There was no district where plaintiff jury demands were significantly more likely than the Northern District of California.

60. Some states have more than one judicial district. Figure 5 combines all jury demands in all judicial districts in each state together to present a state mean.

61. It is not the case that judicial districts with more patent cases have more or less jury demands.

Notice that these significance results demonstrate that both the plaintiff's characteristics and the defendant's characteristics impacted the circumstances in which the plaintiff requested a jury. These results probably would not shock many patent practitioners because they are largely consistent with popular perceptions of jury biases.<sup>62</sup> Practitioners believe juries prefer individuals to big corporations,<sup>63</sup> perhaps because jurors relate better to individuals or perhaps for wealth redistribution reasons. Practitioners also believe juries favor domestic over foreign parties,<sup>64</sup> and local, in-state companies over out-of-state companies.<sup>65</sup>

The multivariate regression allows one to estimate the magnitude of the effect on outcome produced by each independent variable. Using the coefficients from Table 2, I can calculate the approximate change in jury demand rate attributable to each independent variable. When there is a 50% chance that the plaintiff will demand a jury when the plaintiff is the infringer, there is a 77.9% chance that the plaintiff in an identical case will demand a jury if they are the patent holder.<sup>66</sup> This means that when the plaintiff is the patentee, it is 27.9% more likely to demand a jury. Notice that the magnitude of coefficients for the variables *Patentee* and *Dcorp* are the largest, indicating that these variables have the greatest impact on the jury demands. Although there are other variables that significantly impact whether the plaintiff demanded a jury, the magnitude of their coefficients is small which suggests that their impact was small. Moreover, the low value of the adjusted  $R^2$  (10.6%) suggests that there exist idiosyncratic

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62. This empirical study is like an event study in that it details commonly held perceptions of the ways in which juries are biased and how these perceptions influence party litigation behavior. Unlike an opinion poll in which a person could espouse any opinion, here the parties are acting on their opinions—actions speak louder than words.

63. See, e.g., Andrews, *supra* note 1 (juries “have proven eager to side with inventors against large companies”); Jonathon Taylor Reavill, *Tipping the Balance: Hilton Davis and the Shape of Equity in the Doctrine of Equivalents*, 38 WM. & MARY L. REV. 319, 366 (1996) (“juries also tend to idealize inventors”); Barry S. Wilson, *Patent Invalidity and the Seventh Amendment: Is the Jury Out?*, 34 SAN DIEGO L. REV. 1787, 1787 n.4 (1997) (noting juries prefer individual inventors challenging large corporations or foreign defendants).

64. See Jack L. Lahr, *Bias and Prejudice Against Foreign Corporations in Patent and Other Technology Jury Trials*, 2 FED. CIR. B.J. 405, 405 (1992) (“A widespread perception within the corporate communities of many industrial countries holds that they will be treated unfairly in U.S. jury trials due to the jury bias and prejudice against foreigners.”).

65. Perhaps the company has developed considerable local goodwill through employment of the local citizens, sponsorship of local sporting teams (little league), etc.

66. Magnitude in a linear probability model is calculated directly by the coefficient. See WOOLDRIDGE, *supra* note 57, at 233-34.

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case-specific factors not tested in my regression model that impact whether the plaintiff demanded a jury. This is likely a good thing, as it suggests that widely-held perceptions of bias are not the only factors affecting a plaintiff's decision to demand a jury.

I ran a second multivariate regression testing the impact of variables on plaintiff jury demand rate that added technology field of the patent into the model. There are some obvious advantages to considering the type of technology at issue that could impact whether a jury is demanded.<sup>67</sup> For example, perhaps the plaintiff prefers a jury when their patent is simpler—suggesting that we may see more jury demands with mechanical inventions than chemical inventions. However, there are also concerns about running the regression by patent rather than by case, as is required in order to factor in the individual patent characteristic data. One drawback of this approach is that in a given patent case there can be multiple patents that could have differing characteristics, yet the jury demand is binary. This results in a jury for all patents or no patents.

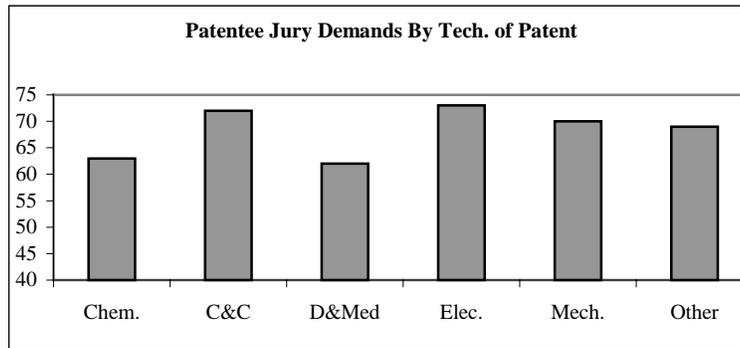
In this second regression, the patent holder plaintiff was significantly more likely to demand a jury when: the plaintiff is the patent holder; plaintiff is domestic; the defendant is foreign, the plaintiff is an individual; the defendant is a corporation; the defendant is out-of-state; the case was more recently filed; and the suit was commenced in certain district courts. The plaintiff's likelihood to demand a jury also changed based upon the underlying patented technology field (chemical, computers and communications, electronics, drugs and medicine, mechanical, and other).<sup>68</sup> These results are entirely consistent with popular perceptions of jury bias and consistent with the results of the regression model limited to case and party characteristics. Figure 6 shows how the patent holder's jury demands varied by the technology of the patent.

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67. In fact, adding the patent technology field data into the regression model produced an adjusted  $R^2$  of 0.137, indicating that 13.7% of the jury demands can be explained by the factors considered.

68. Categorization of patents is originally by PTO technology class. These classes have been grouped together into the six general categories in the NBER dataset. Hall, *supra* note 24.

Figure 6



For completeness, I ran a third regression on factors impacting whether the defendant demanded a jury. The regression model was limited to only the cases in which the plaintiff did not demand a jury and where the defendant had an opportunity to make a demand. Hence it is limited to cases where it mattered whether the defendant selected a jury. The only significant variable in the model was whether the defendant is the patent holder. This is consistent with impressions about jury bias, thus suggesting that parties behave in a manner that is consistent with popular perceptions of jury bias. Again, however, the data suggest that there is more to the picture than what we see in this model because of the low value of the  $R^2$  ( $0.037 = 3.7\%$ ).

In another regression, I included all of the same variables as Table 2 with the addition of the independent variable *DemP* that reports whether the plaintiff demanded a jury. The regression showed significance ( $p \leq 0.05$ ) for the variable *DemP* meaning that, strangely, defendants were significantly more likely to demand a jury if the plaintiff had already demanded one. Why is this the case? If the plaintiff demanded a jury (signaling a belief that they would benefit from jury adjudication) why would the defendant make the “me too” demand? Defendants may have demanded a jury more frequently in these circumstances precisely because it is meaningless. Breaking this dynamic down in Table 3<sup>69</sup> shows most of the defendants’ jury demands (73%) occurred after the plaintiff had already made a request. In these circumstances, making the demand is costless—

69. This reports jury demands of both parties only in cases in which both parties had an opportunity to make a demand—it excludes cases resolved prior to defendant being joined.

## JURY DEMANDS: WHO'S ASKING?

the defendant will end up with a jury anyway because of plaintiff's jury demand and defendant need only add "Jury Demanded" to its answer.<sup>70</sup>

**Table 3**  
**Plaintiff and Defendant Jury Demands**

	<b>Defendant— Jury Demand</b>	<b>Defendant— No Jury Demand</b>
<b>Plaintiff— Jury Demand</b>	32%	41%
<b>Plaintiff— No Jury Demand</b>	11%	16%

The plaintiff's demand may motivate the defendant to make the same demand because the defendant wants to communicate to plaintiff that it does not believe that the jury is bad for the defendant. For settlement purposes, the defendant bluffs—it does not want to give the plaintiff the impression that it believes the jury demand weakened its chances of success. In cases where the plaintiff has already made the demand, it would be strategically advantageous for the defendant to give the impression that it prefers a jury as well.<sup>71</sup> Perhaps bluffing could make the plaintiff question whether it is missing anything (asymmetric information). The plaintiff would wonder whether it correctly calculated the advantageousness of its jury demand if the defendant reached the same conclusion for itself. One of the parties is clearly in error or behaving deceptively for strategic purposes. It must be acknowledged, however, that bluffing is less effective when there is no cost to the defendant and the plaintiff knows that there is no cost to the defendant. In short, plaintiff may see through the defen-

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70. It might also be logical to think that there would be a greater likelihood of defendant demanding a jury when plaintiff does not make a demand. If plaintiff does not demand a jury it would presumably be because plaintiff views a jury as not favorable to it (leaving aside information asymmetries and higher costs of jury trials as possible explanations). If plaintiff signaled to defendant that plaintiff preferred a judge over a jury by not making a jury demand, one might think this would make defendant more inclined to demand a jury. If a jury is bad for plaintiff, it must be good for defendant.

71. Of course this begs the question: "Then why aren't the defendants demanding a jury in 100% of the cases in which plaintiffs have already demanded." The answer could be that attorneys differ as to their strategic behavior. Or perhaps some attorneys simply do not think about the benefit of appearing to favor the jury.

dant's attempts to bluff. The "me too" phenomenon adds a lot of noise into the calculus.<sup>72</sup>

At the outset of litigation, when the parties demand a jury, they seem to behave generally in predictable ways that are consistent with popular perceptions of jury biases. Jury demands seem explainable to a measurable extent by the characteristics of the litigants and their preconceptions about jury preferences. Since the decision of whether to demand a jury is made at the origination of the litigation during the pleading stage,<sup>73</sup> we can also use this data to explore the impact these demands had on the litigation itself and the parties' strategic behavior.

#### IV. JURY DEMANDS: EMPIRICAL RESULTS ON THE JURY DEMAND'S IMPACT TO THE LITIGATION

No legal or empirical study has yet examined how the threat of a jury trial affects the patent litigation process. Some empirical work has substantiated the perception that juries are significantly more likely than judges to decide cases in favor of the patent holder plaintiff.<sup>74</sup> This research is handicapped by the fact that outcome rates can only be compared for the cases that actually go to trial and that tried cases are not a random subset of all disputes. Because parties are likely to factor adjudicator bias into their outcome estimations and thereby into their settlement decisions, win rate data cannot measure the magnitude of the jury effect on litigation or party behavior. In an attempt to shed light on the impact of the jury demand on cases, Part IV studies the impact that jury demands have on the litigation process.

##### A. Procedural Posture of Terminated Cases

Jury demands are a statistically significant determinant of whether a patent case goes to trial.<sup>75</sup> There was a greater chance of getting to trial

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72. In fact, when I limit the regression to only those cases in which the plaintiff did demand a jury, just the "me too" cases, almost none of the stereotypical bias perceptions impact defendants' behavior. The only factors that exhibited any significance in that model was whether the plaintiff was a corporation and whether the litigation was filed more recently; who the patent holder was had no significance. It is not surprising that a decision that does not matter is likely to have a lot of noise in any attempt to measure factors that influence it.

73. FED. R. CIV. P. 38(b)(1) (stating that jury demands must be made no later than ten days after the service of the last pleading).

74. See Allison & Lemley, *supra* note 31, at 211 (finding juries more likely to refuse to invalidate patents than judges at trial); Moore, *supra* note 3, at 403 (finding that juries overall favor patent holders more than judges do).

75.  $\beta = 0.023$ ;  $t = 2.733$ ;  $p = 0.006$ .

## JURY DEMANDS: WHO'S ASKING?

when a jury was demanded (6.0% when a jury was demanded and 3.7% when no jury was demanded). Perhaps district court judges are more inclined to resolve cases on dispositive motions when they themselves would be deciding the case at trial. Or perhaps the parties are worse at predicting outcomes when the trial will be to a jury and therefore are less likely to settle. To attempt to answer these questions, I examined the procedural progression and method of termination of the cases in order to compare cases where a jury was demanded with cases where no jury was demanded.

This study considers cases as resolved early if no court action is required for the resolution or if the resolution occurs prior to an answer being filed (such as on a Rule 12(b) motion). Cases are resolved mid-litigation if resolved after the decision of a dispositive motion (such as summary judgment), after the pretrial conference, or after discovery is underway. Cases are resolved at trial if a trial has begun at the time the case is resolved. Figure 7 addresses only the stage the litigation reached at the time of the termination. It does not address the procedural mechanism responsible for the termination (such as settlement, directed verdict, jury verdict, etc.). As Figure 7 indicates, cases were resolved later in the litigation process when parties demanded juries. Seventy-one percent of all cases are resolved early (with no court action) when no jury is demanded whereas only 54% are resolved early if a jury is demanded. This may result from jury demands increasing the uncertainty in outcome estimates by the parties, thereby inhibiting the expeditious resolution of the cases.

Figure 7

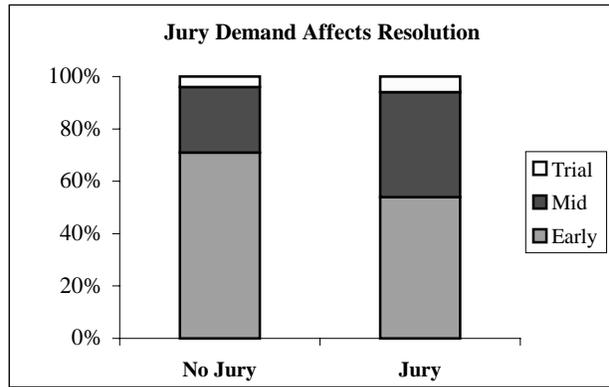
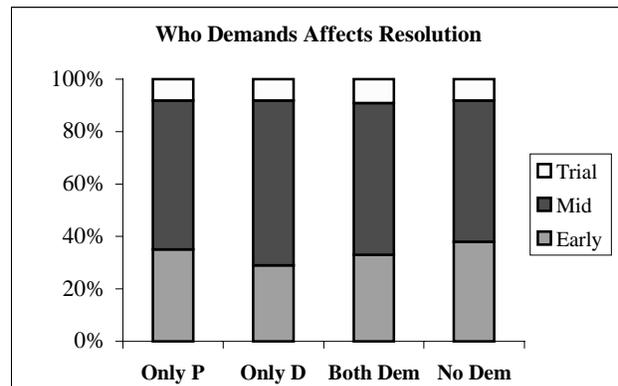


Figure 8 breaks the data down further by who demanded the jury. It shows that there is no variation in the stage of litigation at which the case is resolved depending upon who requested the jury.<sup>76</sup> Who demanded the jury does not seem to have any impact on how quickly the case is resolved.

Figure 8



**B. Case Disposition and the Impacts of Jury Demands**

Similarly, as Figure 9 shows, whether a jury is demanded has no impact on the ultimate resolution of the cases. For example, whether a jury was demanded is not a significant predictor of whether a case settles.<sup>77</sup> Breaking these results down by who demanded the jury (as Figure 10

76. While Figure 7 presents data for all cases, Figure 8 considers only the cases in which both parties had an opportunity to make a demand.

77.  $\beta = -0.020$ ;  $t = -1.053$ ;  $p = 0.292$ .

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does)<sup>78</sup> the data suggests that cases in which both parties demand a jury go to trial more often. This could be explained by a theory of mutual optimism that supports the divergent expectations model for predicting which suits settle and which suits go to trial. An economic theory of case selection suggests that parties are least likely to settle in close cases.<sup>79</sup> In theory, parties would settle to avoid transaction costs when they can both accurately estimate their chances of success.<sup>80</sup> Cases only go to trial when there is a breakdown in the parties' abilities to estimate outcome and they are therefore unable to settle a case because of differing expectations. The data shows that this breakdown is greatest when both parties demand a jury. This could be explained by a theory of mutual optimism. Perhaps both parties perceive the jury as beneficial for them. Each party believes that it has a better chance of success with a jury than it does with a judge. However, one party is clearly wrong. This explanation depends upon a belief that when both parties are demanding a jury it is because each has evaluated the odds with the possible adjudicators and each has concluded that a jury would be preferable for them. If the defendant is largely demanding a jury after the plaintiff simply to avoid the appearance of a weakened position and is successful in bluffing the plaintiff, I would expect to see a higher rate of settlement for the cases in which both parties demanded a jury. This is not the case.

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78. Figure 9 includes all cases, but Figure 10 only includes cases in which both parties had an opportunity to request a jury. The problem with looking at only the data in which both parties had an opportunity to make a demand is that many of the cases in which the plaintiff demanded a jury actually settled quickly (before the defendant answered). All of these settlements are excluded from Figure 10. This is necessary because we could not know whether to categorize those cases as where only plaintiff demanded or both parties demanded since defendant could not make a demand.

79. Priest & Klein, *supra* note 11, at 15.

80. This theory assumes no asymmetrical information or asymmetrical stakes. *See id.* at 24-29 (explaining that the presence of asymmetrical stakes or information would tend to result in a higher win rate for the party with higher stakes or more information).

Figure 9

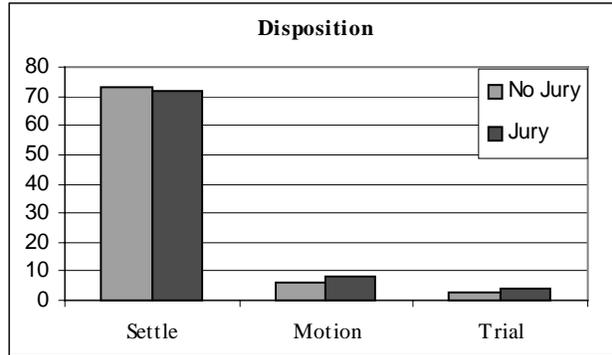
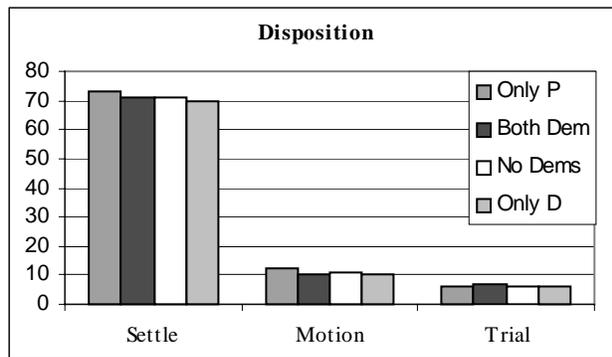


Figure 10



Perhaps the most interesting discovery regarding the impact of the jury demand on the litigation process is that there is no real impact.<sup>81</sup> There is no increase in settlement that can be attributed to jury demands. It does not matter whether one party or both parties demand the jury. The threat of a jury demand cannot be proven to cause an increase in settlement, even if the demand is one-sided. These conclusions would be very comforting to supporters of juries if there were no difference in win rate. Prior research has, however, shown significant win rate differences. In a prior study, I

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81. It may be that jury demands or the threat of jury adjudication have little impact on litigation behavior because the jury's role in patent litigation has been consistently declining. *See, e.g.*, *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996) (holding that claim construction should be decided exclusively by judges).

## JURY DEMANDS: WHO'S ASKING?

showed that patentees prevail with much greater likelihood with juries.<sup>82</sup> Table 4 reproduces these results.

**Table 4**  
**Patentee Win Rates By Adjudicator**

	<b>Jury (781 cases)</b>	<b>Judge (895 cases)</b>
<b>Patentee Prevails</b>	63%	49%
<b>Infringer Prevails</b>	37%	51%

In addition to generating concern about jury bias in decision-making, the prior study also highlighted possible flaws in jury decisionmaking.<sup>83</sup> The most significant being that cases seemed to be decided on an all-or-nothing basis by the jury.<sup>84</sup> When multiple patents were litigated, juries resolved all issues in favor of the same party in 87% of the cases whereas judges were slightly more discerning among issues resolving only 72% in favor of the same party.<sup>85</sup>

## V. CONCLUSION

Parties (predominantly patent holder plaintiffs) frequently make jury demands in patent cases (78% of the cases). The empirical results suggest that parties are motivated in their jury demands by characteristics of the litigants that they believe are likely to sway a jury in their favor. Popular perceptions of jury bias in favor of patent holders over infringers, individuals over corporations, domestic over foreign, and in-state over out-of-state seem to influence the demands. This is troubling in that it suggests that the parties believe that issues unrelated to the merits of the case are likely to influence jury decision-making. The jury demands themselves, however, have no measurable impact on the litigation process aside from the finding that when both parties demand a jury, the case is more likely to go to trial. This suggests that parties are less able to predict jury trial outcomes. Settlement rates remain constant at approximately 71% regardless

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82. See generally Moore, *supra* note 3.

83. *Id.* at 402-07 (substantiating more favorable win rates for patentees with juries and finding that jury outcomes are significantly affected by who initiated the lawsuit and that jury decisionmaking has an all-or-nothing quality which may generate concern).

84. *Id.* at 402-04 (finding that when validity and infringement (two unrelated issues) were both decided by the jury, 86% of the time they were both decided in favor of the same party whereas judges only decided those issues in favor of the same party in 74% of the cases).

85. *Id.* at 404.

of the fact of the jury demand or the disparity among the parties in their preference for a jury. In short, parties are not settling more often because of the threat of jury decisions.

It is interesting that patent holders demand juries in 74% of the cases and when those cases do not settle and a trial ensues, patent holders win with the jury in 63% of the cases. The high patentee jury demand rate suggests that the parties perceive the jury to exhibit relative bias in favor of the patentee and yet they either do not factor it in accurately or they underestimate the bias because it still appears in the win rate data. The jury demands in this empirical study demonstrate perceptions of bias. This alone suggests that avenues for reform should be considered. The win rate data which shows actual bias and possibly flawed decisionmaking further support continued thinking about whether alternative means of resolution are practicable.

# SPECIALIZED TRIAL COURTS: CONCENTRATING EXPERTISE ON FACT

By *Arti K. Rai*<sup>†</sup>

## ABSTRACT

In the absence of a specialized patent trial court with expertise in fact-finding, the Court of Appeals for the Federal Circuit often reviews de novo the many factual questions that pervade patent law. De novo review of fact by an appellate court is problematic. In the area of patent law, as in other areas of law, there are sound institutional justifications for the conventional division of labor that gives trial courts primary responsibility for questions of law. This Article identifies the problems created by de novo appellate review of fact and argues for the creation of a specialized trial court to which the Federal Circuit would feel compelled to defer on questions of fact. It also discusses how such a court would be designed, focusing on the manner in which trial court judges could use the court-appointed advisors to evaluate competing factual claims.

## I. INTRODUCTION

For a number of years, commentators have advocated the creation of a specialized patent trial court. They have suggested that a specialized trial court could address issues of forum shopping and legal inconsistency at the trial court level, just as the 1982 creation of a specialized court of appeals—the Court of Appeals for the Federal Circuit (“CAFC” or “Federal Circuit”)—addressed these problems at the appellate level.<sup>1</sup> These commentators have also argued that a specialized court familiar with the intricacies of patent law and litigation would be much more efficient than the

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<sup>†</sup> Assistant Professor, University of Pennsylvania School of Law. I thank Jay Kesan, Michael Ladra, Mark Lemley, Stephen Maurer, Lynn Pasahow, the Honorable Ronald Whyte, and the participants at the Berkeley Patent System Reform Conference for helpful comments.

1. See, e.g., Kimberly A. Moore, *Forum Shopping in Patent Cases: Does Geographic Choice Affect Innovation?*, 79 N.C. L. REV. 889, 932-33 (2000); John Pegram, *Should There Be A U.S. Trial Court With a Specialization in Patent Litigation?*, 82 J. PAT. & TRADEMARK OFF. SOC'Y 766, 790 (2000).

current trial courts, which typically undertake a patent trial only once every six to eight years.<sup>2</sup>

Though these points are important, this essay presents a more fundamental structural argument for a specialized trial court. This argument emerges from the reality that the complexity of patent law lies not in its legal principles but in the scientific fact-finding required to apply those legal principles properly. Indeed, difficult questions of scientific fact are likely to arise more routinely in patent law than in virtually any other field of law.<sup>3</sup> Moreover, facts are often central to the ultimate disposition of patent cases. Not only is the question of infringement a complicated factual inquiry, but various other key inquiries, such as those into patent scope and patent validity, are also dominated by complex facts.

Commentators on specialized courts have noted that to the extent a legal field is complex not because of its law but because of its facts, such complexity militates in favor of deploying specialized expertise primarily at the level of the trial court.<sup>4</sup> They have not, however, applied this important insight to the field of patents.<sup>5</sup> Undertaking such an application is the goal of this essay. I begin by discussing the factual foundations of patent infringement, scope, and validity. I then turn to the repercussions of having these questions decided in the first instance by trial courts that have no particular scientific or technological expertise. One major repercussion of

2. Moore, *supra* note 1, at 933; Pegram, *supra* note 1, at 787-88.

3. For purposes of this essay, I assume that even though there is no bright-line theoretical division between law and fact, legal determinations, which generally apply across many cases, can fruitfully be distinguished from the factual questions specific to a particular case. This manner of distinguishing law from fact has implications for how thoroughly facts need to be reviewed in the judicial system. *See infra* Part II.B. The law/fact distinction can be seen most clearly if one also acknowledges that there is a third category of decisionmaking that involves the application of law to fact. Indeed, many questions of patent law, including the questions of claim construction and validity on which this article focuses, require this third category of decisionmaking, and thus are best seen as mixed questions of law and fact. For an extended discussion of the law/fact distinction in patent cases, see Arti Rai, *Facts, Law, and Policy: An Allocation-of-Powers Approach to Patent Reform* (Working Paper, 2002) (on file with author).

4. *See* Rochelle Cooper Dreyfuss, *The Federal Circuit: A Case Study in Specialized Courts*, 64 N.Y.U. L. REV. 1, 74 (1989) (noting that “[w]hen the law is clear but difficult to apply to complex factual situations,” expertise is most usefully deployed not at the appellate level but at the administrative or trial level); *see also* Richard Revesz, *Specialized Courts and the Administrative Lawmaking System*, 138 U. PA. L. REV. 1111, 1168-69 (1990) (noting that concerns about the complexity of facts are not reasons for creating a specialized *appellate* court) (emphasis added).

5. Even though Rochelle Dreyfuss’ important article addresses patent law, it focuses on the role of the Federal Circuit in clarifying and making uniform the previously inconsistent body of patent law. *See generally* Dreyfuss, *supra* note 4.

## SPECIALIZED TRIAL COURTS

the current system is that the Federal Circuit has taken it upon itself to decide many questions of fact *de novo*. In some cases it has done so directly, by declaring that there can be no dispute as to a particular factual question.<sup>6</sup> In other cases, it has done so indirectly, by denominating questions that have factual foundations—for example, mixed questions of law and fact such as claim construction—as pure questions of law. Given the trial courts' lack of familiarity with patent cases, the Federal Circuit's suspicion of trial court decision-making, even on factual issues, is understandable. By the same token the Federal Circuit is not necessarily better equipped than the trial court to make factual determinations in any particular area of science and technology. Only four of the eleven active judges on the Federal Circuit are technically trained.<sup>7</sup> More importantly, as discussed below, even if all Federal Circuit judges were technically trained, they could hardly be expected to be knowledgeable in the dozens of scientific and technical fields in which patent litigation can arise.<sup>8</sup> In addition, it is hardly efficient to have an appellate court decide case-specific factual questions *de novo*, after a lower court has already expended time and resources on the same questions. Consequently, in the area of patent law, as in other areas of law, there are sound institutional reasons for the conventional division of labor that gives trial courts primary responsibility for questions of fact and appellate courts primary responsibility for questions of law.

Establishing a specialized trial court with primary responsibility for factual decisions, however, poses challenging questions of institutional design. For example, in addressing the general issue of scientific fact-finding in the court system, some commentators have argued that only judges and jurors who actually have training in a particular scientific or technical area should be considered epistemically qualified to make factual findings in that area.<sup>9</sup> Although these commentators make a forceful point regarding judicial competence, proposals for “two-hat” judges and juries would essentially involve creating a patent trial court that replicated the highly specialized structure of an administrative agency like the Patent and Trademark Office. From a cost-benefit standpoint, this move would be

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6. *See infra* Part II.B.

7. Judges Gajarsa, Linn, Lourie, and Newman have technical backgrounds. *See* United States Court of Appeals for the Federal Circuit, Judicial Biographies, at <http://www.fedcir.gov/judgbios.html> (last visited Mar. 21, 2002).

8. Patents, and patent litigation, span the gamut of the physical and natural sciences, engineering, computer science, and various social sciences.

9. *See, e.g.*, Scott Brewer, *Scientific Expert Testimony and Intellectual Due Process*, 107 YALE L.J. 1535 (1998).

impractical. The alternative of a specialized trial court that relied heavily on court-appointed experts would likely be sufficient for making educated factual findings. This level of understanding might be particularly easy to achieve if the role of the jury were cabined substantially.<sup>10</sup>

It might be argued that, at least to some extent, market forces are already leading us to the type of specialization that I propose: judges on certain courts, such as the district court of Delaware and the Northern District of California, handle patent cases quite frequently; in general, the ten district courts that have the highest number of patent cases hear about forty percent of all such cases.<sup>11</sup> Moreover, given that we already have a specialized appellate court for patents, creating a trial court that focused specifically on patents might unduly sacrifice breadth of vision on the altar of expertise.

These criticisms have considerable merit. Nonetheless, they do not undermine the case for a specialized trial court. As matters currently stand, more than half of all cases are handled by courts with very little experience in the type of complicated fact-finding required by patent law. In addition, the Federal Circuit does not appear to give our semi-specialized district courts significantly greater deference than other district courts. A single patent trial court that had explicitly been given the imprimatur of authority over fact-finding would, in all likelihood, compel greater deference than the current trial courts. Furthermore, although a single patent trial court might be subject to the problems of capture and tunnel vision that potentially plague all specialized courts, these problems should have less force at the trial level than at the appellate level.

This Article proceeds in three parts. Part II discusses the factual foundations of such key determinations as patent infringement, validity, and scope, as well as the manner in which the Federal Circuit has taken to reviewing these factual foundations *de novo*. It also argues that *de novo* fact-finding by the Federal Circuit should be avoided, for it promotes inefficiency as well as substantively bad results. Parts III and IV then address some of the difficult questions of institutional design raised by the prospect of a specialized trial court. Part III makes the argument for a court composed of individuals who would have some exposure to scientific methodology but who would rely heavily on court-appointed experts. Part IV discusses the reasons why a single specialized trial court

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10. The data suggest that because lay juries appear to be significantly less skilled than lay judges in making the complex factual determinations central to patent law, their role should be substantially reduced, perhaps by invoking some version of a “complexity” exception to the Seventh Amendment. *See infra* Part III.C.

11. *See Moore, supra* note 1, at 571.

IV discusses the reasons why a single specialized trial court would be superior to our current system of semi-specialization.

## II. THE FEDERAL CIRCUIT'S FACT-FINDING

### A. The Role of Facts in Patent Law

Facts are critical in patent law. Even the Federal Circuit has acknowledged, for example, that patent infringement is a question of fact.<sup>12</sup> Facts are also central to two other important inquiries in patent law: the determinations of patent scope and patent validity.

The scope of a patent—that is, how much territory the patent covers—is determined through the practice of claim construction.<sup>13</sup> Claim construction begins with the “plain language” of the claim. Notably, however, under both Federal Circuit case law and the most plausible reading of various sections of the patent statute, this plain language should be interpreted *not* from the perspective of the ordinary speaker of English but, rather, from the vantage point of a “person having ordinary skill in the art” (“PHOSITA”).<sup>14</sup> The typical judge is unlikely to be a person skilled in the relevant art. Accordingly, after examining the plain language of the claim terms using established canons of claim construction,<sup>15</sup> she may well find

12. *See, e.g., Embrex, Inc. v. Serv. Eng'g Corp.*, 216 F.3d 1343, 1348-49 (Fed. Cir. 2000).

13. *See Markman v. Westview Instruments Inc.*, 517 U.S. 370, 373-74 (1996).

14. *See, e.g., Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998) (“It is the person of ordinary skill in the field of the invention through whose eyes the claims are construed.”); *Markman v. Westview Instruments*, 52 F.3d 967, 986 (Fed. Cir. 1995) (holding that construction of claim term turns on “what one of ordinary skill in the art at the time of the invention would have understood the term to mean”). Similarly, sections 103 and 112 of the patent statute, which respectively cover the patent validity requirements of nonobviousness and adequate disclosure, turn on the vantage point of one of ordinary skill in the art. 35 U.S.C. §§ 103, 112 (1994). In contrast, according to textualist theories of statutory interpretation, statutory language is interpreted from the standpoint of the ordinary speaker of English. *See, e.g., Green v. Bock Laundry Mach. Co.*, 490 U.S. 504, 528 (1989) (Scalia, J., concurring) (prescribing the interpretation of statutory terms based on “which meaning is . . . most in accord with context and ordinary usage . . .”). Because of this contrast between claim construction and statutory interpretation, even those committed to strict textualism in the context of statutory interpretation should not embrace such textualism in the context of claim construction.

15. The most prominent of these canons involve the relationship between the patent claims and the patent specification (i.e., the body of the patent in which the invention is described). Under black letter patent law, one may use the specification to help define a term or limitation already in a claim. However, one may not read a limitation from the specification into a claim. *See Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582

the language opaque. In fact, to the extent the judge does not find the language opaque, it may be that she is making unwarranted assumptions about how one skilled in the art would interpret the language.

In most cases involving technically complex invention, the judge would be well-advised to turn to the testimony of experts in the relevant scientific or technological community (so-called “extrinsic evidence”). Indeed, in its 1996 *Markman v. Westview Instruments*<sup>16</sup> decision, the Supreme Court explicitly recognized that discerning the meaning of a claim term within a trade or profession could be an “evidentiary” investigation.<sup>17</sup> Based on this recognition, the *Markman* court concluded that claim construction is a “mongrel practice” that “falls somewhere between a pristine legal standard and a simple historical fact.”<sup>18</sup>

Just as claim construction is a fact-dependent inquiry, so too is patent validity. The central determinants of patent validity are the inquiries regarding nonobviousness and adequate disclosure. Both questions combine determinations of law and fact. To satisfy the nonobviousness criterion, the patentee must show that, at the time of its invention, the subject matter of her patent application would not have been obvious to the PHOSITA.<sup>19</sup>

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(Fed. Cir. 1996). The specification may prove particularly useful for claim construction when the patentee uses it specifically to define a claim term. *See Johnson Worldwide Associates, Inc. v. Zebco Corp.*, 175 F.3d 985, 990 (Fed. Cir. 1999) (noting that a patentee may choose to be her own lexicographer by explicitly setting forth a definition for a claim term).

16. 517 U.S. 370 (1996).

17. *Id.* at 390-91. In some respects, claim construction is analogous to the interpretation of contractual terms. Courts often look at factual evidence regarding how a particular contract term is used in a given trade or industry when determining its meaning.

18. *Id.* at 378, 388 (quoting *Miller v. Fenton*, 474 U.S. 104, 114 (1985)). To be sure, the Supreme Court decision in *Markman* did choose to assign the task of claim construction to the judge rather than to the jury. It did so, however, on the basis of largely functional considerations, deciding that such interpretation could best be done by a judge. *Id.* at 378 (“Where history and precedent provide no clear answers, functional considerations also play their part in the choice between judge and jury to define terms of art.”).

19. *See* 35 U.S.C. § 103 (1994). Empirical work by Mark Lemley and John Allison indicates that nonobviousness is the most important criterion in determining patent validity; forty-two percent of patents that are held invalid in litigation are invalidated on grounds of nonobviousness. John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q. J. 185, 208 (1998). Another important (and somewhat related) ground for finding patents invalid is lack of novelty under section 102. *Id.* (noting that 26.8% of patents are invalidated on grounds of lack of novelty). In these cases, the invention is not merely obvious given the prior art, but is actually already found in the prior art. As with nonobviousness, facts are central to the novelty determination. Even the Federal Circuit has recognized this reality. *See Rappaport v. Dement*, 254

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As the Supreme Court has emphasized, the nonobviousness inquiry is necessarily based on factual questions regarding the scope and content of the prior invention (known as “prior art”) in the field; differences between the prior art and the claims at issue; and the level of the ordinary skill in the relevant art.<sup>20</sup> The secondary considerations that help to prove nonobviousness, such as the commercial success of an invention or a “long-felt need” for the invention, are also factual determinations.<sup>21</sup>

Like the nonobviousness inquiry, the inquiry into adequate disclosure is grounded in fact. The most important component of adequate disclosure, the enablement requirement, requires the patentee to disclose information sufficient to allow a person of ordinary skill in the art to make and use the patented invention without “undue experimentation.”<sup>22</sup> The test for enablement therefore requires the judge to make factual findings regarding the level of skill in the art.<sup>23</sup>

### **B. The Federal Circuit’s Alchemy: Turning Facts into Law**

Ignoring conventional allocation-of-power principles that give trial courts primary authority over factual questions, the Federal Circuit has asserted power over fact. In the context of claim construction, it has done so by simply declaring claim construction to be a pure question of law subject to de novo review. The CAFC announced de novo review of claim construction in 1995, in its en banc *Markman v. Westview Instruments*<sup>24</sup> opinion. When the Supreme Court granted *certiorari* in the *Markman* case, however, it did not endorse de novo review. To the contrary, the Court’s observation that claim construction combined both law and fact appeared to suggest a more deferential standard of review. In the face of the ambiguity caused by the Supreme Court decision, the Federal Circuit explicitly

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F.3d 1053, 1057 (Fed. Cir. 2001) (noting that anticipation, one mechanism for proving lack of novelty, is a question of fact).

20. *Graham v. John Deere*, 383 U.S. 1, 17 (1966).

21. *See, e.g., Specialty Composites v. Cabot Corp.*, 845 F.2d 981, 991 (Fed. Cir. 1988).

22. *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir.1993); *In re Vaeck*, 947 F.2d 488, 495-96 (Fed. Cir. 1991). Other less significant components of adequate disclosure include the written description requirement and the best mode requirement. Notably, assessing compliance with these requirements is considered a determination of fact. *See, e.g., Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563 (Fed. Cir. 1991) (written description); *De-George v. Bernier*, 768 F.2d 1318, 1324-25 (Fed. Cir. 1985) (best mode).

23. *See PPG Indus., Inc. v. Guardian Indus. Corp.*, 75 F.3d 1558, 1564 (Fed. Cir. 1996) (observing that enablement is a question of law based on underlying factual findings).

24. 52 F.3d 967 (Fed. Cir. 1995) (en banc).

affirmed its commitment to de novo review two years later, in another en banc decision, *Cybor Corp. v. FAS Technologies*.<sup>25</sup>

The court has been quite aggressive in its application of de novo review. Two recent empirical studies estimate that the Federal Circuit has disagreed with lower court claim construction in at least one-third of all appealed cases.<sup>26</sup> Notably, the Federal Circuit's plenary review of claim construction can have something of a domino effect, leading the court to arrogate power over issues even it admits are factual, such as infringement.

This domino effect works as follows: because claim construction bears heavily on the question of infringement, a decision to overturn the district court's claim construction often means that a new determination regarding infringement must be made. At that point, the Federal Circuit faces two choices. It can either remand to the district court for cumbersome new fact-finding on the question of infringement, or it can simply determine the question of infringement itself. Even though infringement is, under the Federal Circuit's own jurisprudence, a factual issue,<sup>27</sup> the Federal Circuit is often reluctant to remand for a new trial on infringement. Rather, the court simply declares that there is no factual dispute with respect to infringement. As a consequence, de novo review of claim construction effectively becomes de novo review of infringement.

25. 138 F.3d 1448 (1998).

26. See Christian Chu, *Empirical Analysis of the Federal Circuit's Claim Construction Trends*, 16 BERKELEY TECH. L.J. 1075, 1104 (2001) (giving figure of 44%); Kimberly A. Moore, *Are District Court Judges Equipped to Resolve Patent Cases?*, 15 HARV. J.L. TECH. 1, 11 (2001) (giving figure of 33%). The discrepancy between the Moore and Chu findings likely emerges from two factors. First, while Moore's study encompasses cases decided between April 1996 and December 2000, Chu's study encompasses cases decided between January 1998 and April 2000. In addition, while Moore's includes within her population of cases Rule 36 summary affirmances, Chu excludes these affirmances. Chu's study also draws interesting conclusions regarding the Federal Circuit's review of patent cases more generally. He determines that, excluding summary affirmances, the overall reversal rate was 47.3%. *Id.* at 1098. Including summary affirmances, the overall reversal rate was 36.6%. *Id.* at 1100.

27. See *supra* note 12. Both infringement and infringement under the doctrine of equivalents are factual issues. See *Hilton Davis Chemical Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1520-21 (Fed. Cir. 1995) (en banc) (citing *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 609-10 (1950), for the proposition that a finding of equivalence is a question of fact). The equivalence inquiry requires the fact-finder to determine whether the allegedly infringing invention performs the same function in the same way to achieve the same result as the patented invention. This so-called function-way-result equivalence can result in a finding of infringement even when the accused invention does not literally infringe the claims of the relevant patent. See generally *Graver Tank*, 339 U.S. 605.

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For example, in *Pall Corporation v. Hemasure, Inc.*,<sup>28</sup> the patentee claimed that the defendant had infringed its patent on a system that filtered leukocytes (white blood cells) from blood. The district court broadly construed the disputed claim language, which referred to a “gas outlet comprising a porous medium.” Based on that broad construction, the trial court found literal infringement.<sup>29</sup> On appeal, the Federal Circuit substituted a narrower interpretation, stating that given the description in the specification, the porous medium actually had to be placed at the outlet of the system.<sup>30</sup> Relying on this narrower construction, the Federal Circuit held that there could be no dispute that the defendant’s device escaped infringement, not only literally but also under the doctrine of equivalents.<sup>31</sup> The court entered a judgment for the defendant.<sup>32</sup>

In contrast to its stance on claim construction, the Federal Circuit has not declared validity determinations like nonobviousness and enablement to be pure questions of law. Rather, the court has focused exclusively on the legal component of nonobviousness and has argued that de novo review should apply to all components of the nonobviousness determination, whether made by a trial judge or a jury. Soon after the Federal Circuit’s creation, its propensity for de novo review became evident. In *Dennison Manufacturing Co. v. Panduit Corp.*,<sup>33</sup> the Supreme Court responded to an appellant’s complaint that the Federal Circuit was exercising plenary power over the nonobviousness determination by asking the CAFC to explain the standard of review it applied to trial court findings regarding nonobviousness. On remand, the Federal Circuit dutifully discussed at some length the factual foundations of nonobviousness.<sup>34</sup> Despite this acknowledgement, various judges on the Federal Circuit have continued to assert plenary power over nonobviousness. For example, in *Newell Companies, Inc. v. Kenney Mfg. Co.*,<sup>35</sup> a case decided only a year after the remand in *Dennison*, the majority simply announced that there was no fac-

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28. 181 F.3d 1305, 1307 (1999).

29. *Id.* at 1310.

30. *Id.*

31. For a discussion of the doctrine of equivalents, see *supra* note 27.

32. In a recent article, William Rooklidge and Matthew Weil point to *Pall Corporation* and similar cases in which the Federal Circuit has reviewed infringement determinations de novo. See William C. Rooklidge and Matthew Weil, *Judicial Hyperactivity: The Federal Circuit’s Discomfort With Its Appellate Role*, 15 BERKELEY TECH. L.J. 725 (2000). They do not, however, note the connection between the court’s de novo claim construction and its de novo review of infringement.

33. 475 U.S. 809 (1985).

34. 810 F.2d 1561, 1566 (1987).

35. 864 F.2d 757, 762-65 (Fed. Cir. 1988).

tual dispute with respect to nonobviousness and that it could therefore review the jury's determination of nonobviousness de novo. The majority declared that there was no issue of fact even though one of the patentee's main arguments, which the court rejected, was a factual assertion regarding the differences between a particular prior art patent and his own patent.<sup>36</sup>

Similarly, in important cases involving the enablement requirement, the court has paid mere lip service to principles of deferential review. In *Northern Telecom, Inc. v. Datapoint Corporation*,<sup>37</sup> a case involving claims to a method for entering, verifying, and storing data using a batch data entry terminal, the CAFC faced a decision by the lower court finding that the method claims in question were not enabled. The district court had concluded that, because the patentee had not provided any details regarding the data entry program in question, undue experimentation would be required to write the program.<sup>38</sup> The Federal Circuit noted that the amount of disclosure required to enable a software-based invention generally varies depending on the facts of the particular case. These facts might include "the nature of the invention, the role of the program in carrying it out, and the complexity of the contemplated programming, all from the viewpoint of the skilled programmer."<sup>39</sup> The CAFC also acknowledged that a number of expert witnesses had testified that further detail regarding the program would indeed have been useful "in order to avoid spending experimental time."<sup>40</sup> The Federal Circuit even noted that the district court's determination regarding undue experimentation should be overturned only for clear error.<sup>41</sup> Nonetheless, the appellate court reversed the trial court's enablement finding. The *Northern Telecom* decision is particularly pernicious because the Federal Circuit now appears to have elevated to the level of law the idea that very little disclosure is necessary to enable computer software, irrespective of the nature and complexity of the software involved.<sup>42</sup>

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36. *Id.* at 768 (rejecting patentee's argument that the prior art taught away from a do-it-yourself adjustable shade). Dissenting in that case, Judge Newman attacked the panel majority for baldly asserting that the facts were undisputed on appeal. *Id.* at 773 (Newman, J., dissenting).

37. 908 F.2d 931, 933 (Fed. Cir. 1990).

38. *Id.* at 943.

39. *Id.* at 941.

40. *Id.* at 942 (noting testimony of expert witness).

41. *Id.* at 943.

42. See Dan L. Burk & Mark A. Lemley, *Biotechnology's Uncertainty Principle* (Working Paper) (on file with author) (noting that "the Federal Circuit has articulated very loose, almost trivial standards for disclosure of computer software").

### C. Why De Novo Review of Fact is a Bad Idea

The Federal Rules of Civil Procedure give trial courts primary responsibility for fact finding.<sup>43</sup> The central normative justification for this assignment of responsibility turns on the need to conserve scarce judicial resources.<sup>44</sup> If the appellate court attempted to acquire the district court's knowledge of any given factual setting (whether through careful review of the documentary record or by calling witnesses itself), that acquisition would come at great expense.<sup>45</sup> Relative to that expense, the benefits of having another fact-finder are, in the vast majority of cases, likely to be small.<sup>46</sup> Moreover, unlike de novo review of legal principles, de novo review of facts is typically not essential for the appellate court to perform its primary task—maintaining the uniformity of the law as a whole. This is particularly true in patent cases, where the facts in question are typically “adjudicative,” or case-specific, facts. Factual disputes in patent cases generally turn on how a particular patented invention relates either to an allegedly infringing invention or to the state of technical knowledge in a field at a given time.<sup>47</sup> Because it is unlikely that such facts will be relevant in future cases, exacting review of these facts, even in cases where they largely determine the answer to a legal question, is not necessary for maintaining legal uniformity.<sup>48</sup> Indeed, to the extent that the Federal Cir-

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43. FED. R. CIV. P. 52(a).

44. In cases where the jury acts as the fact-finder, it could also be argued that respect for the jury's fact-finding role under the Seventh Amendment requires appellate deference.

45. *Pierce v. Underwood*, 487 U.S. 552, 560 (1988).

46. *Anderson v. City of Bessemer*, 470 U.S. 564, 574-75 (1985) (“Duplication of the trial judge's efforts in the court of appeals would very likely contribute only negligibly to the accuracy of fact determination at a huge cost in diversion of judicial resources.”). De novo review may be justified when the facts in question are not specific to the particular case but are likely to be relevant to many different cases. *See* note 48 *infra*.

47. The relevant point in time may be the time the invention was made or the time that the patent application was filed.

48. Adjudicative facts may usefully be contrasted with “legislative” facts—that is, general facts about the world that may be relevant in a wide variety of cases. Because of their widespread application, legislative facts may be reviewed under a de novo standard. Although some scientific principles are analogous to legislative facts in that they transcend a particular dispute, the facts most relevant to patent cases are almost never transcendent scientific principles. *See* David Faigman et al., *Check Your Crystal Ball at the Courthouse Door, Please: Exploring the Past, Understanding the Present, and Worrying About the Future of Scientific Evidence*, 15 CARDOZO L. REV. 1799, 1821 (1994) (arguing that scientific information that transcends a particular dispute is like a legislative fact and should be reviewed de novo). Rather than turning on timeless scientific principles, patent cases usually turn on far more mundane inquiries regarding how a given invention

cuit gives particular facts—for example, the level of the ordinary skill in art at a particular point in time—precedential, or “law-like” value, it commits the serious error of assuming skill in the art is static.

It may be argued that because the CAFC is a specialized court, with expertise superior to that of the trial courts, the cost-benefit analysis that underlies the traditional allocation of power between trial and appellate court should not apply. However, the expertise enjoyed by the Federal Circuit rests in the area of patent *law*, not in the factual particulars of any given technology. Only four of the eleven active judges on the Federal Circuit have technical training.<sup>49</sup> More importantly, even those who are technically trained are unlikely to have expertise in the area of science or technology raised by any given patent case. Indeed, as discussed further in Part II *infra*, it is difficult to imagine the creation of a court that would have even one judge, let alone a group of judges, trained in all of the various different areas of science and technology to which the patent system applies. Accordingly, it should not be surprising that a number of Federal Circuit cases provide grounds for questioning the court’s *de novo* review of trial court fact-finding. For example, in cases involving computer software,<sup>50</sup> the CAFC’s tendency to believe that any and all software programs can be enabled without disclosure of source code, flow charts, or other detail has led it to overturn enablement findings by lower courts that paid more careful attention to expert testimony addressing the particulars of the case.

To be sure, there is also reason to question whether the lay judges and jurors who serve on generalist trial courts do a thorough job of fact-finding in technically challenging cases. Indeed, a significant analytical and empirical literature—discussed further in Part III *infra*—suggests that lay persons, faced with competing expert accounts of a scientific or techno-

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relates to other inventions or to the state of technical knowledge in a particular field at a given point in time.

The major context in which facts found in a particular patent case might have relevance for future cases, such that deferential review might lead to lack of uniformity, would be where the same patent was asserted against different parties in different cases. In such a situation, two different trial courts might, based on different factual findings, reach different conclusions on validity or claim construction. If the appellate court were to defer to the factual findings of the trial court in each case, it might not be able to reconcile the trial court holdings. These situations should arise relatively rarely, however. Moreover, at least in cases where the earlier trial court holding found against the patentee on the relevant issue or issues, defensive issue preclusion would control the issue in the later case.

49. See *supra* note 7.

50. See *supra* notes 37-41.

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logical dispute, are unlikely to make considered judgments. The solution, however, is not to set up the CAFC as a trial court. Rather, it is to bolster the expertise of the trial courts in deciding questions of fact.

### III. INSTITUTIONAL CHALLENGES IN SETTING UP A SPECIALIZED TRIAL COURT

So how should we set up a specialized patent trial court? We can receive some guidance from the substantial literature outside the patent field on how trial courts should address cases involving scientifically challenging facts. This literature has grown in volume since the 1993 Supreme Court opinion in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*,<sup>51</sup> which interpreted key provisions of the Federal Rules of Evidence concerning the admissibility of scientific expert testimony. In *Daubert*, the Supreme Court responded to fears about “junk science” undermining the accuracy and fairness of judicial decisionmaking by mandating that judges take a much more aggressive role in evaluating expert scientific and technical testimony.

Under *Daubert*, judges should admit proffered scientific evidence for evaluation by the fact-finder (whether the jury or the judge herself) only when the evidence is scientifically valid—that is, “ground[ed] in the methods and procedures of science”<sup>52</sup> and “derived by the scientific method.”<sup>53</sup> The *Daubert* analysis offers four questions that a trial court should consider in determining scientific validity: 1) is the expert’s method or technique testable or falsifiable; 2) has the method been subjected to peer review and publication; 3) does the method have a high known or potential error rate; and 4) is the method generally accepted in the scientific community.<sup>54</sup> Although these factors provide a framework

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51. 504 U.S. 579 (1993).

52. *Id.* at 590.

53. *Id.* The *Daubert* Court’s discussion of scientific knowledge relied on Webster’s dictionary and two *amicus* briefs, one by a group of scientists, the other by the American Association for the Advancement of Science and the National Academy of Sciences. The Court observed that science “represents a process for proposing and refining theoretical explanations about the world that are subject to further testing and refinement.” *Id.*

54. *Id.* at 593-94. Federal Rule of Evidence 702 has recently been amended in a manner that largely conforms to the prescriptions of the *Daubert* test. Rule 702 states:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient reliable facts or data (2) the testimony is the product of reliable principles and methods and (3) the

by which an admissibility determination may be made, none is either necessary or sufficient. By contrast, under the prior rule, enunciated in the 1923 case *Frye v. United States*,<sup>55</sup> the judge's role had been much more passive: the necessary and sufficient criterion for admissibility of scientific testimony had simply been "general acceptance in the particular field to which it belongs."<sup>56</sup>

The Supreme Court has also made it clear that it considers the scope of *Daubert* to be quite wide. Specifically, in the 1999 case *Kumho Tire Co. v. Carmichael*,<sup>57</sup> the Court held that the *Daubert* factors apply not simply to the type of scientific testimony traditionally offered in courtrooms (for example, testimony on forensic science or epidemiology) but also to all expert testimony based on specialized knowledge. As a consequence, trial courts have begun to entertain *Daubert* challenges in patent cases. For example, when experts offer testimony on such factual issues as infringement or the factual foundations of nonobviousness and claim construction, their testimony can be subject to a *Daubert* challenge.<sup>58</sup>

The exacting requirements that *Daubert* and its progeny impose on lay judges have been the subject of considerable controversy. Judge Kozinski of the Ninth Circuit, who authored the opinion upon remand from the Supreme Court in *Daubert*, pointedly noted that "[a]s we read the Supreme Court's teaching in *Daubert*, therefore, though we are largely untrained in science and certainly no match for any of the witnesses whose testimony we are reviewing, it is our responsibility to determine whether those experts' proposed testimony amounts to 'scientific knowledge,' constitutes 'good science,' and was 'derived by the scientific method.'"<sup>59</sup> More generally, scholars have questioned the extent to which judges can understand and properly apply the *Daubert* criteria. Scholars have pointed out, for example, that *Daubert* provides almost no guidance on how the decision-making guideline of falsifiability should be applied or on how the error

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witness has applied the principles and methods reliably to the facts of the case.

FED. R. EVID. 702.

55. 293 F. 1013 (D.C. Cir. 1923).

56. *Id.* at 1014.

57. 526 U.S. 137, 141 (1999).

58. *See, e.g.,* Carnegie Mellon Univ. v. Hoffman-LaRoche, Inc., 55 F. Supp. 2d 1024 (N.D. Cal. 1999) (excluding expert testimony on infringement based on a *Daubert* challenge).

59. *Daubert v. Merrell Dow Pharms. Inc.*, 43 F.3d 1311, 1316 (9th Cir. 1995).

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rate of a particular scientific technique should be determined.<sup>60</sup> In addition, recent empirical evidence suggests that the majority of judges (at least state court trial judges) have difficulty understanding such basic *Daubert* concepts as falsifiability and error rate.<sup>61</sup>

If cases are to be decided correctly, however, the challenges posed to trial courts by scientific and technical evidence extend far beyond threshold admissibility questions. Indeed, these challenges must be addressed squarely no matter what the threshold test for admissibility. Even if technical evidence is sufficiently reliable so as to be admissible, it may nonetheless be inferior to other, conflicting evidence. A lay judge or juror is likely to have difficulty adjudicating between competing factual claims of opposing experts, particularly when each expert, *ex hypothesi*, employs a methodology sufficient to surmount the *Daubert* bar.<sup>62</sup> When lay individuals are dealing with technically challenging questions, the usual mechanisms by which they decide whether or not to give weight to particular testimony—for example, its internal consistency or the demeanor of the witness who is giving the testimony—simply do not carry much weight.<sup>63</sup> Even according deference based on the relative credentials of the compet-

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60. See, e.g., Sophia Gatowski et al., *Asking the Gatekeepers: A National Survey of Judges on Judging Expert Evidence in a Post-Daubert World*, 25 LAW & HUM. BEHAV. 433, 437 (2001).

61. The Gatowski survey of state trial judges indicates that, although judges generally support the gatekeeping role defined by *Daubert*, they do not appear to understand the test particularly well. Only five percent of the respondents demonstrated a clear understanding of the falsifiability concept and only four percent demonstrated a clear understanding of the error rate concept. *Id.* at 433.

62. Scott Brewer notes the strange result that emerges from use of the *Daubert* bar:

When the evidence is so weak that no reputable scientist in the field would endorse it, prevent the nonexpert from hearing it (and from hearing that no reputable expert would endorse it); but when the best scientific theories and methods underdetermine the result, let the nonexpert decide who is correct.

Brewer, *supra* note 9, at 1600.

63. See *id.* at 1619-25. As David Faigman explains in regard to the usefulness of demeanor:

Good scientific research simply does not depend on the credibility of individual witnesses. If the question is whether the declarant made a statement under a belief of impending death, the nurse's credibility might be critical. . . . In contrast, whether a series of six epidemiological studies supports the conclusion that the relative risk associated with silicone implants exceeds 2.0 for connective tissue disorder does not entail the same sort of credibility assessment.

David L. Faigman, *Appellate Review of Scientific Evidence Under Daubert and Joiner*, 48 HASTINGS L.J. 969, 978-79 (1997).

ing witnesses assumes that the layperson is competent to judge which credentials are most relevant as a basis for weighing the persuasiveness of testimony in a given field.<sup>64</sup> More importantly, credentials do not substitute for the type of substantive evaluation that should be required in any judicial process that adheres to a minimal standard of fairness and accuracy.

In order to assist lay judges and juries in deciding cases involving complicated factual issues, scholars of the court system have suggested that the trial court can avail itself of a wide range of expert help. For example, Justice Breyer's concurring opinion in the 1997 case *General Electric Company v. Joiner*<sup>65</sup> notes that special masters and specially trained law clerks can assist the court in technically complicated cases.<sup>66</sup> Judges can also use their inherent power to appoint technical advisors who can serve as specialized law clerks. Finally, judges can invoke Rule 706 of the Federal Rules of Evidence and appoint their own expert witnesses.

One might challenge liberal use of third-party expertise on the grounds that such assistance gives the adversarial judicial process an inquisitorial cast. In technically complex cases involving conflicting expert testimony, however, reducing the adversarial component may be a virtue rather than a vice. "Battles of the experts" in which the parties present well-credentialed individuals making opposing claims are likely to shed more heat than light. In addition, careful limitations on the roles played by third-party experts can prevent cases from being removed from the control of the parties. Consider, for example, the situation in which the court appoints an expert to act as a technical advisor. Because technical advisors work outside the scrutiny of the parties, and may not be deposed or called to testify, trial courts have tended to limit the advisor's role to providing the court with a general tutorial on the relevant science and technology. Courts have avoided using technical advisors for direct opinions on the merits of the parties' testimony.<sup>67</sup>

In contrast, the Rule 706 expert witness may be deposed, called to testify, and cross-examined by the parties.<sup>68</sup> The expert witness must also make her findings available to the parties. Similarly, the court must make its own instructions to the expert witness available to the parties. As a con-

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64. Brewer, *supra* note 9, at 1624-34.

65. 522 U.S. 136 (1997).

66. *Id.* at 149-50.

67. *See, e.g., MediaCom Corp. v. Rates Tech., Inc.*, 4 F. Supp. 2d 17, 30 n.11 (D. Mass. 1998) (noting that technical advisor appointed in case would play an educational role and would not be used for fact-finding).

68. FED. R. EVID. 706(a).

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sequence of this greater transparency, it becomes appropriate for expert witnesses to offer opinions on the parties' testimony. Indeed, according to Federal Judicial Center survey data, courts have appointed expert witnesses to assist in resolving conflicting expert testimony.<sup>69</sup>

A contentious issue raised by the use of third-party expertise, particularly the use of Rule 706 experts, involves who should participate in the appointment process. Allowing the parties to the case to be involved may increase the expert's legitimacy. By the same token, each of the parties will no doubt lobby for the individual who is most allied with their interests. The choice of the expert is particularly important in cases where the scientific or technical dispute is prominent and heated. In areas of heated scientific controversy, all individuals who are sufficiently knowledgeable to qualify as experts may have already committed themselves to one or the other side of a dispute.

More generally, even in cases where the relevant scientific disputes are not as heated, judges must make difficult choices about which experts to appoint. An intelligent choice of expert requires, however, that the judge has some ability to evaluate the expert's work. To the extent that evaluating the expert's work requires an understanding of the relevant science and technology in the first instance, suggestions that trial courts rely on court-appointed experts may beg the question rather than address it.

In lieu of using court-appointed experts, Scott Brewer suggests that we have scientifically or technically trained judges and juries in cases where scientific or technical facts are at issue.<sup>70</sup> Brewer's proposal for a "two-hat" solution is important and provocative. By showing us what strict adherence to an ideal of judicial competence in technically complicated cases might require, Brewer demonstrates how far we have to travel. A host of practical difficulties attends his proposed solution, however. First, because expertise in one area of science or technology does not transfer over to other areas,<sup>71</sup> Brewer's proposal would require selecting a group of

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69. Si-Hung Choy, Comment, *Judicial Education After Markman v. Westview Instruments, Inc.: The Use of Court-Appointed Experts*, 47 UCLA L. Rev. 1423, 1428 (2000) (citing results from Federal Judicial Center survey). Court-appointed expert witnesses tend to be used relatively infrequently, however. The Federal Judicial Center survey of federal trial court judges found that only twenty percent had appointed experts. The assumption appears to be that experts should be appointed only in unusual circumstances. *See id.* at 1445.

70. Brewer, *supra* note 9, at 1677-79.

71. *See* Jay P. Kesan, *Carrots and Sticks to Create a Better Patent System*, 17 BERKELEY TECH. L.J. 763 (2002) (discussing highly localized nature of scientific knowledge). To the contrary, expertise in one area of science may be problematic in that it leads the judge to view all other areas through the lens of that science. To be sure, general ex-

judges that was trained in a large variety of different areas of science and technology. In the patent context, this would presumably mean a trial court with at least as many specialties and subspecialties as the Patent and Trademark Office. But setting up a judicial process that is merely a higher cost version of the administrative process is unlikely to produce benefits that justify its cost. In any event, the likelihood of assembling a group of judges competent not only in law but in all of the various fields of scientific and technical endeavor relevant to the patent system is low. Moreover, to the extent that a specialized trial court incorporated juries (an issue discussed below), Brewer's proposal would require assembling a pool of jurors competent in the technical area relevant to that case. Assembling such a pool for every patent case would, at a minimum, be quite costly.

In contrast with Brewer's "two-hat" proposal, setting up a specialized trial court with lay judges who had basic training in the scientific method, and who were given sufficient resources to appoint experts liberally, would be feasible and cost-effective. To be sure, the question of how these court-appointed experts would be appointed would still be with us. As was noted earlier, lay judges do not have the training to evaluate directly the work of potential experts. In all likelihood, the rough proxy of credentials would have to serve as the relevant criterion.

Credentials are not particularly good criteria on which to ground the substantive first-order choice between opposing scientific claims. However, credentials may provide a reasonable (if far from perfect) foundation for the second-order decision regarding the individual to whom the first-order choice should be given. Relying on particular credentials to make the second-order decision is qualitatively different from relying on these credentials to make the first-order decision. To the extent that credentials are used to ground the first-order decision, the judicial process does not at any point encompass a substantive evaluation of the merits of particular claims. In contrast, when credentials are used in the second-order decision, the first-order decision is still based on substantive criteria.

A brief observation regarding the role of juries bears mention.<sup>72</sup> Considerable evidence, both anecdotal and statistical, suggests that juries are particularly poor arbiters of complex scientific fact. As an anecdotal matter, patent lawyers have long observed that juries tend unduly to favor the

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posure to the scientific method will be useful. General exposure to the scientific method can be achieved, however, through a basic course in research methodology. As discussed further *infra*, this basic course could be required of lay judges on a specialized trial court.

72. The role of juries is discussed more fully in Rai, *supra* note 3.

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patentee.<sup>73</sup> Similarly, Kimberly Moore's empirical study of all trial court cases that were resolved by a fact-finder between 1983 and 1999 indicates that juries are far more likely than judges to rule for the patentee—while judges rule for patentees in fifty-one percent of cases brought by the patentee, juries rule for patentees in sixty-eight percent of such cases.<sup>74</sup> The patentee-win rate before juries is particularly striking to the extent that defendants can be presumed to have incorporated information about pro-patentee jury bias into their decision about whether to take the case to trial before a jury in the first instance. In other words, it may be that defendants are bringing only their strongest cases to trial before a jury but still managing to lose two-thirds of the time. Because juries are highly suspect as finders of scientific fact, it is probably a good idea to cabin their role, perhaps by invoking some version of the complexity exception to the Seventh Amendment.<sup>75</sup>

### IV. ARGUMENTS AGAINST A SPECIALIZED TRIAL COURT

It could be argued that we already have a semi-specialized version of the patent trial court system proposed here. Under our current system, almost half of all patent cases are filed in about ten district courts.<sup>76</sup> Moreover, to the extent that these district courts do not already make routine use of court-appointed expert witnesses, they could certainly be given the resources to make liberal use of such witnesses.

This argument, however, ignores the reality that the majority of cases still go to inexperienced courts. Moreover, even if the percentage of cases filed with inexperienced courts were to decrease somewhat, it would probably be far from zero—when parties can choose between tribunals with expertise and those without, at least some parties with weak cases will gamble on nonexpert tribunals. In addition, a system that contains both expert and nonexpert tribunals in a given area cannot realize fully the efficiencies that emerge from division of labor.

The current system is also problematic in that the Federal Circuit does not give fact-finding by experienced district courts substantially greater

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73. Allan L. Littman, *The Jury's Role in Determining Key Issues in Patent Cases: Markman, Hilton-Davis, and Beyond*, 37 IDEA 207, 209 (1997).

74. Kimberly A. Moore, *Judges, Juries, and Patent Cases: An Empirical Peek Inside the Black Box*, 99 MICH. L. REV. 365, 386 (2000).

75. Use of the complexity exception would not mean that juries would be altogether excluded from the patent. They could be used to determine issues like inequitable conduct and willful infringement, where assessments of credibility and character may play a role.

76. *See supra* note 11.

weight than fact-finding by inexperienced ones. Data presented in a recent study by Christian Chu indicate that, although there is some difference in reversal rates between “more active” patent tribunals and “less active” ones, this difference is not statistically significant.<sup>77</sup> In contrast to our current system of semi-specialization, a specialized trial court would have the imprimatur of authority with respect to fact-finding. This added authority would presumably add to the deference given it by the Federal Circuit.

One might also worry about creating too much specialization within the patent system. Specifically, given that we already have a specialized appellate court for patents, the creation of another specialized court raises concerns about narrowness of judicial vision and possible capture.<sup>78</sup> These concerns are important ones. However, while concern about excessive specialization might call for reform at the level of the Federal Circuit,<sup>79</sup> it does not necessarily militate against the creation of a specialized court. Problems of tunnel vision and bias are likely to have much greater importance at the level of the appellate court than at the level of trial court. While trial courts decide facts in individual cases, appellate courts have the responsibility for developing the law. With respect to trial courts, the balance between expertise and vision should probably be struck in favor of expertise. In contrast, at the level of the appellate court, we should probably err on the side of broad vision. The need for balance and breadth in appellate decisionmaking is particularly acute in an area as infused by economic analysis, and as central to innovation and competition policy, as patent law.

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77. Chu, *supra* note 26, at 1121-27. As noted earlier, Chu analyzed patent decisions rendered by the Federal Circuit between January 1, 1998 and April 30, 2000. The category of more active tribunals included those district courts from which the Federal Circuit reviewed more than ten cases during the studied period. The more active group also included tribunals with specialized jurisdiction that includes patents, such as the Board of Patent Appeals and Interferences, the Court of Federal Claims, and the International Trade Commission. *Id.* at 1122. Chu found that, within his studied population, the Federal Circuit tended to reverse more cases from less active tribunals than from more active ones (41% vs. 34% respectively). This tendency was not sufficiently marked, however, to have predictive implications for future cases.

78. For general discussions of such concerns, see, e.g., Harold Bruff, *Specialized Courts in Administrative Law*, 43 ADMIN. L. REV. 329, 331 (1991), Revesz, *supra* note 4, at 1120 (1990).

79. Several different mechanisms through which generalist judges could play a role at the appellate level are outlined in Rai, *supra* note 3.

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### V. CONCLUSION

Proposals for reform of the patent system must confront the reality that patent law is suffused with complicated findings of scientific fact. Addressing this reality probably requires the creation of a specialized trial court with some level of expertise in scientific fact-finding. This expertise does not, however, have to come directly from the judges themselves. The more practical alternative of a system in which specialized trial court judges are provided with the resources to appoint expert consultants in many, if not most, cases is likely to produce decisions that comport with standards of intellectual due process.

# PATENT ABOLITIONISM

By Mark D. Janis<sup>†</sup>

## ABSTRACT

In this Article, Professor Janis argues that modern enthusiasm for large-scale legislative reforms in patent law should be received with caution in view of the history of patent law reform. That history suggests that patent law is more resilient—or perhaps more impervious to change—than modern reformers recognize. To explore these propositions, Professor Janis analyzes the history of the mid-Victorian era British patent abolitionism movement. He demonstrates that much of the reform dialogue of that era, from the elucidation of major problems in the patent system, to the formulation of legislative solutions, mirrors quite closely the modern U.S. patent reform debate. He asserts that participants in the modern patent law reform debate should take this history to heart, approaching age-old proposals for large-scale legislative reform with healthy skepticism.

## I. INTRODUCTION

Patent reform . . . was unimportant, esoteric and dull. It was a subject for the hard-headed enthusiast, and demanded unfaltering attention rather than sparkling rhetoric.<sup>1</sup>

“Esoteric?” Undoubtedly. “Dull?” No comment. But, “unimportant?” Not! Today, everyone wants to be a patent law reformer. I give you Bezos.<sup>2</sup> Nader.<sup>3</sup> Gore.<sup>4</sup> Oprah.<sup>5</sup>

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1. H.I. DUTTON, *THE PATENT SYSTEM AND INVENTIVE ACTIVITY DURING THE INDUSTRIAL REVOLUTION 1750-1852*, at 57 (1984) (describing mid-nineteenth century British patent law reform).

2. *See, e.g.*, Scott Thurm, *Amazon.com Chief Executive Urges Shorter Duration for Internet Patents*, WALL ST. J., Mar. 10, 2000, at B3 (reporting on Bezos' suggestions in his open letter on the Amazon.com website, which advocated term reduction for software patents, pre-grant oppositions, and other reforms).

3. *See, e.g.*, Consumer Project on Technology, at <http://www.cptech.org/> (last visited Jan.9, 2002).

Alas for Bezos and his fellow luminaries—patent law reform remains a subject for hard-headed enthusiasts. Patent law has a long and complex history. Even patent law *reform* has a long history, and modern patent law reform efforts can benefit by taking careful account of that history. This Article examines one curious historical episode—the short-lived movement for patent abolition—and analyzes whether the history of this most radical of reforms can teach us anything about more temperate reforms of the modern patent system.

Nowadays, it is hard to find any rock-ribbed, dyed-in-the-wool patent abolitionists. Indeed, it is hard to find any patent abolitionists at all. Contemporary patent policy debates seem invariably to start from the premise that the patent system is a *fait accompli*.<sup>6</sup> Even Fritz Machlup, who declared that he could not justify instituting a new patent system on economic grounds, allowed grudgingly that he would consider it irresponsible to abolish patent systems that had long existed.<sup>7</sup> Likewise, scholars such as Shavell and Van Ypersele, who have studied the economics of reward systems, tend to offer them as adjuncts to, not replacements for, the patent system.<sup>8</sup>

In truth, there never were very many patent abolitionists. In the United States, no substantial patent abolitionist movement has ever emerged, although there were some late-nineteenth century commentators who warned that “the people might rise in their wrath” against the patent sys-

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4. Meaning Al. See Douglas Kiker, *Gore Proposes Generic Drug Plan*, AP ONLINE, Nov. 8, 1999, available at 1999 WL 28136946 (reporting that at a campaign stop at a pharmacy, candidate Gore remarked that “[p]atents are great” but that “unfair patent extensions” resulted in higher consumer prices for pharmaceuticals, a problem that should be addressed by new legislation). For patent issues concerning the other Gore, see *W.L. Gore & Associates v. Garlock, Inc.*, 721 F.2d 1540 (Fed. Cir. 1983), addressing patents relating to Gore-Tex technology.

5. Actually, I’m not entirely sure about Oprah.

6. For a rare counterexample, see Brian Peckham, *Should the U.S. Patent Laws Be Abolished?*, 11 J. CONTEMP. L. 389 (1985) (analyzing seriously, but largely rejecting, abolitionist arguments).

7. STAFF OF SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF THE COMM. ON THE JUDICIARY, 85TH CONG., AN ECONOMIC REVIEW OF THE PATENT SYSTEM (Comm. Print 1958) (Fritz Machlup, author). Machlup asserted that:

If we did not have a patent system, it would be irresponsible, on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it.

*Id.* at 80.

8. See generally Steven Shavell & Tanguy Van Ypersele, *Rewards Versus Intellectual Property Rights*, 44 J.L. & ECON. 525 (2001).

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tem,<sup>9</sup> others who feared imminent Congressional action,<sup>10</sup> and still others who thought that the Supreme Court was poised to take care of the job through “judicial legislation.”<sup>11</sup> As experience has demonstrated, reports of the death of the U.S. patent system have always been greatly exaggerated. Even claims that the system is in mortal “distress” seem quaint in the current environment.<sup>12</sup>

Victorian England, however, did have patent abolitionists, and they cut a wide swath. The movement, however, was short lived. Serious debate over whether to abolish the British patent system extended for several years in the mid-nineteenth century. The British patent system emerged from this ordeal unchanged in some respects and fundamentally modernized in others.

This Article explores the relevance to modern U.S. patent law of the nineteenth century patent abolitionism movement in England. This connection is significant, although it may not immediately be apparent due to material differences between the British patent system of the early and middle nineteenth century—the “unreformed” patent system<sup>13</sup>—and the

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9. D.J. Brewer, *The Patent System*, 3 YALE L.J. 149, 157 (1894) (expressing “the strong conviction that unless some radical changes are made in the patent system as it exists to-day it will not be many years before the people rise in their wrath and abolish it altogether.”).

10. See, e.g., Chauncey Smith, *A Century of Patent Law*, 5 Q. J. ECON. 44 (Oct. 1890). Smith states:

It is undeniable that there has been, and doubtless still is in some parts of the country, a wide-spread hostility to the patent law. . . . The writer was assured several years ago . . . that a large number of the members of the House of Representatives were ready at any moment to vote for the repeal of the patent law. At every session of Congress bills are introduced, providing, if not for the repeal of the law, at least for its amendment in such a way as to destroy or impair the value of patent property.

*Id.* at 58-59.

11. *Avery v. Ever Ready Label Corp.*, 104 F. Supp. 913, 914 (D.N.J. 1952) (reporting the views of some observers that the Supreme Court, in the course of its mid-twentieth century patent jurisprudence, “has deviated from well-established doctrines of patent law and may soon abolish the patent system by judicial legislation”).

12. See Abe Fortas, *The Patent System in Distress*, 53 J. PAT. OFF. SOC’Y 810 (1971); see also Mark D. Janis, *The Revival of Distress in the Patent System* (forthcoming 2002) (on file with author) (positing that the patent system endures cycles of under protection and overprotection, and accompanying cycles of distress and exuberance); cf. Lawrence G. Kastriner, *The Revival of Confidence in the Patent System*, 73 J. PAT. & TRADEMARK OFF. SOC’Y 5 (1991).

13. KLAUS BOEHM, I THE BRITISH PATENT SYSTEM: ADMINISTRATION 19-26 (1967) (referring to the “unreformed patent system” as subsisting until the passage of the 1852 Patents Act, or roughly between 1750 and 1850). Relevant statutes during this period

modern U.S. system. The British patent system of the time was a registration system.<sup>14</sup> Until 1852, the system lacked any central granting authority,<sup>15</sup> and even afterward, the Patent Office conducted no substantive patentability examination until reforms were enacted in the 1880's. Patent applicants were subject to pre-grant oppositions,<sup>16</sup> and prior to 1852, previously-filed caveats as well.<sup>17</sup>

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include patents acts of 1835, 1839, and 1852. *See* Patents Act, 1835, 5 & 6 Wm. 4, c. 83 (Eng.); Patents Act, 1839, 2 & 3 Vict., c. 67 (Eng.); Patents Act, 1852, 15 & 16 Vict., c. 83 (Eng.), *reprinted in* JOHN CORYTON, A TREATISE ON THE LAW OF LETTERS-PATENT, FOR THE SOLE USE OF INVENTIONS IN THE UNITED KINGDOM OF GREAT BRITAIN AND IRELAND 275, 279, 294 (Philadelphia, T. & J.W. Johnson 1855) (reproducing the text of the 1835, 1839, and 1852 Acts).

For a study of the origins of the British patent system and its history through the eighteenth century, see generally CHRISTINE MACLEOD, INVENTING THE INDUSTRIAL REVOLUTION: THE ENGLISH PATENT SYSTEM 1660-1800 (1988).

14. That is, the system included no provisions for substantive pre-grant examination. By contrast, after a relatively brief experiment with a patent registration system, the U.S. abandoned it in 1836 in favor of pre-grant examination. *See generally* EDWARD C. WALTERSCHEID, TO PROMOTE THE PROGRESS OF USEFUL ARTS: AMERICAN PATENT LAW AND ADMINISTRATION 1798-1836 (1998).

One key point in debates over reform of the British patent system in 1850-51 was whether to institute pre-grant examination. Thomas Webster, one of the proponents of this position, pointed with approval to the U.S. system in arguing for pre-grant examination. *See* MOUREEN COULTER, PROPERTY IN IDEAS: THE PATENT QUESTION IN MID-VICTORIAN BRITAIN 57 (1991). It is remarkable that even as early as the mid-nineteenth century, U.S. patent law was beginning to influence the course of British patent law, even though U.S. patent law had come into formal existence only a few decades before, borrowing from British law and antecedents.

For more on Thomas Webster's positions in the patent reform and abolition debate, see *infra* Part II.

15. Instead, applicants were required to negotiate an almost impossibly complicated journey through multiple government offices. *See infra* notes 24-45 and accompanying text.

16. *See* W.M. HINDMARCH, A TREATISE ON THE LAW RELATING TO PATENT PRIVILEGES FOR THE SOLE USE OF INVENTIONS 377 (London, V. & R. Stevens 1846) (describing the relatively restrictive pre-1852 opposition practice); THOMAS WEBSTER, THE NEW PATENT LAW: ITS HISTORY, OBJECTS, AND PROVISIONS 25-26 (4th ed. 1854), *microformed on* 19th-Century Legal Treatises, Fiche 39,017 (Research Publications Int'l) (describing 1852 Act provisions authorizing "advertisement" of specifications and providing an opportunity for pre-grant opposition by interested members of the public); *see also id.* at 8 (explaining that the 1852 Act also incorporated a notion of provisional rights "thus affording a precedent for the principle that the legal right should date from the day of the application, unless justice to other parties required that it should be post-dated").

17. HINDMARCH, *supra* note 16, at 504-05 (explaining that a caveat was a filing expressing an inventor's intent later to file a patent application and petitioning that no patent be granted on the invention without notice to the caveat filer); *see also* WEBSTER,

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Not surprisingly, British patents of the time afforded relatively insecure rights.<sup>18</sup> In addition to being subject to invalidity defenses in infringement actions,<sup>19</sup> British patentees could be made defendants in *scire facias* actions, a remedy for the public and the Crown against defective patents.<sup>20</sup> Moreover, prior to 1852, British patentees could obtain an injunction against patent infringement only via a separate action at equity in the Chancery Court, and the Court ordinarily required that infringement of valid rights be established in a prior proceeding at the law courts.<sup>21</sup> Surprisingly, despite these important differences, much of the core agenda that motivated nineteenth century British patent law reform and abolitionist movements has carried over to U.S. patent law reform agendas of both the twentieth and, now, the twenty-first centuries. Patent abolitionism may help give historical context for current patent reform efforts. It may also yield lessons about the process of patent law reform, and, more generally, about the political economy of patent systems old and new.

Part II considers reform initiatives in early nineteenth century British patent law that preceded the mid-Victorian abolitionist movement. Part III turns to the abolitionist movement itself, focusing on several aspects of that movement that are pertinent to modern patent reform discussions. Part IV offers some conclusions about the process of patent law reform, including a cautionary observation about the absence of evolution in patent reform agendas over the past century.

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*supra* note 16, at 25 (noting with approval that the 1852 Act abolished the caveat practice).

18. Those rights included basic exclusive rights in making, using, and selling the patented invention for a 14-year term measured from the date of sealing. HINDMARCH, *supra* note 16, at 53-55 (exclusive rights); *id.* at 144 (term).

19. *Id.* at 262.

20. *Id.* at 376-430 (describing *scire facias* actions in detail). *Scire facias* actions might be likened to declaratory judgment actions in form, but *scire facias* actions were not constrained by jurisdictional limitations that characterize modern declaratory judgment actions. Accordingly, they could readily be used to harass patentees. In response, a “Patentees’ Association” formed in the late 1700’s to resist “opulent manufacturers” who “have agreed to use very beneficial patent inventions [without authorization] and have subscribed large sums to attack the same by writ of *Scire facias*.” DUTTON, *supra* note 1, at 37 (citing an anonymous circular found in the correspondence of James Watt). Evidently, James Watt was unimpressed with this early version of a patent owners’ lobby, calling the Patentees’ Association a motley crew of “projectors and madmen, some of which I thought it a disgrace to keep company.” *See id.*

21. For a description of the 1852 reform of this practice, see WEBSTER, *supra* note 16, at 36 (explaining that section 42 of the 1852 Act gave courts at common law the power to grant injunctions and an accounting in the case of infringement).

## II. PRECURSORS TO ABOLITIONISM: ADMINISTRATIVE REFORM AND THE “HEROIC INVENTOR” MOTIF

### A. The Letters of “Vindicator”

Beginning in 1828, the *London Journal of Arts and Sciences* published a series of letters whose author, in the style of the times, identified himself by a pseudonym, “Vindicator.” Vindicator took on the British patent administration, which he excoriated, in characteristically unsparing rhetoric, as a system of “rank absurdity, oppression, and humbug.”<sup>22</sup> Vindicator portrayed the formal prerequisites for obtaining patent protection and the fees accompanying each step in excruciating detail. According to Vindicator, the procedures amounted to a “heterogeneous mass of antiquated pretensions—of fantastic operations—of absurd practices—and of legal impositions,” which were “retained for the sole advantage of a few State officers and subalterns, in defiance of common sense, of common honesty, and of the universal feeling of society.”<sup>23</sup>

Vindicator’s portrayal was not far off the mark. British patent administration in the first half of the nineteenth century was truly Byzantine. Hindmarch, a barrister and patent treatise author,<sup>24</sup> described the procedures in a single sentence of alarming proportions:

[A] petition for the patent, verified by a solemn declaration, and left at the Home Office; a reference of the petition by the Secretary of State to the Attorney or Solicitor General; a report by one of those officers to the Crown in favour of the grant; a warrant under the sign manual to the Attorney or Solicitor General to prepare a bill for the patent; the preparation of the bill and two

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22. Letter XIII, *On the Chancery Fees and Charges upon Patents for Inventions*, 3 LONDON J. ARTS & SCI. 1-8 (1829), reprinted in JEREMY PHILLIPS, CHARLES DICKENS AND THE ‘POOR MAN’S TALE OF A PATENT’ app. D, at 47 (1984). Phillips speculates that Vindicator was probably William Newton, editor of the *London Journal of Arts & Sciences* and a leading expert on the British patent system. *Id.* at 9.

By no means was Vindicator the first agitator for patent law reform in the British patent system. For example, in the late eighteenth century, preeminent inventor James Watt made a variety of proposals for refinements to the patent law. See Eric Robinson, *James Watt and the Law of Patents*, 13 TECH. & CULTURE 115 (1972); see also BOEHM, *supra* note 13, at 26-27 (remarking on Watt’s activities and noting that patent reform bills were introduced, without success, in 1793, 1819-1822, 1826, and 1833); DUTTON, *supra* note 1, at 39-40 (discussing Watt’s proposals to maintain specifications in secrecy and to have them examined to ensure that they were sufficiently comprehensible).

23. Letter XVI, *On the Fees and Charges upon Chancery Patents for Inventions*, 3 LONDON J. ARTS & SCI. 175-80 (1829), reprinted in JEREMY PHILLIPS, CHARLES DICKENS AND THE ‘POOR MAN’S TALE OF A PATENT’ app. D, at 51 (1984).

24. See HINDMARCH, *supra* note 16.

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transcripts or copies of it in the Attorney General's Office, called the Patent Bill Office; the conversion of one of these copies of the bill into the Queen's Bill, upon its receiving the sign manual; the first bill being deposited in the Signet Office, a second copy is transformed into the Signet Bill by adding a few formal words to it, and sealing it with the seal of the Secretary of State; the Signet Bill being received in the Privy Seal Office, the remaining copy of the bill is in a similar manner converted into the Privy Seal Bill; the Privy Seal Bill is then delivered to the Lord Chancellor, and a patent made in the form contained in the bill.<sup>25</sup>

Effectively, the patent applicant had to set in motion a chain of command that commenced with the Queen and proceeded through a wilderness of bureaucracy. While this may appear to modern sensibilities as an early example of bureaucracies expanding to fill every void, Hindmarch suggested that this "cumbrous machinery" was probably the product of deliberate policy tracing back to the sixteenth century.<sup>26</sup> During the reign of Henry VIII, it was considered important to limit the power to confer valuable grants in any individual officer of the Crown. Coke had explained as much in his "Institutes:"

[S]uch was the wisdom of prudent antiquity, that whatsoever should passe the Great Seale should come through so many hands, to the end that nothing should passe that Great Seale, that is so highly esteemed and accounted of in law, that as against law or inconvenient; or that anything should passe from the king anywayes, which he intended not, by undue or surreptitious meanes.<sup>27</sup>

Even applicants who succeeded in navigating this formidable bureaucratic maze attained patent protection of dubious value, at best, because at no stage in these extraordinarily cumbersome procedures did British patent authorities ever conduct a substantive examination of patentability.<sup>28</sup> In addition to being subjected to potential pre-grant oppositions, an inventor might have his granted patent attacked in the courts on a writ of *scire*

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25. W.M. HINDMARCH, OBSERVATIONS ON THE DEFECTS OF THE PATENT LAWS OF THIS COUNTRY; WITH SUGGESTIONS FOR THE REFORM OF THEM 2 (Philadelphia, T. & J.W. Johnson 1851).

26. *Id.* at 4.

27. *Id.* (quoting EDWARD COKE, 2 INSTITUTES OF THE LAWS OF ENGLAND 555 (London, W. Clarke & Sons 1817) (*Articuli super chartas*)). The policy, as relevant to the patent grant, was embodied in a statute popularly known as the 1536 Clerks Act, 27 Hen. VIII. c. 11 (1535).

28. *See supra* note 14.

*facias*, or by invalidity challenges offered as defenses in infringement proceedings.<sup>29</sup>

Vindicator had put out a call for dramatic reform. Asserting that “[m]en of skill, intellect, sense, learning, and nerve, are in decided opposition to all attempts to bolster up this most rotten part of a decaying order of things,” he urged “public meetings, to petition Parliament for an effectual revision of patent laws and practice, and the adoption of an entire new system of protection to inventions.”<sup>30</sup>

Vindicator enjoyed partial vindication, eventually. In 1829, Parliament appointed a Select Committee of the House of Commons to review the patent system,<sup>31</sup> eventually leading to the passage of the 1835 Patents Act<sup>32</sup>—by all accounts a “timid measure” making no major reforms.<sup>33</sup> In 1851, Hindmarch’s work identified many of the same defects about which Vindicator had so vociferously complained: bewildering and burdensome procedures, delay, and stifling costs.<sup>34</sup> Not until the 1852 Act did Britain finally discard its archaic procedures and reduce application filing costs.<sup>35</sup> But even the 1852 Act left much to be accomplished.<sup>36</sup>

The complaints of early British patent reformers demonstrate that dissatisfaction with patent administration—patent acquisition procedures,

29. See HINDMARCH, *supra* note 16, at 376-431 (explaining the *scire facias* action and pre-grant opposition practice under nineteenth century British practice).

30. Letter XIII, *supra* note 22, at 47.

31. COULTER, *supra* note 14, at 44 (referring to the 1829 Committee).

32. Patents Act, 1835, 5 & 6 Will. 4, c. 83 (Eng.).

33. BOEHM, *supra* note 13, at 27; see also WEBSTER, *supra* note 16, at 3.

34. As to the last, see HINDMARCH, *supra* note 25, at 11, which claims that “[t]he enormous sums which inventors must pay to obtain patents for their inventions, form one of the greatest grievances of which they have to complain.” Hindmarch called for a series of reforms ranging from the inclusion of foreign publications as prior art, to granting third parties the right to a hearing in pre-grant oppositions, to requiring a printed specification and “some clear or distinct claim or claims of invention,” to, perhaps most importantly, that “[a]ll the present preliminary proceedings for obtaining patents to be abolished.” See *id.* at 54-57.

35. BOEHM, *supra* note 13, at 28-29 (reducing the filing fee to 25 pounds, compared to the 300 pounds that Old John would have paid for comparable U.K. protection).

36. The 1852 Act did not institute substantive pre-grant examination, and despite centralizing patent operations in a Patent Office, apparently did not provide adequate administrative oversight, as made evident when large amounts of Patent Office funds were unaccounted for in 1864. *Id.*; see also WEBSTER, *supra* note 16, at 42-48 (detailing numerous shortcomings remaining in the 1852 Act).

On the other hand, the “cardinal features” of the 1852 Act included: (1) protection from the day of application; (2) one patent for the United Kingdom; (3) moderate cost; (4) printing and publication of specifications; and (5) one office of patents and specifications. *Id.* at 41.

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fees,<sup>37</sup> and the extent of public participation in the process<sup>38</sup>—is by no means a new theme in patent reform debates. This alone should serve as a sobering reminder to students of twenty-first century patent policy that much of what we say about reforming patent administration has probably been said before, and many of the solutions that we propose have been proposed, and probably previously discarded, though the social, economic, and legal contexts have varied.

The tepid legislative response that greeted early nineteenth century British patent reform efforts may also provide an important lesson about the patent reform process in general. One might infer that then, as now, abstract expressions of moral umbrage over the arcana of patent administration are not likely to arouse the sympathies of politicians—at least, not very quickly. Eventually, however, patent reform, and even patent abolition, did gain a foothold in the British legislative agenda.

### B. Origins of the “Heroic Inventor” Motif

One important reason why British legislators ultimately took interest in patent reform is the emergence of what might be designated the “heroic inventor” motif. Charles Dickens was one of its chief progenitors. In 1850, Dickens published a short work entitled *A Poor Man’s Tale of a Patent*.<sup>39</sup> *A Poor Man’s Tale* is a narrative in the first person, told by the fictional “Old John.” By his own modest representation, Old John was a man “of an ingenious turn.”<sup>40</sup> He spins a classic tale of invention:

I have been twenty year, off and on, completing an Invention, and perfecting it. I perfected of it, last Christmas Eve at ten o’clock at night. Me and my wife stood and let some tears fall over the Model, when it was done and I brought her in to take a

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37. See, e.g., STAFF OF THE SENATE SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF THE COMM. ON THE JUDICIARY, 85TH CONG., PATENT OFFICE FEES—A LEGISLATIVE HISTORY 1-3 (Comm. Print 1958) (Victor L. Edwards, author) (describing the fee structure under the patent acts of 1790, 1793, 1836, 1861, and recommendations in 1912); *id.* at 3-8 (describing the fee changes in 1922, 1927, and 1930); *id.* at 8-16 (describing various attempts to change fees from 1947 through 1957).

For more recent sample commentary, see Michael N. Meller, *Planning for a Global Patent System*, 80 J. PAT. & TRADEMARK OFF. SOC’Y 379, 380 (1998), and Erwin F. Berrier, Jr., *Global Patent Costs Must Be Reduced*, 36 IDEA 473 (1996).

38. See, e.g., Mark D. Janis, *Rethinking Reexamination: Toward a Viable Administrative Revocation System for U.S. Patent Law*, 11 HARV. J.L. & TECH. 1 (1997) (commenting on newer proposals and tracing the history of legislative efforts to enact post-grant revocation procedures).

39. See PHILLIPS, *supra* note 22, at 15-21 (full reprint of Dickens’ work).

40. Old John remarks that he hopes “[i]t won’t be took as boastful in me, if I make the remark . . . that I have always been of an ingenious turn.” *Id.* at 16.

look at it. . . . There it was, perfected of, on Christmas Eve. . . . at ten o'clock at night. All the money I could spare I had laid out upon the Model; and when times was bad, or my daughter Charlotte's children sickly, or both, it had stood still, months at a spell. I had pulled it to pieces, and made it over again with improvements, I don't know how often. There it stood, at last, a perfected Model as aforesaid.<sup>41</sup>

Old John's troubles begin when he resolves to seek patent protection for his invention. Drawing on his savings,<sup>42</sup> Old John takes lodgings with Thomas Joy, an acquaintance in London, and proceeds on an epic journey through the British patent administration. In one memorable passage, he summarizes his odyssey in tones reminiscent of *Vindicator*:

Look at the Home Secretary, the Attorney-General, the Patent Office, the Engrossing Clerk, the Lord Chancellor, the Privy Seal, the Clerk of the Patents, the Lord Chancellor's Purse-bearer, the Clerk of the Hanaper, the Deputy Clerk of the Hanaper, the Deputy Sealer, and the Deputy Chaff-Wax. No man in England could get a Patent for an Indian-rubber band, or an iron-hoop, without feeing all of them. Some of them, over and over again. I went through thirty-five stages. I began with the Queen upon the Throne. I ended with the Deputy Chaff-wax.<sup>43</sup>

Old John ultimately succeeds in receiving his patent, but only after exhausting nearly all of his savings.<sup>44</sup> Obviously, Dickens' *Poor Man's Tale* is a direct, satirical commentary on the complexity and cost of the patent-granting procedures under pre-1852 British practices. Reforms under the 1852 Act followed shortly on the heels of the publication of the *Poor Man's Tale*,<sup>45</sup> and it is safe to assume that Dickens' work had some small influence.

For modern U.S. patent reform discussions, however, Dickens' work may be of interest for quite different reasons. *A Poor Man's Tale* is one of

41. *Id.* at 16-17.

42. Specifically, his "legacy of one hundred and twenty-eight pound ten." PHILLIPS, *supra* note 22, at 17. Says Old John, "[m]e and my wife never broke into that money yet. Note. We might come to be old and past our work. We now agreed . . . to make a hole in it—I mean in the aforesaid money—and Patent the invention." *Id.*

43. PHILLIPS, *supra* note 22, at 20-21. Phillips speculates that Dickens may have been influenced, at least indirectly, by the *Vindicator* letters. *Id.* at 8-9.

44. "I was quite wore out, patience and pocket . . . I had lodged at Thomas Joy's over six weeks, and the unopposed patent for my invention, for England only, had cost me ninety-six pound, seven, and eightpence. If I had taken it out for the United Kingdom, it would have cost me more than three hundred pound." *Id.* at 19-20.

45. See generally WEBSTER, *supra* note 16 (explaining the reforms in the 1852 Act).

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the earliest examples in Anglo-American patent law of invoking the now familiar motif of the heroic inventor. Dickens spends a good deal of *A Poor Man's Tale* constructing a romantic image of the independent inventor, from the tears over the prototype on Christmas Eve, to the plundering of the retirement savings to the persistence in the face of an unyielding bureaucracy. Towards the close of the *Tale*, Dickens makes a direct appeal to the inventor-as-hero, when Old John laments:

Is it reasonable to make a man feel as if, in inventing an ingenious improvement meant to do good, he had done something wrong? How else can a man feel, when he is met by such difficulties at every turn? All inventors taking out a Patent MUST feel so . . . .<sup>46</sup>

Although Dickens was peculiarly effective in idealizing inventors and the process of invention, he was not alone. Similar imagery appears elsewhere in nineteenth century patent reform literature, albeit with less emotional impact.<sup>47</sup>

### C. The “Heroic Inventor” in U.S. Patent Law Iconography

The invocation of the heroic inventor in the cause of patent reform is intriguing because today, one hundred and fifty years later, the heroic inventor remains firmly entrenched in the modern U.S. patent law iconogra-

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46. PHILLIPS, *supra* note 22, at 20.

47. For example, in arguing against excessive filing fees in his 1851 volume on patent law reform, Hindmarch observes:

This enormous cost of patents throws very many serious difficulties in the way of inventors. Such persons are seldom affluent, but on the contrary are generally in straitened circumstances, frequently very poor. Many intelligent workmen are possessed of very considerable inventive powers; but being unable to pay the cost of a patent for anything they may invent, they have no motive to turn aside out of the beaten track.

HINDMARCH, *supra* note 25, at 12-13.

In tones that must surely resonate with contemporary high technology entrepreneurs, Hindmarch also gave an account of the perils of seeking venture capital financing:

And if an artisan should seek the assistance of a capitalist to enable him to obtain the means of procuring a patent, he must disclose the invention to the man of whom he is in fact asking a favour, and thus put himself wholly in the power of the capitalist, who may dictate his own terms respecting the assistance which he will afford, and the manner of doing it. In such cases poor inventors usually pay dearly for the assistance that they obtain; and it frequently happens that they fail to obtain any profit from their inventions.

*Id.* at 13.

phy. At first blush, this might seem counterintuitive in some respects. After all, as Merges has written, the twentieth century witnessed a gradual “corporatization” of industrial research and development (“R&D”), and American patent law responded to this trend with the professionalization of the Patent Office,<sup>48</sup> the liberalization of the rules for correcting inventorship, and the rejection of a doctrine that would have penalized patentees for failure to “work” patented technology.<sup>49</sup>

In other respects, however, it makes sense that the heroic inventor motif has lingered in U.S. patent policy debates. First, it is conceivable that the corporatization of R&D has reinforced the romantic appeal of the lone inventor.<sup>50</sup> Second, the heroic inventor motif, with its overtones of Jeffersonian self-reliance and Yankee ingenuity, may simply mesh uniquely well with the American perception of its own identity.<sup>51</sup> Third, the heroic inventor rhetoric can be used to render technical, arid patent reform debates more accessible to nonspecialists. One might expect patent reformers to be drawn to the strategy of reconceptualizing the reform debate by attempting to couple technical reform measures with the romantic imagery of the lone inventor struggling against a recalcitrant bureaucracy.

The historical record of patent law reform yields a fair amount of anecdotal evidence to support this last claim of rhetorical power, a power that endures over decades of American patent law reform. The U.S. Patent and Trademark Office (“PTO”) has done its share to contribute to this venerable literary tradition. A worthy exemplar appears on the PTO’s Independent Inventor Resources website:

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48. Robert P. Merges, *One Hundred Years of Solicitude: Intellectual Property Law 1900-2000*, 88 CALIF. L. REV. 2187, 2216 (2000) (observing that corporate R&D departments tended to file more patent applications, precipitating a need for administrative reform to enable the Patent Office to handle the heavy application volumes).

49. This occurred at the time that corporate entities were beginning to acquire patent protection for defensive purposes, and otherwise developing strategic patent portfolios. A requirement that patented technology be “worked” would have complicated, and might have thwarted, these efforts. *Id.* at 2219-21.

50. Perhaps the same phenomenon occurred in Dickens’ time. Nineteenth century observers experiencing the Industrial Revolution might surely have perceived that the day of the lone inventor—as embodied in the local craftsmen of the pastoral economy—was passing.

51. There is also some evidence that the independent inventor theme has played well outside the United States at various times. *See, e.g.*, PETER MEINHARDT, INVENTIONS PATENTS AND MONOPOLY 237-244 (1946) (suggesting reform legislation for the British patent system that would provide various forms of assistance to “small” inventors); *see also* text accompanying notes 89-92 *infra* (discussing second tier patent regimes).

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To paraphrase our Declaration of Independence, America is the land of the free, home of the brave, and haven for the independent inventor. Nowhere else in the world does a government exist that supports its independent inventors to the extent that we do. The independent inventor is America's natural resource.<sup>52</sup>

Another example comes from mid-1960's symposium commentary from PTO officials in honor of the 175<sup>th</sup> anniversary of the U.S. Patent System. A symposium article published in the *Journal of the Patent Office Society* offered a poetic ode to the "Godly Inventor," commencing, "A spark ignites your restless mind, a fearless soul, it starts to grind . . ."<sup>53</sup>

While scholars may be hard pressed to take seriously these grinding minds<sup>54</sup> and revisions to basic American scripture,<sup>55</sup> it seems significant that the PTO persists in its desire to offer homage to the heroic inventor. Whether purely the product of pragmatic considerations,<sup>56</sup> or for purposes of political expediency, the heroic inventor and attendant symbolism lives on in American patent administration.

The heroic inventor motif also manifests itself in judicial opinions. Patent litigators, present and past, undoubtedly would consider it glaringly obvious that the heroic inventor motif matters in patent litigation, the hero-inventor being the quintessential protagonist in the patent infringement narrative. Writing in the mid-1950's, Judge Rifkind captured this notion with Dickensian felicity:

[I]n the eyes of the proponent of the patent, his client generally is the poor, famished, garret inventor pursuing for years his private faith in his particular vision of the new and useful; at the end of the first act he is the proud possessor of a diploma of achieve-

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52. Independent Inventor Resources, at <http://www.uspto.gov/web/offices/com/iip/welcome.htm> (last visited Dec. 20, 2001) (displaying statement of Richard J. Apley, Director, USPTO Office of Independent Inventor Programs).

For earlier incarnations of PTO programs on behalf of independent inventors, see Isaac Fleischmann, *The Patent Office and the Independent Inventor*, 47 J. PAT. OFF. SOC'Y 459 (1965), detailing mid-1960's Patent Office efforts to assist independent inventors, and Maurice A. Crews, *Problems of the Independent Inventor*, 41 J. PAT. OFF. SOC'Y 159, 163 (1959), containing the Assistant Commissioner of Patents' introduction of a pamphlet designed for independent inventors, and discussion of some "self-evident" problems faced by independent inventors who seek to use the patent system.

53. Fleischmann, *supra* note 52, at 465.

54. Or grinding souls, as it may be.

55. See generally PAULINE MAIER, *AMERICAN SCRIPTURE: MAKING THE DECLARATION OF INDEPENDENCE* (1997) (saying nothing whatsoever about the "land of the free, home of the brave").

56. For example, to reduce the costs associated with assisting *pro se* applicants.

ment from the Patent Office; at the end of the second act, you find him complaining bitterly that a greedy corporation has kidnapped his brain child and its inheritance.<sup>57</sup>

This is not to suggest, however, that the heroic inventor motif in patent litigation is confined to relatively superficial appeals to emotion. For example, Federal Circuit judges still periodically invoke the interests and imagery of the independent inventor in crafting and applying patent law rules.<sup>58</sup> In *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*,<sup>59</sup> Judge Linn argued that the Federal Circuit majority's rule on prosecution history estoppel "wrongfully sets in place a regime that increases the cost and complexity of patent prosecution to the detriment of individual inventors. . . ."<sup>60</sup> and "discounts the intrinsic worth in treating more fairly the individual inventor whose patent right is under administrative scrutiny."<sup>61</sup> On occa-

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57. Simon H. Rifkind, *The Romance Discoverable in Patent Cases*, 37 J. PAT. OFF. SOC'Y 319, 322 (1955). Judge Rifkind also recorded his doubts that the romance of the hero-inventor motif had seeped into the general judicial consciousness:

[T]he same judges write both patent opinions and admiralty opinions. But the lay reader would never guess that fact. No sooner does a judge betake himself to an admiralty case, but he immediately fancies himself a latter day Conrad. His manuscript is redolent of resin and sea water, his paragraphs are resonant with whistles and general alarms. He tells a story of a burning cargo in a far off sea, of lifeboats launched in storms, of brave rescues, and sudden deaths. It is plain he enjoys the telling of the story.

But not so when he ponders his patent cases. Then he writes only of claims and specifications, of prior art and anticipations. Of the inventor—nary a word.

*Id.* at 329-30.

58. The heroic inventor may be functioning in this context as a decision-making heuristic. See Hillary A. Sale, *Judging Heuristics*, U.C. DAVIS L. REV. (forthcoming 2002) (on file with author) (providing examples from securities litigation).

59. 234 F.3d 558 (Fed. Cir. 2000), *cert. granted*, 121 S.Ct. 2519 (U.S. Jun. 18, 2001) (No. 00-1543).

60. *Id.* at 620 (Linn, J., concurring in part and dissenting in part). Judge Linn worried that:

[T]he majority's new rule will substantially increase the cost of obtaining patent protection, and may in fact become prohibitively high for individual inventors and start-up companies . . . . These increases in costs and complexity will also come at a time when greater prosecution investments may be hard for many applicants to justify because the commercial value of the inventions covered may not then be fully apparent. In my view, this will most detrimentally impact individual inventors and start-up companies. . . .

*Id.* at 624.

61. *Id.* at 628.

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sion, judges also debate whether various substantive patent law rules should be subject to exceptions or limitations for independent inventors: for example, the on-sale<sup>62</sup> and public use bars,<sup>63</sup> and damages under the reasonable royalty methodology<sup>64</sup> and other, more creative, damages theories.<sup>65</sup>

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62. *E.g.*, *Special Devices, Inc. v. OEA, Inc.*, 270 F.3d 1353, 1356 (Fed. Cir. 2001) (upholding the application of the on-sale bar to a transaction between arguably related entities, but seeming to suggest that the bar might not apply to cases in which “an individual inventor takes a design to a fabricator and pays the fabricator for its services in fabricating a few sample products”).

63. *E.g.*, *Lough v. Brunswick Corp.*, 86 F.3d 1113 (Fed. Cir. 1996) (reviewing whether an independent inventor’s pre-critical date uses of an invention were barring public uses or experimental uses). Judge Lourie, for the panel majority, acknowledged that relatively informal and “seemingly casual” activities undertaken by independent inventors might qualify as experimental use for purposes of 35 U.S.C. § 102(b), but insisted that evidence of “the same basic elements that are required to validate any experimental program” must still be present. *Id.* at 1121. Judge Lourie goes on to state that:

The law does not waive statutory requirements for inventors of lesser sophistication. When one distributes his invention to members of the public under circumstances that evidence a near total disregard for supervision and control concerning its use, the absence of these minimal indicia of experimentation require a conclusion that the invention was in public use.

*Id.* at 1122.

Judge Plager dissented. He rendered a classic portrait of the lone inventor: This is not a contest between . . . the two big competitors in this field . . . . If it were, we could expect the combination of engineering and legal staffs on each side to be punctilious about observing the niceties of our prior opinions on how to conduct experiments so as to avoid any possible running afoul of the public use bar. No, this is a home-made improvement by a man with only a high school education who worked on boats and boat engines, including his own, where he kept encountering the problem . . . that [others] had failed to solve. He solved it by trial and error, with an ingenious bushing of his own design, and, on his grandfather’s metal lathe, after several tries, fashioned a half-dozen prototype seals that looked like they might do the job.

*Id.* at 1123.

According to Judge Plager, the majority clearly should have taken account of the plaintiff’s status as an independent inventor, excusing his failure to keep detailed records and to obtain appropriate confidentiality agreements, rather than demanding a level of legal sophistication that “we lawyers, with our clean and dry hands, have come to prefer.”

*Id.* at 1124.

64. *See Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1109 (Fed. Cir. 1996) (observing that the use of a pure willing licensor/willing licensee model, without regard to other *Georgia Pacific* factors, ‘risks creation of the perception that blatant, blind appropriation of inventions patented by individual, nonmanufacturing inventors is the profitable, can’t-lose course’) (quoting *Fromson v. Western Litho Plate and Supply Co.*, 853 F.2d 1568,

I do not mean to draw grandiose inferences here. Judges may have no conscious motivation for reverting to the heroic inventor narrative; they may simply perceive that they are reporting the facts of the cases before them. Whether out of necessity or desire, by continuing to link plaintiff-patentees with the independent inventor motif, judges ensure the motif's lingering relevance to patent policy debates.

The normative implications of this linkage are unclear. Economists and others have disagreed throughout the twentieth century about whether independent inventors or corporate R&D groups contribute more profoundly to technological innovation.<sup>66</sup> Historians have worried that the impulse to lionize individuals as inventor-heroes has the potential to cause mischief in the historical record.<sup>67</sup> Legal commentators have expressed

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1575 (Fed. Cir.1988)). *But cf.* *Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1580-81 (Fed. Cir. 1996) (cautioning against the use of a punitive "*Panduit* kicker" in calculating a reasonable royalty).

65. An examination of the inventor-as-hero phenomenon would hardly be complete without at least passing reference to the war of the windshield wipers, pitting Robert Kearns against the automobile industry. In *Kearns v. Chrysler Corp.*, 32 F.3d 1541 (Fed. Cir. 1994), one of Kearns' many cases, Kearns had prevailed on a claim against Chrysler for damages for Chrysler's past infringement, but additionally sought to have Chrysler enjoined from producing the infringing products for a predetermined future period, even though the infringed patents had expired. The post-expiration injunctive relief, Kearns reasoned, compensated him for the loss of true "exclusivity" under his patents. *Id.* at 1549. The Federal Circuit expressed sympathy with Kearns' complaint "that his patents have expired without his ever being able to exclude others from practice of his invention, especially since he is an individual inventor contending with a multitude of giant corporations," but refused the requested relief. *Id.* at 1550-51; *see also id.* at 1551 n.11 (adding that "[t]he fact that Kearns has fired several of his attorneys and attempted to conduct massive multiple suits *pro se* may be relevant to his dilemma").

66. An oft-cited source in the early 1960s literature on the role of independent inventors at that time is JOHN JEWKES ET AL., *THE SOURCES OF INVENTION* 223-25 (1958) (concluding that even as of the mid-twentieth century, inventors working independently of large organizations were still contributing significantly to technological progress); *see also* WILLIAM B. BENNETT, *THE AMERICAN PATENT SYSTEM: AN ECONOMIC INTERPRETATION* 197-98 (1943) (asserting that "it might be argued that the independent inventor assumes an ever greater importance as a larger portion of American patents spring from corporate research" because corporate research shuns risky, pioneering endeavors); GEORGE E. FOLK, *PATENTS AND INDUSTRIAL PROGRESS: A SUMMARY, ANALYSIS, AND EVALUATION OF THE RECORD ON PATENTS OF THE TEMPORARY NATIONAL ECONOMIC COMMITTEE* 144-66 (1942) (summarizing testimony on the role of independent inventors in the 1940s U.S. economy and concluding that encouraging independent inventors should continue as a focus of the U.S. patent system).

67. Louis C. Hunter, *The Heroic Theory of Invention*, in *TECHNOLOGY AND SOCIAL CHANGE IN AMERICA* 25-46 (Edwin T. Layton ed., 1973) (noting the tendency of historians to attribute important technological innovations to individual heroic figures, when in fact such innovations routinely have come about through the collective efforts of multiple

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suspicion that the independent inventor motif may skew legislative policy debates.<sup>68</sup> Perhaps Federal Circuit judges should resolve to become more cautious about deploying heroic inventor rhetoric in opinions, or at least take a hard look at the argument that special rules or exceptions should apply to independent inventors, to better ensure that such claims rest on a legitimate policy basis rather than a literary tradition.<sup>69</sup>

In the context of patent reform through patent litigation, it may be difficult to evaluate how much influence to attribute to the heroic inventor motif. In the context of patent reform through the legislative process, however, the influence and pervasiveness of the motif are more easily

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contributors). Hunter uses the invention of the steamboat as an illustration of the phenomenon.

68. See, e.g., John C. Stedman, *The U.S. Patent System and Its Current Problems*, 42 TEX. L. REV. 450, 496 (1954) (arguing that while “[t]here are frequent assertions that small business needs the patent system and gets more protection from it than big business, and defenders of the patent system rarely have difficulty rounding up “small business” witnesses to testify whenever the patent system is under attack,” it remains unclear to what extent these assertions “are anecdotal rather than general, or based upon emotion rather than fact”).

69. While they are at it, it might also be advisable for judges to consider the potential emergence of a competing motif—the heroic infringer. Arguably, the *Cellpro* patent litigation qualifies as a narrative of this type. *Johns Hopkins Univ. v. Cellpro*, 978 F. Supp. 184 (D. Del. 1997). Judge McKelvie, opining on damages, wrote:

One element of the strategy CellPro has adopted in this battle has been to hold itself out as a warrior in a twentieth-century holy crusade. It claims it is out to advance science, to save lives, to fight cancer, and improve the human condition. If it infringed Dr. Civin’s patents, so it says, it was only to do good. That is the image CellPro seeks to project of itself in this litigation and elsewhere.

*Id.* at 196.

He proceeded to comment that while there is “some truth” to the image that CellPro sought to project, “[i]n other ways, however, this image is a facade constructed by the venture capitalists” who started CellPro. *Id.* Judge McKelvie was not amused, and imposed enhanced damages. CellPro offered its take on the litigation in a popular book, RICK MURDOCK & DAVID FISHER, *PATIENT NUMBER ONE: A TRUE STORY OF HOW ONE CEO TOOK ON CANCER AND BIG BUSINESS IN THE FIGHT OF HIS LIFE* (2000).

Law review commentary on the case focuses on the issue of march-in rights. Because a federally funded research project had generated the inventions claimed in the Johns Hopkins patents, those patents were potentially subject to compulsory licensing under the “march-in” rights provisions of 35 U.S.C. § 203(1). Cellpro petitioned the federal funding agency (the NIH) to exercise march-in rights, but the NIH declined after extensive administrative review. See generally Tamsen Valoir, *Government Funded Inventions: The Bayh-Dole Act and the Hopkins v. Cellpro March-in Rights Controversy*, 8 TEX. INTELL. PROP. L.J. 211 (2000); Barbara M. McGarey & Annette C. Levey, *Patents, Products, and Public Health: An Analysis of the CellPro March-In Petition*, 14 BERKELEY TECH. L.J. 1095 (1999).

demonstrated. Commentaries and legislative studies on U.S. patent law reform in the mid-twentieth century periodically acknowledged the interests of independent inventors, generally focusing on the cost and complexity of patent prosecution and litigation.<sup>70</sup> A mid-1950's legislative report<sup>71</sup> acknowledged the obstacles faced by independent inventors,<sup>72</sup> and concluded that:

the individual inventor . . . performs a vital and important function. The patent system is designed to encourage this type of inventor, and the patent statutes, Patent Office administration, and the patent system as a whole must be considered, and improved where necessary, in the light of this purpose.<sup>73</sup>

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70. See, e.g., FLOYD VAUGHAN, THE UNITED STATES PATENT SYSTEM 265, 261-84 (1956) (identifying the expense of interference proceedings and litigation among the defects of the patent system that might frustrate the efforts of independent inventors); A.J. Hayes, *The Independent Inventor's Interest*, 47 J. PAT. OFF. SOC'Y 298, 303 (1965) (questioning rules for ownership of employee inventions and asserting that patent administration must be kept "as inexpensive and simple as possible"); David Rines, *Do We Need a Patent System?*, 51 J. PAT. OFF. SOC'Y 501 (1969) (answering yes, and lamenting that the expense of patent litigation might discourage independent inventors from disclosing their inventions via the patent system).

A relevant legislative study is STAFF OF THE SENATE SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF THE COMM. ON THE JUDICIARY, 86TH CONG., INDEPENDENT INVENTORS AND THE PATENT SYSTEM (Comm. Print 1961) (C.D. Tuska, author) (attempting to gauge the patent activities of various independent inventors through a largely inscrutable analysis of selected tax cases involving licensing royalties and the like).

For commentary of more recent vintage, but in this same tradition, see Donald Grant Kelly, *America's Inventors Have Arrived (And We Thought They Were "Invisible.")*, 80 J. PAT. & TRADEMARK OFF. SOC'Y 601 (1998), describing progress on "inventor-friendly" patent legislation proposals.

71. REVIEW OF THE AMERICAN PATENT SYSTEM, S. REP. NO. 84-1464 (1956).

72. The report related that:

The subcommittee heard an almost unanimous chorus of dissatisfaction from individual inventors. The normal market, investment, and business hazards attending any innovation—whether a new product, a new machine, or a substantive improvement—are already so large that the additional and . . . as they see it, unnecessary administrative and judicial hazards now incurred in securing and protecting a patent represent the straw that breaks the camel's back.

*Id.* at 2.

73. *Id.*

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Similarly, in *Small Business and the Proposed Patent Reform Act of 1967*,<sup>74</sup> one commentator identified several proposed reforms that would disadvantage independent inventors, including first-to-file provisions,<sup>75</sup> early publication coupled with pre-grant opposition and post-grant revocation,<sup>76</sup> and the proposed elimination of the 35 U.S.C. § 102(b) grace period.<sup>77</sup> A reform that would have afforded applicants the option to file “preliminary” applications (comparable to provisional applications under current U.S. law) likewise came under fire.<sup>78</sup>

In some instances, pressure on behalf of independent inventors has led directly to proposals, and sometimes legislation, expressly alleviating burdens of independent inventors. Perhaps the most obvious example is legislation providing that qualified “small entities” can receive reductions in government fees associated with patent prosecution.<sup>79</sup> Other recent initiatives have included proposals for subsidizing foreign patent filings<sup>80</sup> and fee-shifting for patent litigation against the federal government.<sup>81</sup>

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74. William E. Schuyler, Jr., *Small Business and the Proposed Patent Reform Act of 1967*, 36 GEO. WASH. L. REV. 122 (1967).

75. Schuyler argued that first-to-file provisions would force inventors to file earlier and more often, purely for defensive purposes. *Id.* at 125-26. Presumably this would generate increased patent prosecution costs, the burden of which would fall hardest on small business.

76. Pre-grant oppositions would contribute to delay in patent issuance. *Id.* at 127. In general, according to Schuyler, opposition and revocation proceedings favored the well-heeled—those having the resources to monitor published patent applications routinely so as to identify targets for oppositions, to initiate opposition proceedings, and to respond when subjected to such proceedings on one’s own applications. Small business lacked the resources to monitor and to initiate proceedings, but was likely to be subjected to such proceedings. *Id.* at 132-33.

77. *Id.* at 131-32 (arguing that the lack of a grace period would be particularly problematic for small business because they are least likely to consult a patent lawyer until after some development effort—and valuable time—has been invested).

78. *Id.* at 129-30 (offering the familiar argument that the provisional application might not contain an adequate description to support claims in a subsequent regular application, exposing the applicant to possible invalidating intervening prior art). Of course, this would be equally true for large and small-entity applicants, assuming no disparity in the quality of counsel preparing the provisional application.

79. *See* 35 U.S.C. § 41 (1994) (providing for a reduction in fees for independent inventors and other qualifying entities); 37 C.F.R. §§ 1.9, 1.27, 1.28 (1999) (procedures for establishing entitlement to reduced fees and correcting pertinent errors). The relevant regulations recently have been amended to simplify claims to small entity status. *See* 65 Fed. Reg. 54659 (2000); *see also* DH Tech., Inc. v. Synergystex Int’l, 154 F.3d 1333 (Fed. Cir. 1998) (vacating and remanding district court ruling that a patent was unenforceable where the patentee had erroneously paid small entity fees).

80. The “SBIR and STTR Foreign Patent Protection Act of 2001.” *See Legislation/Patents: Bill Would Fund Patent Costs of Small Businesses*, 62 PAT. TRADEMARK &

In other instances, it appears that lobbying efforts on behalf of independent inventors has materially affected more general patent legislation. For example, provisions on the publication of pending patent applications 18 months after filing, enacted as part of the 1999 reform package,<sup>82</sup> allow applicants to opt out of the publication regime if they certify that they have not and will not file foreign applications in jurisdictions requiring publication 18 months after filing.<sup>83</sup> These provisions bear the unmistakable influence of lobbying on behalf of independent inventors.

That lobbying effort included liberal reference to the heroic inventor. For example, William P. Parker, President of the Vermont Inventors Association, testified on disadvantages of the early publication provisions:

[O]thers are able to view and assess an innovation before the actual inventor can either commercialize it or even know if it will be granted a patent. For a large corporation with a legal staff and financial resources, such early review poses no threat. But for the individual inventor, early publication can lead to ruin. Often he will have spent five years of his life between conceiving the idea and acquiring a patent. He uses the money that might have been spent on a car, a house, or his child's education to bring his idea to fruition. Unlike the corporation, he has no budget for legal

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COPYRIGHT J. (BNA) 369 (Aug. 17, 2001) (reporting on S. 1323, introduced August 2, 2001). SBIR refers to the Small Business Innovation Research program; STTR refers to the Small Business Technology Transfer program. The bill would offer grants for foreign patent filings, in exchange for a portion of royalties. *See also* J. Douglas Hawkins, *Importance and Access of International Patent Protection for the Independent Inventor*, 3 U. BALT. INTELL. PROP. L.J. 145, 146 (1995) (asserting that the independent inventor "is still responsible for a disproportionate amount of input in the invention process" and arguing that fees for PCT filings must be controlled to facilitate the acquisition of foreign patent protection by independent inventors).

81. JUST COMPENSATION OF PATENT OWNERS FOR UNLICENSED USE BY UNITED STATES, H.R. REP. NO. 104-373 (1995) (accompanying H.R. 632, whose purpose was "to help small business, independent inventors and nonprofit organizations recover the legal costs associated with defending their patents when the Federal government is found liable for taking them," *e.g.*, under application of 28 U.S.C. § 1498(a)).

*See also Patent Law Revision Part 2: Hearing before the Subcomm. on Patents, Trademarks and Copyrights of the Comm. on the Judiciary*, 90th Cong. 616 (1968) (statement of Henry J. Cappello, NSBA consultant) (proposing establishment of a special patent litigation fund to defray attorney's fees for independent inventors initiating patent infringement actions).

82. *E.g.*, 35 U.S.C. § 122(b) (Supp. 2001) (addressing publication); *id.* § 154(d) (addressing provisional rights to compensation for unauthorized exploitation of inventions claimed in published patent applications).

83. *Id.* § 122(b)(2)(B)(i).

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counsel should his idea be stolen. The rules for publication must reflect this discrepancy.<sup>84</sup>

Early publication, according to Parker, might unwittingly confer a substantial benefit on “idea thieves.” Upon early publication of a patent application claiming a commercially valuable invention:

[t]he idea-thieves can make money from the idea before the patent even issues and when they are challenged, are in a better position financially to defend themselves than the legitimate owner. Worse, if this party is in a foreign country or is a large corporation, then the inventor’s recourse is virtually hopeless.<sup>85</sup>

Testimony from the 1990 legislative debate addressing the impact of proposed patent law reforms on independent inventors and small business was among the most caustic in recent memory.<sup>86</sup> Congress’ response ex-

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84. *The Omnibus Patent Act of 1997: Hearings on S. 507 and H.R. 400 (S. Hrg. 105-95) Before Comm. on the Judiciary*, 105th Cong. 49 (1997).

85. *Id.* Parker proceeded to recommend that the individual inventor have the option to withhold publication if the application was not being submitted overseas, and urged that “[e]arly publication would be more acceptable to individual inventors if it occurred 3 months after the second office action.” *Id.* Parker also argued that a provisional rights provision giving inventors a right to collect a royalty for unauthorized use of a published application would not adequately compensate the individual inventor (because he envisions a scenario where multiple unlicensed competitors flood the market and undermine the true inventor’s marketing strategy). Provisional rights provisions giving the inventor the right to collect “substantial” damages would be more acceptable.

86. See, e.g., *Impact on U.S. Exporters of the New GATT Patent Accord: Hearing Before the Subcomm. On International Economic Policy and Trade of the House Comm. on International Relations*, 104th Cong. (1995), which included discussion of an agreement between Ron Brown, then the Secretary of Commerce, and Japanese officials under which the Clinton administration agreed to press for certain U.S. patent reforms (including early publication of patent applications and reexamination reform) while the Japanese would institute certain reforms to the Japanese patent system. David L. Hill, President of the “Patent Enforcement Fund, Inc.,” likened early publication and reexamination reform as memorialized in the bilateral agreement to “an attack on the U.S. economy which in the long-term would be comparable to the military attack from Japan at Pearl Harbor.” *Id.* at 2; see also *id.* at 68-77 (appending to Hill’s prepared statement an article, entitled *The Putsch to Enfeeble the Independent U.S. Inventor*, characterizing proposals for early publication, reexamination reform, and first-to-file as being “targeted to weaken the position of the independent inventor” and thereby undermine the U.S. economy); *id.* at 98-109 (written statement of Ronald J. Riley, Advisory Board President, Alliance for American Innovation, similar in tone and content); *Changes in U.S. Patent Law and Their Implications for Energy and Environment Research and Development: Hearing before the Subcomm. On Energy and Environment of the House Comm. on Science*, 104th Cong. 197 (1996) (quoting the statement of Salvatore J. Monte, executive of a specialty chemical

tended beyond compromising the publication regime. In a rather transparent gesture that sought, perhaps, to mollify independent inventors, Congress labeled the reform package the American Inventors Protection Act of 1999, even though it contained numerous reforms that independent inventors opposed.<sup>87</sup> Moreover, the Act commenced with a title on “Inventor’s Rights,” concerning restrictions on Invention Promotion businesses, which had attained a notorious reputation for preying on independent inventors.<sup>88</sup>

Sympathy for the plight of the independent inventor also motivates proposals for second tier patent systems in various parts of the world.<sup>89</sup> Second tier systems generally promise less cumbersome pre-grant procedures, which entail correlative savings in time and cost, little or no substantive pre-grant examination, and softened patentability requirements (particularly a diminished threshold for obviousness).<sup>90</sup>

In the new Australian “Innovation Patent” regime (“IP Australia”), one example of a second tier regime, applicants can file applications and pay relevant fees online. IP Australia represents that most innovation patents will be granted within one month of application filing.<sup>91</sup> All of this, according to IP Australia, is “designed to suit the needs of Australian small

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company: “Laying open patents after 18 months opens the small inventor to patent flooding tactics and challenges from deep-pocketed Japanese industrial cartels”).

87. Some found irony here. *E.g.*, Phyllis Schlafly, *Don’t Fall for Phony Patent Reform*, at <http://www.inventionconvention.com/inventorsvoice/urgentalerts/080199schlafly.html> (last visited Dec. 20, 2001). Schlafly notes:

This bill is called the American Inventors Protection Act, but should be called the Inventors Elimination Act. The independent inventors would be squeezed out and their inventions stolen from them, all for the benefit of the foreigners and the giant corporations.

*Id.*

88. The relevant provision is now codified at 35 U.S.C. § 297 (1994) (imposing disclosure requirements on “invention promoters,” recognizing a civil cause of action for customers who are defrauded by such promoters, and providing optional statutory damages in such civil actions).

89. *See generally* Mark D. Janis, *Second Tier Patent Protection*, 40 HARV. INT’L L.J. 151 (1999) (criticizing second tier patent proposals). *But cf.* Uma Suthersanen, *Incremental Inventions in Europe: A Legal and Economic Appraisal of Second Tier Patents*, 2001 J. BUS. L. 319 (offering a cautiously optimistic assessment).

90. An example is the Australian “Innovation Patent.” *See* Anne Duffy, *Australia: Patents—Patents Amendment (Innovation Patents) Act 2000*, 23(4) EUR. INTELL. PROP. REV. N37-39 (2001) (describing the legislation as enacted); Janis, *supra* note 89, at 167-73 (describing relevant proposals).

91. *The Innovation Patents Kit*, at [http://www.ipaustralia.gov.au/patents/-P\\_innvopat\\_about.htm](http://www.ipaustralia.gov.au/patents/-P_innvopat_about.htm) at 3 (last visited Mar. 30, 2002).

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to medium sized enterprises (“SMEs”) and individuals and help reduce the risks involved in research and development.”<sup>92</sup>

In debating second tier patent regimes, modern patent policymakers are, no doubt unwittingly, invoking Dickens. At the conclusion of *A Poor Man’s Tale*, Dickens’ protagonist, Old John, is bidding goodbye to his carpenter friend, Thomas Joy, when Thomas Joy delivers a full-fledged legislative proposal for a second tier patent system:

Thomas said to me, when we parted, ‘John, if the laws of this country were as honest as they ought to be, you would have come to London—registered an exact description and drawing of your invention—paid half-a-crown or so for doing of it—and therein and thereby have got your Patent.’ My opinion is the same as Thomas Joy.<sup>93</sup>

One cannot help but expect that patent law reform debates will continue to revert periodically to narratives about the heroic inventor.

### III. THE ABOLITIONIST MOVEMENT: ESSENTIAL THEMES AND THEIR MODERN COUNTERPARTS

Following the passage of the 1852 Act,<sup>94</sup> patent reform efforts gradually transformed into a full-fledged movement emphasizing patent law abolition over patent law reform. The patent abolitionist debate caught the attention of a wide range of interests, among them patent professionals, academics, inventors, and business owners.<sup>95</sup> One can capture the flavor of the debate, if not its full political complexity, by viewing it as a dialogue between leading figures: Robert Macfie, an ardent abolitionist, and Hindmarch and Webster, a pair of patent lawyers who supported reform, but opposed abolition.<sup>96</sup>

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92. *Id.* at 4. In previous work, I have expressed doubts about these claims. See Janis, *supra* note 89, at 178-88 (questioning whether second tier systems will enhance independent inventor potential to obtain meaningful, enforceable patent rights).

93. PHILLIPS, *supra* note 22, at 21.

94. The approach of the Great Exhibition of 1851 gave added urgency to the patent law reform agenda of 1850-51. *E.g.*, COULTER, *supra* note 14, at 39. For general background on the Great Exhibition, see, e.g., JEFFREY A. AUERBACH, *THE GREAT EXHIBITION OF 1851* (1999). For an interesting brief account focusing on international trade implications, see John Kemper, *Internationalism and the Search for a National Identity: Britain and the Great Exhibition of 1851* (2000), at <http://www.stanford.edu/group/w1/Spring2000/exhibition/paper.htm> (last visited Jan. 9, 2002).

95. *E.g.*, COULTER, *supra* note 14, at 91-92.

96. While it might be supposed that the debate would have pitted abolitionists against defenders of the status quo (rather than abolitionists versus reformers), in fact

Robert Andrew Macfie, a sugar refiner who also served in the House of Commons during part of the time period when abolition was being debated,<sup>97</sup> was single-handedly responsible for a good share of the pro-abolition literature,<sup>98</sup> and a good share of invective about the patent system.<sup>99</sup> Hindmarch, a leading patent law commentator<sup>100</sup> and barrister, pub-

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there were few defenders of the status quo. *See, e.g.*, Victor M. Batzel, *Legal Monopoly in Liberal England: The Patent Controversy in the Mid-Nineteenth Century*, 22 BUS. HIST. 189, 190 (1980).

97. *Id.* at 59-60 (describing Macfie's sugar manufacturing interests); *id.* at 136 (telling of Macfie's election to the House of Commons in 1868); *id.* at 160 (relating Macfie's unsuccessful bid for re-election in 1874, when Disraeli's conservative government came into power).

98. Included among Macfie's compendious bibliography on the subject of patent reform are numerous original writings and compilations of others' works. *See* ROBERT ANDREW MACFIE, COPYRIGHT AND PATENTS FOR INVENTIONS: PLEAS AND PLANS FOR CHEAPER BOOKS AND GREATER INDUSTRIAL FREEDOM, WITH DUE REGARD TO INTERNATIONAL RELATIONS, THE CLAIMS OF TALENT, THE DEMANDS OF TRADE, AND THE WANTS OF THE PEOPLE (1879) (2 vols.) (collecting excerpts from many sources) [hereinafter MACFIE, COPYRIGHT AND PATENTS]; ROBERT ANDREW MACFIE, RECENT DISCUSSIONS ON THE ABOLITION OF PATENTS FOR INVENTIONS IN THE UNITED KINGDOM, FRANCE, GERMANY AND THE NETHERLANDS (1869) (collecting letters, papers, and speeches by Macfie and others) [hereinafter MACFIE, RECENT DISCUSSIONS]; ROBERT ANDREW MACFIE, THE PATENT QUESTION UNDER FREE TRADE: A SOLUTION OF DIFFICULTIES BY ABOLISHING OR SHORTENING THE INVENTORS' MONOPOLY, AND INSTITUTING NATIONAL RECOMPENSES (1864) [hereinafter MACFIE, PATENT QUESTION] (incorporating Macfie's 1863 report to the Congress of the Association for the Promotion of Social Science, as well as extracts from various works authored by others).

Of related interest is ROBERT ANDREW MACFIE, FREE-TRADE IN MANUFACTURES (2d ed. 1881) (compilation of materials from various sources). The full title gives a glimpse of Macfie's characteristic style and tone: CRIES IN A CRISIS, ANENT FREE-TRADE IN MANUFACTURES SHATTERED BY CONCESSIVE TREATIES AND AGGRESSIVE BOUNTIES THAT FAVOUR FOREIGN AIMS UPON OUR INDUSTRIES AND SHIPPING: AND ANENT THE EMPIRE AND EMIGRATION, PARLIAMENT AND ITS PROCEDURE.

99. According to Macfie:

I am sure that nobody can go over the evidence . . . without becoming convinced that the trade and manufactures of this country are seriously obstructed, fettered, retarded, harassed, and burdened, sometimes demoralised, often wronged, or even robbed, by the multitude and vexatious character of Patents . . .

MACFIE, RECENT DISCUSSIONS, *supra* note 98, at 61.

In similar tones, Macfie quotes a paper presented by J. Stirling, entitled "Patent Right," as proclaiming that "[t]he whole history of Patents is a long-continued story of litigation and disappointment; and the more admirable the invention, the greater is the certainty of difficulty and loss." MACFIE, RECENT DISCUSSIONS, *supra* note 98, at 121.

The *piece de resistance* comes from Lord Granville, who is supposed to have remarked in the Upper House in 1851 that:

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lished a slim volume in 1851 specifically devoted to patent law reform.<sup>101</sup> Webster, another barrister, was also a prominent treatise writer<sup>102</sup> and took a substantial role in abolition debates.<sup>103</sup>

The patent abolitionism debate in Britain took place predominantly from the 1860s to the early 1870s. The National Association for the Promotion of Social Science, formed in 1857, held annual congresses which regularly featured addresses, papers, and debates on patent law reform and abolition. Macfie and Webster figured prominently in such debates, which extended over a period of some fifteen years.<sup>104</sup> Abolitionists eventually succeeded in taking their case to Parliament, which formed numerous study committees during the period. From 1875 until the passage of the 1883 Act, Parliament debated a multiplicity of legislative reform packages.<sup>105</sup> The movement gradually lost its abolitionist character and became, again, a reform movement,<sup>106</sup> due in part to the onset of a severe economic depression.<sup>107</sup>

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The only persons who derive any advantage from the law of Patents are the lawyers. Except, perhaps, warrants for horses, there is no subject which gives such an opportunity for roguery as the Law of Patents.

MACFIE, RECENT DISCUSSIONS, *supra* note 98, at 212-213.

100. *See* HINDMARCH, *supra* note 16.

101. *See* HINDMARCH, *supra* note 25.

102. *See* WEBSTER, *supra* note 16; *see also* THOMAS WEBSTER, ON PROPERTY IN DESIGNS AND INVENTIONS IN THE ARTS AND MANUFACTURES (London, Chapman and Hall 1853); THOMAS WEBSTER, THE LAW AND PRACTICE OF LETTERS PATENT FOR INVENTIONS: STATUTES, PRACTICAL FORMS, AND DIGEST OF REPORTED CASES (1841), *microformed on 19th-Century Legal Treatises*, Fiche 55,281-55,282 (Research Publications Int'l).

103. The intellectual property bar, a major force in modern U.S. patent policy debates, organized in Britain beginning in the early 1880s, too late to influence the abolitionist debate, although individual lawyers such as Webster certainly made themselves heard. *See* COULTER, *supra* note 14, at 133.

104. *Id.* at 111-13.

105. *Id.*

106. COULTER, *supra* note 14, at 160-61 (asserting that while organizations continued to apply pressure for patent abolition into the 1870s, abolitionist fervor in the Parliament dissipated gradually by the mid-1870s).

107. DUTTON, *supra* note 1, at 29 (asserting that with the onset of the mid-1870s Great Depression and the “emergence of protectionism,” the patent abolitionist movement suddenly collapsed; “intense international rivalry now made the patent system perfectly respectable once more”). Coulter sees the decline of the abolitionist movement as more gradual. COULTER, *supra* note 14, at 160-61.

For discourse concerning the Great Depression of the mid-1870s (and the debate among economists as to whether it really existed), see LEWIS C.B. SEAMAN, VICTORIAN ENGLAND: ASPECTS OF ENGLISH AND IMPERIAL HISTORY 1837-1901, at 262-79 (1973), commenting on the existence of a “Great Depression” in the British economy beginning

Just as it drew in a wide range of interested parties, the patent abolition debate also encompassed a wide range of substantive patent issues, three of which are particularly relevant to modern patent reform. The first concerns alleged defects in the judicial administration of the patent system, especially the role of juries and the use of generalist judges in patent litigation.<sup>108</sup> The second involves baseline philosophical justifications for the granting of patent rights, juxtaposing natural rights against utilitarianism.<sup>109</sup> Finally, the third involves the intersection between patents and international trade, extending both to “free trade” arguments and to primitive steps towards patent law harmonization.<sup>110</sup>

#### A. Judicial Administration: The Jury and Specialized Courts

Many of the high-profile patent cases of the past decade have centered around fundamental disputes over the judicial administration of the patent system.<sup>111</sup> Two classes of disputes have occupied center stage in the mod-

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in about 1873, and SIDNEY POLLARD, *BRITAIN’S PRIME AND BRITAIN’S DECLINE: THE BRITISH ECONOMY 1870-1914*, at 241-43 (1989), discussing political dimensions of the late 19th century British depression.

108. See *infra* Part III.A.

109. See *infra* Part III.B.

110. See *infra* Part III.C. Utilitarianism and free trade have been called “the two dominant ideologies of the mid-Victorian era.” COULTER, *supra* note 14, at 73.

111. That the jury issue has preoccupied modern patent jurists hardly need be recounted. From *Lockwood*, to *Markman*, to *Hilton Davis*, and now—less directly—in *Festo*, the Federal Circuit has been locked in a battle over the extent to which the jury should participate in the patent system. *In re Lockwood*, 50 F.3d 966, 976 (Fed. Cir. 1995), *vacated by* 116 S.Ct. 29 (1996); *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995), *aff’d* 517 U.S. 370 (1996); *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512 (Fed. Cir. 1995), *rev’d*, 520 U.S. 17 (1997); *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 558 (Fed. Cir. 2000).

Scholarly commentary has been abundant. A very small sample of relevant articles treating various aspects of the general problem includes, for example, Kenneth R. Adamo, *Reforming Jury Practice in Patent Cases: Suggestions Towards Learning to Love Using an Eighteenth Century System While Approaching the Twenty-First Century*, 78 J. PAT. & TRADEMARK OFF. SOC’Y 345 (1996); Mark D. Janis, *Judge and Jury Roles in Equivalents Analysis, Commentary on Malta v. Schulmerich Carillons*, 74 J. PAT. & TRADEMARK OFF. SOC’Y 621 (1992); Allen N. Littman, *The Jury’s Role in Determining Key Issues in Patent Cases*, 37 IDEA 207 (1997); Michael A. Sartori, *An Economic Incentives Analysis of the Jury’s Role in Patent Litigation*, 79 J. PAT. & TRADEMARK OFF. SOC’Y 331 (1997); Philippe Signore, *On the Role of Juries in Patent Litigation (Part I)*, 83 J. PAT. & TRADEMARK OFF. SOC’Y 791 (2001).

The Federal Circuit has also taken the topic up at its judicial conferences. *E.g.*, *The Fourteenth Annual Judiciary Conference of the United States Court of Appeals for the Federal Circuit*, 170 F.R.D. 534, 598-620 (1996) (discussing the challenges raised by the use of juries in patent trials); see also Paul R. Michel & Michelle Rhyu, *Improving Patent Jury Trials*, 6 FED. CIR. B.J. 89 (1996) (providing a judicial perspective).

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ern reform debate: (1) the role of the jury in patent litigation, particularly as to enforcement issues; and (2) the efficacy of the Court of Appeals for the Federal Circuit—more generally, the desirability of creating “expert” tribunals for patent cases and their proper roles in the federal judiciary. Documents from the British patent controversy illustrate that, by the middle of the nineteenth century, patent scholars were already debating these same issues of judicial administration—identifying similar problems and proposing similar solutions.

In 1851, Hindmarch reported that “[m]any persons obtain an opinion that the courts of law of this country are not fitted to determine questions respecting patent rights.”<sup>112</sup> This objection to the efficacy of the “courts of law” may be attributed to the competency either of judges to decide the relevant questions of patent law, of juries to decide relevant questions of technological fact, or both. Some reformers found fault with the judges, and contended “that peculiar tribunals ought therefore to be erected with exclusive jurisdiction over all suits respecting patents.”<sup>113</sup> Webster also noted the division over the question of specialized tribunals, and implied that he favored them. Sounding remarkably like a modern-day commentator on the relationship between district courts and the Federal Circuit in modern U.S. patent matters, Webster observed:

Concerning litigation on patents, opinion is divided between a special tribunal or some modification of the existing system. It may be observed, that the real trial of a patent case lies in the court of appeal, and the chief question remaining is the mode of trial at the preliminary stage, so as best to ascertain the facts for the consideration of the court.<sup>114</sup>

Hindmarch disagreed, asserting that judges had performed capably in resolving legal questions in patent cases,<sup>115</sup> and blaming juries instead for the inefficacy of the courts. According to Hindmarch, “there can be no

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112. HINDMARCH, *supra* note 25, at 19.

113. *Id.*

114. TRANSACTIONS OF THE NATIONAL ASSOCIATION FOR THE PROMOTION OF SOCIAL SCIENCE 886 (1863) (George W. Hastings, ed.) [hereinafter NAPSS TRANSACTIONS 1863] (reporting Webster’s oral comments).

115. HINDMARCH, *supra* note 25, at 19 (“The complaint . . . cannot apply to the mode in which *the law* respecting patent privileges has in modern times been expounded by our judges, for they have uniformly given the most favourable interpretation to the law of which it was capable in favour of the rights of patentees; and although there have long been many acknowledged defects in the law, the legislature alone could apply the necessary remedies.”).

doubt that juries are rarely, if ever, found to be fully competent”<sup>116</sup> to decide the fact questions in patent cases. Jury incompetence sprang both from intrinsic factors and the jury’s probable lack of education: “In the absence of a thorough understanding of the facts brought before them in [patent] cases, juries are too prone to be swayed more by appeals to their feelings and prejudices than by their reason. . . .”<sup>117</sup> However, Hindmarch seemed unwilling to accept the proposition that juries would never be competent to handle patent cases. He thought that the “unfitness” of juries arose from “the limited nature of the education of the people, more particularly as to matters of science and art,”<sup>118</sup> and contended that as education on such subjects became “more and more general,” juries would become better suited to decide cases involving technological facts.<sup>119</sup>

If some found fault with judges, others found fault with experts. The following exchange between Macfie and Webster, before a House of Commons committee in 1871, illustrates Webster’s skepticism about the usefulness of expert witnesses:

Macfie: You have told the Committee in very apt language, that at present a trial [in a patent case] is a speculation on the ignorance of the judge and jury; have you any cases that would illustrate that?

Webster: I think almost every case, where there is any complication at all in an invention, which requires experts to explain it to the judge and jury, is a speculation, because you have the plaintiff starting with a number of scientific witnesses, and there is a kind of practical difficulty in the defendant’s way, if he does not call the same number of scientific witnesses . . . The present system has this great vice in it, that it allows witnesses to give evidence with regard to matters of opinion rather than matters of fact; and that would be checked at once by a judge with skilled assessors . . .<sup>120</sup>

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116. *Id.*

117. *Id.*

118. *Id.*

119. *Id.*

120. 2 MACFIE, COPYRIGHT AND PATENTS, *supra* note 98, at 374 (reprinting extracts from the 1871 Report of the Committee of the House of Commons on Letters Patents). See also the comments of Sir Roundell Palmer, who advocated outright abolition of the British patent system:

## PATENT ABOLITIONISM

Arguments about the cost of patent trials paralleled arguments about competency. As Hindmarch reported, other commentators cited the “great expense” of patent trials as another reason for creating patent tribunals separate from the general courts of law.<sup>121</sup> Hindmarch recognized a fundamental problem with both the competency and cost arguments: even if they were valid, they could not be confined to patent cases alone.<sup>122</sup> Even in the nineteenth century, other types of civil cases involved complex factual questions.

These issues appeared prominently in the U.S. patent reform agenda for a century and a half following the British patent controversy. The project to create a patent-focused court of appeals in the United States endured for nearly a century, and stands as perhaps the most commonly repeated reform suggested in the entirety of the twentieth century patent reform literature.<sup>123</sup> The debate continues today over the success of the Fed-

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In dealing with Patent cases in a court of law there was generally a vast array of witnesses to be examined, consisting of mechanics, chemists, and scientific men of all sorts on one side and the other. Then there were the jury, who knew nothing of the subject, and the judge, who might be placed in a worse position, because he might imagine he understood all about it when he did not. . . . [I]t might very easily happen that an ingenious professional witness might so argue the case under the form of giving evidence as to lead the judge to think that he really knew all about it when such was not in reality the fact.

MACFIE, RECENT DISCUSSIONS, *supra* note 98, at 107.

121. HINDMARCH, *supra* note 25, at 20. Hindmarch expressed skepticism that the creation of an alternative, expert tribunal for patent cases would reduce the costs of patent litigation. *See id.* at 21 (“[T]hose who advocate the institution of a special tribunal . . . seem to forget that the expense of it would be great; probably much more in proportion to the business to be done, than the total amount of costs in patents actions tried in our courts of law . . .”).

122. *Id.* at 20. (stating that “the great expense of law proceedings is not confined to patent suits: and patentees have no greater claim for relief in this respect than many other classes of persons”).

123. The literature on this issue is immense. For an exhaustive survey of legislative efforts to create a patent court of appeals from 1887 through 1921, see STAFF OF THE SENATE SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF THE COMM. ON THE JUDICIARY, 85TH CONG., SINGLE COURT OF PATENT APPEALS—A LEGISLATIVE HISTORY 2-9 (1959) (Margaret M. Conway, author).

For scholarly commentary from the first half of the twentieth century, see, for example, Otto Raymond Barnett, *The Proposed Court of Patent Appeals*, 6 MICH. L. REV. 441 (1908); William H. Davis, *Proposed Modifications in the Patent System*, 12 LAW AND CONTEMP. PROBS. 796 (1947); Evan A. Evans, *Shall the United States Have a Special Patent Court of Appeals?*, 36 U. ILL. L. REV. 643 (1942); Charles F. Meroni, *Comments and Observations Concerning Recommendations in Report of the National Patent Planning Commission*, 26 J. PAT. OFF. SOC’Y 117 (1944); Edwin J. Prindle, *Pro-*

eral Circuit experiment, the role of the Supreme Court in the modern U.S. patent system, and the desirability of expert patent trial courts.<sup>124</sup>

Similarly, it is not difficult to find expressions of judicial discontent over the use of juries in U.S. patent cases over the entire course of the twentieth century. Consider the unmasked skepticism and air of resignation evident in the jury charge in this 1901 patent infringement case:

It is a very mistaken system of jurisprudence that leaves the decision of the issues of fact that arise in a patent case to a jury. In the very nature of things, it is extremely awkward and difficult, and many times practically impossible, for 12 laymen, untrained in the examination of the intricate questions which so frequently arise in patent causes, without any facilities for taking notes, and with no opportunity for the lengthened reflection which is frequently necessary to reach a wise conclusion in cases of this kind,—I say it is many times practically impossible for them to dispose of such questions.<sup>125</sup>

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*posal of a Single Court of Patent Appeals and Draft of a Bill Therefor*, 13 J. PAT. OFF. SOC'Y 438 (1931); Charles L. Reynolds, *In Favor of a Single Court of Patent Appeals*, 13 J. PAT. OFF. SOC'Y 596 (1931); Elliott J. Stoddard, *Comments on Mr. Lane's Letter as to the Bill for a Court of Patent Appeals*, 14 J. PAT. OFF. SOC'Y. 188 (1932); Fritz Von Briesen, *The Confusion of Patent Courts in the United States*, 5 THE BRIEF 358 (1905) (discussing the idea of a single court of patent appeals); Edmund Wetmore, *Patent Law*, 17 YALE L.J. 101 (1907); *Report of Patent Committee to National Research Council*, 1 J. PAT. OFF. SOC'Y 341 (1919); and William R. Woodward, *A Reconsideration of the Patent System as a Problem of Administrative Law*, 55 HARV. L. REV. 950 (1942). Cf. Wallace R. Lane, *Why a Single Court of Patent Appeals is Not Necessary*, 13 J. PAT. OFF. SOC'Y 569 (1931); Frank E. Liverance, *An Alternative for a Single Court of Patent Appeals*, 14 J. PAT. OFF. SOC'Y 816 (1932); Simon Rifkind, *A Special Court for Patent Litigation? The Danger of a Specialized Judiciary*, 37 ABA 425 (1951).

For more recent commentary, see sources cited in Mark D. Janis, *Patent Law in the Age of the Invisible Supreme Court*, 2001 U. ILL. L. REV. 387, 392 nn.22-28 (2001).

124. An example can be found in John B. Pegram, *Should There Be a U.S. Trial Court With a Specialization in Patent Litigation?*, 82 J. PAT. & TRADEMARK OFF. SOC'Y 765, 782-83 (2000) (proposing that the U.S. Court of International Trade be given subject matter jurisdiction over patent cases in parallel with existing jurisdiction in the district courts).

The U.K. has an ongoing experiment with expert patent tribunals of first instance, the Patents County Court. See John N. Adams, *Choice of Forum in Patent Disputes*, 17 EUR. INTELL. PROP. REV. 497 (1995) (discussing history of Patents County Court); Richard Price, *Patent Litigation In England—Quiet Revolution*, 17 EUR. INTELL. PROP. REV. 290 (1995) (noting early success and popularity of the Patents County Court).

125. *Int'l Tooth Crown Co. v. Hanks Dental Ass'n*, 111 F. 916, 917 (S.D.N.Y. 1901), *rev'd on other grounds*, 130 F. 1022 (2d Cir. 1904) (Circuit Judge Lacombe, charging jury).

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Ruling on a petition for mandamus, directing a district judge to reinstate jury demands in a patent infringement lawsuit, Judge Sobeloff of the Fourth Circuit expressed similar sentiments several decades later:

We are neither oblivious of nor insensitive to the contentions that the jury trial is a cumbersome and unwieldy mechanism for dealing with the complex factual settings and intricate legal framework of patent cases. We cannot dispute the assertion that the trial of all patent cases to juries would add significantly to the congestion of district court dockets.<sup>126</sup>

Judges have written frankly about the need to rein in juries in patent cases through post-trial motion practice:

The complex issues of validity, infringement, and accounting in patent cases do not often lend themselves today to proper determination by a lay jury, and it may frequently be necessary, in jury trials of patent cases, for the Court to set aside the jury verdict and render judgment *non obstante veredicto* in the interest of justice . . . . A lay jury . . . could become hopelessly lost in an attempt to resolve the more complex issues of a patent case involving complicated mechanical inventions.<sup>127</sup>

In a scattering of other cases, courts express these same general frustrations and seek a variety of solutions.<sup>128</sup>

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126. *Tights, Inc. v. Stanley*, 441 F.2d 336, 344 (4th Cir. 1971) (granting litigants' request for jury, albeit grudgingly).

127. *Railex Corp. v. Joseph Guss & Sons, Inc.*, 40 F.R.D. 119, 124-25 (D.D.C. 1966).

128. *See generally* *Dual Mfg. & Eng'g, Inc. v. Burriss Indus.* 619 F.2d 660, 667 (7th Cir. 1980) (remarking that the case "is an excellent illustration of the wisdom of this court's observation that 'members of the Patent Bar have wisely avoided jury trials in patent litigation'" and offering recommendations on the use of special verdicts on obviousness "because of the troublesome questions which seem to arise frequently where a complex patent case is submitted to a jury of lay people") (quoting *Panther Pumps & Eqpt. Co. v. Hydrocraft, Inc.*, 468 F.2d 225, 228 n.9 (7th Cir. 1972)); *General Tire & Rubber Co. v. Watkins*, 331 F.2d 192, 197-98 (4th Cir. 1964) (ruling no abuse of discretion to deny jury trial where party had waived rights, especially in view of "the technicalities involved in determining the issues of patent validity and infringement, the experience of the court in patent cases, the difficulties to be encountered in instructing a jury, and the doubtful ability of jurors with only ordinary experience to comprehend the complex issues and to reach a correct conclusion"); *Great Plains Chem. Co. v. Micro Chem., Inc.*, 549 F. Supp. 1348 (D. Colo. 1982) (asserting that "[t]his case is a monument to the risk of futility in asking a jury to decide a complex patent case" and referring to proposals to create a special patents court). *But cf.* *Medtronic, Inc. v. Catalyst Research Corp.*, 547 F. Supp. 401, 406 n.3 (D. Minn. 1982) (holding that jury's special verdict answers should be reviewed under the typical j.n.o.v. standard, but questioning whether detailed special verdict questions "would merely confuse the jury and further complicate

It should be sobering to modern-day patent law reformers that, one hundred and fifty years after the British patent controversy, basic normative questions about the allocation of adjudicative authority between judge and jury and the efficacy of expert tribunals remain unresolved. Claims that modern patented technology is too complex for juries to comprehend simply echo the claims of Webster, Hindmarch, and others from decades ago. Perhaps these claims have been correct all along, and policymakers have failed to fashion adequate responses. Perhaps, on the other hand, the lesson is that the jury system is more resilient than we sometimes think, and we should guard against overreacting to claims that particular new technologies are too complex for lay juries.

## B. Natural Rights v. Utilitarianism

Patent abolitionism cut to the core of the patent system. It stimulated a popular discussion over the fundamental philosophical justifications for the patent grant, and in many ways anticipated twentieth century theoretical scholarship on justifications for the patent system, ranging from debates over natural rights justifications, to “incentive to disclose” and “incentive to invent” theories, reaching even to discussions of reward systems versus property rights systems. As detailed below, the patent abolitionist movement thus has made a substantial intellectual contribution to modern patent law reform.<sup>129</sup>

### 1. Natural Rights Justification

It was necessary for Macfie to rebut moral rights justifications for patents<sup>130</sup> in order to present a convincing case for abolition of the patent system.<sup>131</sup> Presumably unwilling to take on the entrenched Continental vision of a moral rights justification for copyright, Macfie made his attack indi-

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verdict questions “would merely confuse the jury and further complicate their task” and asserting that “[t]he problem of submitting highly technical and complex questions—in any fashion—to a lay jury remains a peculiar difficulty in patent cases”).

129. For recognition of this contribution, see Fritz Machlup & Edith Penrose, *The Patent Controversy in the Nineteenth Century*, 10 J. ECON. HIST. 1 (1950). Scholarly treatments of the patent abolitionist movement are rare, and, to my knowledge, Machlup & Penrose is the only article to explore rigorously how pro- and anti-patent forces argued fundamental justificatory theories of the patent system. I need not repeat their analysis here; rather, in this brief section of the present article, I limit my analysis to a few pertinent observations, particularly on scholarly work that has been undertaken in the several decades since the Machlup & Penrose work.

130. I.e., that version of a natural rights argument holding that society has a moral obligation to recognize an inventor’s natural right in his or her invention.

131. *Id.* at 10 (articulating the moral rights argument); *id.* at 14 (noting that Macfie was a “severe critic of the theory of natural property rights in inventions”).

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rectly, simply expounding at length on the inherent differences between the creative arts—appropriately the objects of property under a natural rights regime according to Macfie—and inventions—to which no claim of property could be made merely as a matter of moral right. As Macfie summarized the argument:

Those things that belong to the province of patent right are in their nature capable of being independently discovered or originated, in the same identical form, by a plurality of persons . . . . It is otherwise with things that belong to the province of copy-right . . . .<sup>132</sup>

Advocates for the patent system, however, did not flock to the defense of the moral rights justification. Although others attributed to him the view,<sup>133</sup> Webster did not defend the patent system on a pure moral rights basis. Webster's paper on the "Patent Right" argued:

[T]hat, of all acquired rights, that of an inventor to his own creation may be most truly called his own; his claims being that of the first occupant, the foundation of all property. But when he has given his invention to the world, the right to restrain others from copying it is a matter of municipal regulation: in this country the grant of a patent is an act by grace of the crown, and it may be made on such conditions as the crown chooses.<sup>134</sup>

This was a conventional approach distinguishing between undisclosed ideas, which could belong to the idea holder as a matter of natural right, and disclosed inventions, the grant of exclusive rights to which was a matter of "the grace of the crown," and not of moral obligation.<sup>135</sup> There has been little effort since Webster and Macfie's day to revive a pure moral rights version of a natural rights justification for patents, particularly in the United States, in the face of the instrumental ambitions expressed in the U.S. Constitution.<sup>136</sup> The abolitionist literature remains pertinent today as

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132. Robert Andrew Macfie, *The Patent Question*, in TRANSACTIONS OF THE NATIONAL ASSOCIATION FOR THE PROMOTION OF SOCIAL SCIENCE 818, 821 (George W. Hastings ed., 1864).

133. Ringworth stated, in *Patent Law*, TRANSACTIONS OF THE NATIONAL ASSOCIATION FOR THE PROMOTION OF SOCIAL SCIENCE 884, 890 (George W. Hastings ed., 1863), "I must enter my protest against the whole theory laid down. I differ from those who think, like Mr. Webster, that there is any inherent right on the part of the inventor."

134. *Id.* at 885.

135. *Id.*

136. U.S. CONST., art. I, § 8, cl. 8 ("To promote the progress of . . . useful arts"). Cf. Adam Mossof, *Rethinking the Development of Patents: An Intellectual History 1550-1800*, 52 HASTINGS L.J. 1255 (2001) (asserting that the natural rights justification played

an expression of doubt as to the force of moral rights justifications for patent systems.

## 2. *Incentive to Disclose*

Having discarded the moral rights justification for patents, the abolitionists moved on to address instrumental justifications.<sup>137</sup> One of the justifications discussed frequently during the course of the abolition debate was whether, and to what extent, the patent grant provided an incentive to disclose inventions. Webster, not surprisingly, employed the disclosure function in defense of the patent system:

But as an inventor might, if he liked, keep his invention to himself, or practise it in secret, the object was to induce him to disclose it. If that system were done away with, then, instead of disclosure, we should have secret tribunals, of which we had now forgotten the history.<sup>138</sup>

Macfie acknowledged the legitimacy of the disclosure function,<sup>139</sup> but wondered whether the patent system was really inducing it. He speculated that many inventions, by their very nature, might be disclosed anyway upon legitimate commercialization,<sup>140</sup> and, of course, disclosure might be

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a more significant role in the early development of patent systems than contemporary scholars have acknowledged, and suggesting that natural rights arguments be accorded some respect in modern patent policy debates).

137. For a summary of instrumental justifications for the patent right as articulated in modern intellectual property theory, see, for example, Rebecca S. Eisenberg, *Patents and the Progress of Science: Exclusive Rights and Experimental Use*, 56 U. CHI. L. REV. 1017, 1024-30, 1036-44 (1989).

138. NAPSS TRANSACTIONS 1863, *supra* note 114, at 890. However, even Webster recognized the limitations of the incentive to disclose theory. Testifying before the House of Commons, he admitted that, “as a general rule, with reference to mechanical inventions, it is quite impossible” to maintain such inventions in secrecy because “the result shows the means.” 2 MACFIE, COPYRIGHT AND PATENTS, *supra* note 98, at 335 (transcribing extracts from Commons’ Committee’s Report of 1871, Mr. Webster’s Evidence). Webster elaborated:

The power of secrecy must be limited, I think, to chemical patents in this day. I do not think people can work much in closed rooms now-a-days, and we should scarcely ever have such a case as that of Crumpton of Nottingham making lace in a closed room, and people getting up to the windows to find out the process. . . .

*Id.*

139. MACFIE, PATENT QUESTION, *supra* note 98, at 23 (“The expediency . . . may be assumed of some means to stimulate the publishing or specifying of inventions.”).

140. This is one of several familiar objections to the incentive to disclose theory. See Machlup & Penrose, *supra* note 129, at 26 (cataloguing objections to the incentive to

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extracted by less conventional means. In response to the question, “[w]ould the absence of Patents for inventions, in your judgment, have any effect in producing secret trades . . . ?,” Macfie quoted one commentator as answering, “I know this, that no trade can be kept secret long; a quart of ale will do wonders in that way.”<sup>141</sup> Scholars continue to debate the extent to which patent systems induce disclosure, and it seems doubtful that any general answer is likely to emerge.

### 3. *Incentive to Invent*

Webster articulated the now-familiar incentive theory under which the patent grant supplies an incentive to invent, or invest in research and development, and an antidote to uncontrolled free-riding:

Who would go to the expense of making elaborate machines, of which patterns could be taken by any other person the next day? Without the patent laws, all these inventions could not subsist, as men could not be found to go the expense of starting them.<sup>142</sup>

The abolitionist response to this justification for the patent system was not especially satisfactory. Certainly, abolitionists would have experienced difficulty mustering a convincing argument that the patent system had retarded the progress of innovation (or even reduced its rate of acceleration), given the unprecedented flowering of technology in the course of the Industrial Revolution.<sup>143</sup> So abolitionists generally conceded that the patent system had induced innovation, but argued either that the patent reward was disproportionate to the innovation induced, or that innovation was “overstimulated,” apparently meaning that resources were being devoted towards innovation in excess of some socially optimal level. One commentator who adopted this latter view used the U.S. patent system as an example of the dangers of an overheated patent system:

In all her arrangements, Nature provides for a due equilibrium of powers and tendencies . . . . But if . . . we give a factitious impulse to the inventive faculty, we destroy the natural equilibrium of capacities, and foster a scheming, fanciful turn of mind, at the expense of thoroughness and a patient working out of sound

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disclose theory raised in the course of the abolitionist movement). Modern scholars have voiced similar objections. *See, e.g.*, Eisenberg, *supra* note 137, at 1028-29.

141. MACFIE, *RECENT DISCUSSIONS*, *supra* note 98, at 56 (quoting Richard Roberts).

142. NAPSS *TRANSACTIONS* 1863, *supra* note 114, at 890.

143. DUTTON, *supra* note 1, at 29 (noting that proponents of the patent system could argue that the recent decades had witnessed remarkable technological expansion, all during a time when the patent system existed).

ideas. This result has actually occurred in the United States, where the factitious value attached to invention has tended to produce an almost total sacrifice of solid workmanship to a flimsy ingenuity.<sup>144</sup>

The arguments that the patent system offered disproportionate awards seemed to have a firmer foundation, but seemed only to prove that reform was needed, not abolition. For example, consider another Macfie argument:

Mr. Webster . . . told us that the theory of the patent law is that a monopoly is given for a limited time, till the public are instructed in the new manufacture or new method of manufacture. But the misfortune is, that the patent retards the use by the public of whatever is patented . . . . We must remember that, now-a-days, the hindrance of fourteen years is very serious, so rapid is now the race of competition.<sup>145</sup>

This argument is a familiar one today; economists have frequently asserted that the *ex ante* incentive structure of the patent system could be fine-tuned by optimizing the patent term—not by throwing out patents altogether.<sup>146</sup> Legislative efforts to revise the patent term, either in its absolute length or by starting the term at the earliest effective filing date (or both), are legion, extending throughout the twentieth century, culminating in the adoption of the twenty-year term in the United States, in compliance with the TRIPs agreement.<sup>147</sup> Modern scholars also recognize that the patent incentive can be optimized by careful attention to patent scope.<sup>148</sup>

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144. MACFIE, RECENT DISCUSSIONS, *supra* note 98, at 119-20 (quoting from a presented paper of J. Stirling entitled “Patent Right”).

145. *Is the Granting of Patents for Inventions Conducive to the Interests of Trade?*, in TRANSACTIONS OF THE NATIONAL ASSOCIATION FOR THE PROMOTION OF SOCIAL SCIENCE 661, 665 (George W. Hastings ed. 1865) [hereinafter NAPSS TRANSACTIONS 1865]. One wonders how Macfie would have felt about the rapidity of the twenty-first century “race of competition.”

146. See, e.g., Andrew W. Horowitz & Edwin L.-C. Rai, *Patent Length and the Rate of Innovation*, 37 INT’L ECON. REV. 785 (1996).

147. For a review of relevant legislation, see STAFF OF THE SENATE SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF THE COMM. ON THE JUDICIARY, 86TH CONG., EXPEDITING PATENT OFFICE PROCEDURE—A LEGISLATIVE HISTORY 10-22 (Comm. Print 1960) (Margaret M. Conway, author) (discussing dozens of legislative proposals dating from 1875 to 1957 calling variously for term reductions or for terms of 20 years measured from the filing date); see also PRESIDENT’S COMM’N ON THE PATENT SYSTEM, REPORT TO THE SENATE SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF THE COMM. ON THE JUDICIARY, 90TH CONG., “TO PROMOTE THE PROGRESS OF

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Macfie also argued that the incentive structure provided by the patent system resulted in a profusion of patents. He offered what surely has now become a classic businessperson's lament:

In the manufacture with which I am connected—the sugar trade—there are somewhere like 300 or 400 patents. Now, how are we to know all these 400 patents? How are we to manage continually, in the natural process of making improvements in manufacture, to know which of these patents we are at any time conflicting with? So far as I know, we are not violating any patent; but really, if we are to be exceedingly earnest in the question, probably we would require to have a highly paid clerk in London continually analysing the various patents; and every year, by the multiplication of patents, this difficulty is becoming more formidable.<sup>149</sup>

One might well sympathize with Macfie on this point, but again the answer was reform, rather than abolition. Given the lack of substantive pre-grant examination, it is not surprising that the patent system of Macfie's day experienced a fundamental patent quality problem.<sup>150</sup>

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. . . USEFUL ARTS" IN AN AGE OF EXPLODING TECHNOLOGY 33 (1967) (recommending a 20-year term measured from earliest effective filing date—Recommendation XVII).

Scholarly commentary on these and related proposals is voluminous. *See, e.g.*, Arthur C. Fraser, *Patent Law Reforms*, 8 J. PAT. OFF. SOC'Y 461, 468 (1925) (suggesting 20-year term); W. Houston Kenyon, Jr., *Sore Spots in the Patent System*, 24 J. PAT. OFF. SOC'Y 458, 471-75 (1942) (suggesting patent term measured from application date); Bert Russell, *The Improvement of Our Patent System*, 15 J. PAT. OFF. SOC'Y 666 (1933) (suggesting 20 year term); George H. Willits, *Proposed Patent Legislation: Why It Is Needed, the Advantages of the Proposed Legislation and the Objections to It*, 12 J. PAT. OFF. SOC'Y 313, 392 (1930) (same).

Of course, this merely scratches the surface, leaving aside important issues such as term extensions for pharmaceuticals. *See* 35 U.S.C. §§ 155-56 (Supp. 2001).

148. To cite one common proposal, scholars have expressed mounting interest in more robust "fair use" or "experimental use" exceptions to infringement. *See* Mark D. Janis, *Sustainable Agriculture, Patent Rights, and Plant Innovation*, IND. J. GLOBAL LEG. STUD. n.51 (forthcoming 2002) (on file with author).

149. NAPSS TRANSACTIONS 1865, *supra* note 145, at 666. Macfie was apparently fond of citing the 300-400 figure, including in testimony before the House of Commons. One such instance drew a response from Webster: "The Honourable Member for Leith [Macfie] made a notable admission, that out of 400 sugar patents, he was not aware of any one being obstructive." 2 MACFIE, COPYRIGHT AND PATENTS, *supra* note 98, at 334 (reproducing extracts from Commons' Committee Report 1871, Mr. Webster's Evidence).

150. Webster thought as much. *Id.* at 664. This is all quite apart from the larger question of whether a multiplicity of patents in a given art area is a bad thing at all for participants in that art area.

Macfie endorsed yet another argument about skewed patent incentives of interest to modern reformers. According to this argument, in the early days of British patent grants, patent “monopolies” were tolerated (i.e., deemed to create monopolies, but not of the “odious” variety) because craftsmen were so isolated, and communication so primitive, that government needed to provide a stimulus to ensure the introduction of new technologies to the realm. There was then a “wide open field to invention” and a danger that innovations would be lost if not recorded by a centralized authority.<sup>151</sup> Because those conditions were no longer present, the argument continued, the patent system was no longer necessary.<sup>152</sup>

In one respect, this argument is consistent with what has now become a longstanding tradition, in which commentators of any given era proclaim that the patent system of their time was designed for the conditions of a previous age, and should therefore be reviled as anachronistic and scuttled or reformed. Learned Hand called the U.S. patent system of the 1930’s “archaic;”<sup>153</sup> in the 1940’s, Frankfurter declared the system “obsolete;”<sup>154</sup>

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151. William Hawes, *On the Economical Effects of the Patent Laws*, in TRANSACTIONS OF THE NATIONAL ASSOCIATION FOR THE PROMOTION OF SOCIAL SCIENCE 830, 833 (George W. Hastings ed., 1864).

152. See also MACFIE, PATENT QUESTION, *supra* note 98 at 37 (presenting the argument that England was willing to tolerate exclusive patent rights in order to stimulate the development of new industries, but it was not foreseen that privileges would eventually be granted in large numbers in areas where industry (domestic) was already well established).

153. *Texas Co. v. Sinclair Refining Co.*, 87 F.2d 690, 693 (2d. Cir. 1937) (Hand, J.) (“Courts have always discouraged efforts to dress up [minor] advances . . . as invention; that discouragement was never more proper than at the present time, at least while the patent law remains as archaic as it is.”).

In a similar vein, a 1930s-era reform commission, addressing the question of whether a system of compulsory licensing should be introduced into U.S. patent law, observed:

There has been enormous change in technique and commercial practice in the last hundred years. The patent system at its inception contemplated an individual inventor, given a monopoly for 17 years as a reward and stimulant for invention, and to enable funds to be obtained from commercialization. This simple situation no longer obtains. What was originally a self-sufficient patent to an individual for 17 years has developed into a patent structure or assemblage of patents, giving a substantially permanent monopoly in an advancing art to an industry or a group of industries. The justification for the extension in a democratic country of an absolute monopoly to an invention, in lieu of maintaining it secret, no longer applies generally.

Science Advisory Board, *Report of the Committee on the Relation of the Patent System to the Stimulation of New Industries*, reprinted in 18 J. PAT. OFF. SOC’Y 94, 103 (1936).

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in the mid-1950's, the Senate Subcommittee on Patents, Trademarks, and Copyrights reported that the patent system needed to be "adjusted to modern conditions;"<sup>155</sup> in the later 1950's, Professor Melman asserted that the patent system was so "obsolete" that it no longer was fulfilling its Constitutional purpose to promote progress in the useful arts,<sup>156</sup> sparking a spirited response from the patent bar.<sup>157</sup>

The obsolescence argument offered in the British patent controversy is also ironic when juxtaposed against modern arguments on international

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154. *Marconi Wireless Telegraph Co. v. United States*, 320 U.S. 1, 63-64 (1943) (Frankfurter, J., dissenting). Frankfurter noted:

I have little doubt, in so far as I am entitled to express an opinion, that the vast transforming forces of technology have rendered obsolete much in our patent law. For all I know the basic assumption of our patent law may be false, and inventors and their financial backers do not need the incentive of a limited monopoly to stimulate invention.

155. REVIEW OF THE AMERICAN PATENT SYSTEM, *supra* note 71, at 1. As the report proceeded to explain:

When the patent laws were first drawn, invention and discovery were almost exclusively the product of the efforts of individuals working alone. Today, invention and discovery are largely the work of research laboratories. . . .

*Id.*

156. STAFF OF THE SENATE SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF THE COMM. ON THE JUDICIARY, 85TH CONG., THE IMPACT OF THE PATENT SYSTEM ON RESEARCH 57 (Comm. Print 1958) (Seymour Melman, author). Melman reasoned that "changes in the ways of producing knowledge," among other factors, resulted in the patent system having "lost the effectiveness that it may once have had as a way of promoting science and the useful arts." *Id.*; see also *id.* at 62 (declaring that the patent system no longer served its Constitutional purpose).

Melman did not make clear whether he supported the outright abolition of the patent system, however. Certainly he seemed dismissive of the notion that any modest reforms could restore the usefulness of the patent system:

The effort to operate a patent system formulated for the technological conditions of a century ago has proved to be increasingly awkward. The problems of patent-system operation, however, do not stem primarily from the administrative shortcomings or from the absence of ingenuity among the able attorneys, judges, and Patent Office staffs who administer the system. Rather, they stem from the inability to apply the conceptions of a bygone era to the contemporary conditions under which technical knowledge is produced.

*Id.* at 61-62.

157. Patent Law Association of Los Angeles, *Our Patent System Works: A Reply to the Melman Report*, 42 J. PAT. OFF. SOC'Y 295 (1960). The authors also questioned whether it was accurate to draw such a sharp distinction between modes of invention in the nineteenth century and the twentieth, discounting "the romanticized and largely fictionalized [sic] picture of the struggling inventor of the past century, alone in his garret with his experiments." *Id.* at 304.

patent policy. Macfie proposed that, while the patent system succeeded in stimulating progress in the early, developing British economy, it thwarted progress later, when Britain's economy had a developed industrial base. Today, some scholars take precisely the opposite position: that full-fledged patent systems may benefit developed economies but may be counterproductive when transplanted into developing economies (e.g., to satisfy TRIPs obligations).<sup>158</sup>

#### 4. *Reward Systems*

Perhaps of greatest interest to modern scholars is Macfie's proposed alternative to the patent system: a reward system administered by the government, paying a subsidy, sometimes in a predetermined amount, directly to the inventor rather than awarding property rights and allowing the inventor to collect license fees. According to Macfie, a reward system would be "on the whole, wise and fair," as a substitute for "monopoly" patent rights; indeed, it would provide superior ex ante incentives because the reward, unlike royalties under a patent license, "is prompt and is sure; the bird is in the hand."<sup>159</sup>

Reward systems substitute the complexities of substantive patent examination with the complexities of calculating an optimal award amount. Perhaps the weakest aspect of Macfie's reward argument was his failure to articulate a viable formula for calculating appropriate awards. Macfie gives little reassurance in providing simply that the reward payment would be calculated not in accordance with the amount that a patentee might extract by way of license fees if exclusive rights were granted, but rather by "what is fair, considering utility, cost of preliminary trials, originality, probability of others making the same discovery, &c."<sup>160</sup>

Macfie also offered an alternative proposal that combined notions of exclusive rights, compulsory licensing, and a reward system. Under this

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158. See, e.g., A. Samuel Oddi, *TRIPs—Natural Rights and a "Polite" Form of Economic Imperialism*, 29 VAND. J. TRANSNAT'L L. 415 (1996).

159. MACFIE, PATENT QUESTION, *supra* note 98, at 24-25. Macfie's invocation of wisdom and fairness might suggest to some that his reward proposal was not based purely on utilitarian concerns. It is plausible to propose that Macfie would have agreed even with a normative version of Lockean labor theory (i.e., that an inventor *should* receive rewards for his labor), but would simply have argued that the patent system provided too generous a reward (i.e., a greater reward than the concerns of justice would have dictated). See Machlup & Penrose, *supra* note 129, at 17-19 (describing views of various anti-patent advocates on the labor-reward theory); see generally Justin Hughes, *The Philosophy of Intellectual Property*, 77 GEO. L.J. 287, 296-329 (1988) (thorough exploration of the Lockean labor-reward theory for various forms of intellectual property).

160. MACFIE, PATENT QUESTION, *supra* note 98, at 41.

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proposal, a patentee would enjoy exclusive rights, subject to compulsory licensing, for a term of three years from grant, after which the government would undertake a “valuation” and subsequently pay the patentee in accord with the calculated value, after which any patent rights would cease. Under a further alternative, the government would have the option of undertaking the valuation at a later time.<sup>161</sup>

John Stuart Mill provided the standard economic argument in response to simple reward system proposals: patent rights should be superior to a simple reward system because under a patent system, the market, through payment of license fees, determines the amount of the reward.<sup>162</sup> Webster added that patented technology often did not come into general use until more than three years had passed, such that Macfie’s valuation scheme might not be practicable.<sup>163</sup>

Curiously, Webster ultimately expressed tentative agreement with Macfie’s optional reward scheme, at least insofar as it relied upon the principle of compulsory licensing. Foreshadowing a debate that continues to the present day, Webster clearly favored the aggressive use of compulsory licensing schemes to curb potential abuses of patent rights.<sup>164</sup>

Theoretical analysis as to the efficacy of reward systems continues in scholarly circles today.<sup>165</sup> Indeed, given the definitive political failure of the abolitionist movement by the late 1870’s, Macfie might be pleasantly surprised at the extent to which his writings continue to inform modern scholarly debate. In their recent study of the economics of reward systems, Shavell and Ypersele cite Macfie’s work to illustrate the historical precedent for reward system proposals and the basic outlines of those proposals.<sup>166</sup> Shavell and Ypersele develop an economic model to test whether patent systems are superior, from a social welfare standpoint, to either pure reward systems or an optional system in which the innovator chooses between the patent grant and the reward grant. While they are unable to prove that pure reward systems are unambiguously superior to patent sys-

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161. Macfie, *The Patent Question*, *supra* note 132, at 829.

162. Machlup & Penrose, *supra* note 129, at 20 (quoting Mill). Scholars have now elaborated on these simplified propositions. *See* text accompanying notes 166-171 *infra*.

163. NAPSS 1863 TRANSACTIONS, *supra* note 114, at 885.

164. *See, e.g.*, NAPSS 1863 TRANSACTIONS, *supra* note 114, at 885; NAPSS 1865 TRANSACTIONS, *supra* note 145, at 664.

165. *See generally* Michael Abramowicz, *Perfecting Patent Prizes* (Soc. Sci. Research Network, Law & Economics Working Paper Series), available at <http://papers.ssrn.com/abstract=292079> (last visited Jan. 4, 2002); F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 MINN. L. REV. 697, 705-17 (2000) (critiquing prize proposals); Shavell & Ypersele, *supra* note 8.

166. Shavell & Ypersele, *supra* note 8, at 526-27.

tems,<sup>167</sup> they conclude that optional reward systems would outperform a patent system,<sup>168</sup> even under circumstances where the government's information relevant to calculation of the reward is relatively poor.<sup>169</sup>

Others have pointed out practical and theoretical limitations of the Shavell and Ypersele model,<sup>170</sup> but it is not my object to propose a resolution on the merits of this debate. It is remarkable, however, that the arguments of a Victorian-era British sugar refiner retain relevance in twenty-first century law and economics scholarship on patent theory.

### C. Harmonization or Abolition? Patents and the Interface with Free Trade

While it may be that Robert Macfie held firm in his belief in the theoretical arguments he raised in support of abolishing the patent system, his motivation for pressing so aggressively for abolition seems to have sprung in no small part from pragmatic business considerations. Macfie was a domestic sugar refiner, an occupation that required an understanding of international competitiveness, even in the Victorian era. Of particular concern to Macfie was the impact of British patent rights on competition in the trans-Atlantic sugar trade, especially competition between domestic sugar refiners and colonial producers in the British West Indies.<sup>171</sup> Macfie generalized this narrow and self-serving claim into a variety of patent proposals linking patent rights to free trade and exploring international patent law harmonization, as discussed in the subsections below.

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167. *Id.* at 530. They conclude that a patent system could be superior to a reward system, because the patent system “effectively harnesses the private information of the innovator about the value of an innovation,” but that the reward system could also be superior to the patent system, because the incentive to innovate is optimized (assuming that the reward equals the actual social surplus afforded by the invention) and there is no monopoly pricing, and hence no deadweight loss due to such pricing. Thus, no general argument favoring one system over the other can be made.

168. *Id.* at 530-31 (an optional reward system is “unambiguously” superior to patents because expected social welfare is improved when the innovator chooses the reward (e.g., by avoiding deadweight loss associated with monopoly pricing)).

169. *Id.* at 541.

170. *See, e.g.,* Abramowicz, *supra* note 165, at 17-25. Like Shavell and Ypersele, Abramowicz also makes reference to Macfie's early arguments in support of a reward system. *Id.* at 4 n.14.

171. For background on the nineteenth century sugar trade, see generally R. W. BEACHEY, *THE BRITISH WEST INDIES SUGAR INDUSTRY IN THE LATE 19TH CENTURY* 40-60 (1957) (describing the sugar trade and the Continental sugar bounty system); *see also* S.N. BROADBERRY, *THE PRODUCTIVITY RACE: BRITISH MANUFACTURING IN INTERNATIONAL PERSPECTIVE 1850-1990*, 200 (1997) (discussing briefly the fall of the British sugar refining industry in the 1880s, in the context of the international competitiveness of British industry overall).

## PATENT ABOLITIONISM

### 1. *Free Trade*

Free trade principles<sup>172</sup> probably formed the “main ideological influence” behind the abolitionist movement.<sup>173</sup> Although anti-patent sentiment drew from a variety of motivations, it is clear that free trade was a recurring theme, even finding its way into the title of one of Macfie’s numerous abolitionist tracts.<sup>174</sup>

The free trade element of the abolitionist movement traces at least as far back as the debates over passage of the 1852 Act.<sup>175</sup> Patent reform proponents argued that the British patent right should extend not only across England, Scotland, and Ireland,<sup>176</sup> but also to British colonies. The principal advocates for this reform were domestic British sugar refiners, including Macfie, who took the view that domestic refiners were, in effect, “taxed” by the patent system, while West Indies refiners could operate free of it and compete in British domestic markets.<sup>177</sup>

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172. Concerning the free trade movement generally, see, for example, ANTHONY HOWE, *FREE TRADE AND LIBERAL ENGLAND 1846-1946* chs. 3-5 (1997); Oliver Macdonagh, *The Anti-Imperialism of Free Trade*, 14 *ECON. HIST. REV.* 489, 490-93 (1962) (defining free trade by explaining its political context). On the rise of protectionism in Britain in the late 1870s, see, for example, BENJAMIN H. BROWN, *THE TARIFF REFORM MOVEMENT IN GREAT BRITAIN 1881-1895*, at 9-28 (1943).

173. DUTTON, *supra* note 1, at 24.

174. See MACFIE, *PATENT QUESTION*, *supra* note 98.

175. See WEBSTER, *supra* note 16 (referring to the 1852 Act).

176. See WEBSTER, *supra* note 16, at 3 (reporting that some considered the 1835 Act insufficient for its failure to institute a patent that extended across England, Scotland, and Ireland).

177. See COULTER, *supra* note 14, at 59-60 (reporting the views of sugar refiners). Moreover, whereas one might expect that the domestic disadvantages of this “tax” could be alleviated by the imposition of import duties on foreign or colonial refiners, Great Britain had eliminated the sugar bounty system under the principle of free trade. *Id.* at 169-71 (explaining briefly the bounty system). Macfie argued:

Inventions, which are made the subject of patent in this country, very soon become known in other countries, and not many weeks elapse before other countries adopt what is detailed in the specifications of Great Britain. The result, therefore, is that while we British manufacturers stand with our arms folded, waiting till the expiration of the fourteen years, our rivals abroad do or may at once step in, use the inventions, and compete with us in our own markets; at any rate, they get too frequently the use of inventions free, for which we alone pay, or are expected to pay, the inventors’ rewards.

NAPSS *TRANSACTIONS* 1865, *supra* note 145, at 666 (reporting comments of Macfie).

Ultimately, the sugar refiners failed: the 1852 Act did not extend the patent right to British colonies.<sup>178</sup> But Macfie had his argument, and was more than willing to advance it in the name of patent abolition.<sup>179</sup>

In addition, from Macfie's perspective, the free trade argument grew stronger in the course of the 1860's because the disharmony among the patent laws of key European nations became more acute. In particular, Holland had abolished its patent system in 1869; Switzerland had no patent system; and France, Germany, and Belgium were all engaged in abolitionist debates.<sup>180</sup> The prospect of competition from Continental manufacturers operating free of any patent rights certainly would have added to Macfie's sense of urgency to remove the "crying evil" brought about by the patent system.<sup>181</sup>

Contemporary commentators disagreed on whether the anti-patent argument in fact reflected a proper interpretation of free trade principles. One of the major detractors was John Stuart Mill, who expressed "real alarm" that if the anti-patent movement succeeded, it would "enthron[e] free stealing under the prostituted name of free trade."<sup>182</sup> But aside from theoretical objections, Macfie's free trade argument were met by pragmatic rejoinders. Webster supplied two.

One of Webster's rejoinders was an economic argument: even if the domestic producer was forced to pay the "tax" in the form of patent license fees, the domestic producer received in exchange the benefit of the invention, which presumably was equal to or in excess of the license fee; otherwise, the producer would decline to adopt the patented technology.<sup>183</sup>

178. Nor did this view prevail in debates that led to passage of the 1883 Act after the abolitionist movement had subsided. COULTER, *supra* note 14, at 167.

179. *Id.* at 72 (suggesting that although the 1852 reform effort failed, one result was the emergence of Robert Macfie as a leader in the burgeoning patent abolitionist movement).

180. *See, e.g.*, DUTTON, *supra* note 1, at 29 ("The fact that Switzerland and Holland had abolished their patent systems in 1863 and 1869 gave the British movement an impetus which it never previously had."); COULTER, *supra* note 14, at 90. Macfie's compilations include numerous "extracts" from Dutch, French, German, and Belgian commentators and officials. *See, e.g.*, MACFIE, RECENT DISCUSSIONS, *supra* note 98, at 185 (relaying official communication from Count Von Bismarck to the North German Parliament); *id.* at 164-180 (transcribing discussions in France); *id.* at 197-229 (transcribing discussions in Holland).

181. MACFIE, PATENT QUESTION, *supra* note 98, at 33.

182. Machlup & Penrose, *supra* note 129, at 9 n.32 (citing JOHN STUART MILL, PRINCIPLES OF POLITICAL ECONOMY 932 (1872)).

183. Macfie and Webster argue the point in 2 MACFIE, COPYRIGHT AND PATENTS, *supra* note 98 (reproducing extracts from Commons' Committee's Report of 1871, Mr. Webster's Evidence):

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Another rejoinder revealed that Macfie's argument rested on a mistaken assumption as to the state of the law of infringement—although, in Macfie's defense, the law had apparently changed in the course of the abolitionist debate, as reflected in the following exchange:

Macfie: [When England, Scotland, and Ireland had separate patent systems,] monopoly having been granted in England, but not in Scotland or Ireland, there was nothing then to prevent an English consumer, notwithstanding the monopoly in England, from being supplied from Scotland and from Ireland, with articles made according to the invention in those two countries. . . [and] there was no restriction on importation into England of articles manufactured free of patents in the two sister countries, was there?

Webster: [answering no, acknowledging a theoretical problem but doubting whether the problem ever in fact manifested itself]

Macfie: Then under free trade, that which was formerly done as between Scotland and Ireland, on the one hand, and England, on the other, is being regularly done as between any foreign countries that have not patents and the whole of the British Islands, is it not?

Webster: Yes; no doubt.

Macfie: So that an article patented in this country can be manufactured in Switzerland [where no patent sys-

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Macfie: [T]ake the sugar manufacture, a manufacture which is carried on upon the same principle, and for the same markets, in the colonies and in the United Kingdom; [the non-uniformity of patent rights] tended to make manufacturers of sugar in one part of the empire gain advantages on the one hand, or bear burdens on the other hand, that their competitors, also subjects of the Queen, were not partakers of or liable to?

Webster: No doubt, theoretically that was so; but I take it that the advantage derived from the succession of improvements was such that that would disappear, and that sugar can be made at Liverpool or Leith quite as cheaply as anywhere in the colonies by reason of the subsequent improvements.

*Id.* at 339.

tem existed] or Holland [which had abolished its patent system], and sent to this country?

Webster: Yes.

Macfie: But would the law prohibit the sale in this country of articles made in those two countries according to the principles of any patents existing in this country?

Webster: Yes; that has been decided, within the last month, by the House of Lords. That is assuming that they were proved to be made according to the system that was patented in this country.<sup>184</sup>

These exchanges suggest that Macfie's effort to turn free trade principles to the cause of patent abolitionism may have failed on their own merits. Regardless, events ensuing a short time after this exchange demonstrated that Macfie made a strategic error when he linked the anti-patent movement to free trade. The British economy slid into depression, reviving protectionist impulses at the expense of free trade policies. By 1874, much had changed, including the British domestic political scene. Macfie lost his seat in the House of Commons, and the abolitionist movement lost its place in the domestic political agenda.

Despite its failure, Macfie's free trade argument was, in one respect, ahead of its time—it sought to link international trade policy with national patent policy. Macfie, representing a business concern based in an advanced economy and operating in an internationally-competitive market, argued on the basis of free-trade principles that the absence of patent systems in some countries (countries capable of participating in the export trade, but not necessarily having developed economies) gave those countries an advantage. Accordingly, he asserted that patents should be abolished. Perhaps he would have thought it an ironic twist that in the late twentieth century, global business concerns in developing economies saw the absence of patent systems in some developing countries as antithetical

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184.*Id.* at 341-42 (reproducing extracts from Commons' Committee's Report of 1871, Mr. Webster's Evidence). Having apparently received the wrong answer, Macfie changed the issue, shifting to questions about the difficulty of proving that a product imported into Britain had been manufactured overseas using a British patented process. The current U.S. patent statute reflects similar concerns. *See* 35 U.S.C. § 271(g) (Supp. 2001) (liability for importation of products made by patented processes); *id.* § 295 (presumption that product was made by patented process).

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to international trade, and suggested that patent systems meeting TRIPs minimum standards be established.

### 2. *International Patent Harmonization*

As noted above, Macfie perceived that variations among patent regimes, from country to country, had the potential to impose unfair “taxes” on domestic industry in those countries where patent rights had to be respected, and thus Macfie saw patent systems as obstructing “free trade.” While Macfie’s favored solution was to abolish patent systems where they existed, it was not his only proposal. Macfie appeared to recognize that if lack of uniformity among patent laws created the problem, harmonization (or unification) of patent laws provided one solution:

How inconvenient and hurtful, to inventors and to the public, is the diversity of laws now prevailing! How great a facility to inventors, if a Patent registered in one country were recognised in all others; and to both inventors and manufacturers, if a specification published in one were made officially known in all.<sup>185</sup>

Macfie proposed as much, although only as an alternative to outright abolition, and seemingly with considerably less vigor. Macfie’s proposal was a utopian one: he called, as so many others have in succeeding years, for a patent of world-wide effect, apparently contemplating not merely harmonized national laws but a truly unified international system.<sup>186</sup> Even then, Macfie recognized that it was probably “vain to hope that the countries of Europe and America, with their colonies, will speedily agree to an international system,”<sup>187</sup> and so pressed his reward system as a more viable alternative.<sup>188</sup>

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185. MACFIE, PATENT QUESTION, *supra* note 98, at 32. Macfie also reported on others’ arguments for harmonization-related reforms—for example, Michel Chevalier’s argument that the scope of the prior art should extend worldwide. Chevalier asserted that the scope of prior art should reach “even to the antipodes,” explaining, with startling prescience, that in some far-flung “young communities” such as California, “[i]nventive genius is very active and very well-directed.” MACFIE, PATENT QUESTION, *supra* note 98, at 57 (translation of M. Michel Chevalier on the Law of Patents, taken from the introduction to the *Rapports des Membres de la Section Francaise du Jury International sur l’ensemble de l’Exposition*, 1862).

186. NAPSS TRANSACTIONS 1863, *supra* note 114, at 884 (reporting on Macfie’s paper, *Patents Internationally Considered*).

187. He probably had no idea how correct he was. Although interest in substantive patent law harmonization again seems to be on the rise, efforts to create a Community patent regime have again stalled. See Results of the Internal Market Council Brussels, Community Patent, MEMO/01/4510 (Dec. 12, 2001), at [http://europa.eu.int/rapid/start/cgi/guesten.ksh?p\\_action.gettxt=gt&doc=MEMO/01/4510|RAPID&lg=EN&d](http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=MEMO/01/4510|RAPID&lg=EN&d)

In another of many ironies, the patent abolitionist movement had very direct consequences for the international patent harmonization agenda. At the very time when “the controversy between patent and anti-patent forces throughout Europe was still bitter,”<sup>189</sup> plans for the International Exposition at Vienna in 1873 generated pressure for international patent cooperation, and ultimately led to the first international conference on patents, the Vienna Patent Congress of 1873. Some 158 participants from 13 countries, including the United States, Britain, and several countries from the Continent, gathered at the Congress.<sup>190</sup>

Webster participated in the Vienna Congress, and was elected a Vice President (along with five others), a member of the Executive Committee, and, after the Congress, a member of an unofficial British committee formed to explore further cooperative efforts with the Executive Committee.<sup>191</sup> Macfie submitted his views to the Congress by letter.<sup>192</sup> Participants at the Congress endorsed patent protection in principle, and resolved to press ahead to create an international treaty on patents.<sup>193</sup> The Congress also endorsed the principle of compulsory licensing.<sup>194</sup> Webster, an advocate of compulsory licensing despite his general support for the patent system, defended this principle “warmly.”<sup>195</sup> The influence of the patent abolitionist debate was clear.<sup>196</sup> The patent abolitionist movement subsided, but the international patent movement took hold, maintaining discourse about many of the concerns promulgated by the patent abolitionists.<sup>197</sup> Discussions at the Vienna Patent Congress led to further

isplay= (last visited Dec. 22, 2001) (reporting the most recent failure of the EU’s Council of Internal Market Ministers to reach agreement on proposals that would create a Community Patent).

188. NAPSS TRANSACTIONS 1863, *supra* note 114, at 884.

189. EDITH TILTON PENROSE, THE ECONOMICS OF THE INTERNATIONAL PATENT SYSTEM 46 (1951).

190. *Id.* (noting that despite the impressive attendance, the conference was not an official diplomatic conference).

191. COULTER, *supra* note 14, at 174-76.

192. 2 MACFIE, COPYRIGHT AND PATENTS, *supra* note 98, at 141-47 (reproducing extracts from Webster’s Report to the Royal Commission of the Vienna Universal Exhibition, 1873).

193. PENROSE, *supra* note 189, at 46-48.

194. 2 MACFIE, COPYRIGHT AND PATENTS, *supra* note 98, at 147 (reproducing extracts from Webster’s Report to the Royal Commission of the Vienna Universal Exhibition, 1873).

195. *Id.*

196. PENROSE, *supra* note 189, at 47 (crediting the anti-patent movement with creating awareness of the potential abuses of the patent system, and thereby facilitating acceptance of the principle of compulsory licensing).

197. Coulter reports that both anti-patent and pro-patent forces approved of the agreements made in Vienna; the anti-patent forces saw at least the prospect of eliminating the

Discussions at the Vienna Patent Congress led to further discussions in Paris; and in 1883, several nations signed the Paris Convention, regarded as the first international patent treaty.<sup>198</sup>

#### IV. CONCLUSION: PATENT LAW REFORM AND THE PATENT LAW REFORMATORY

Despite the fundamental differences between the patent systems of nineteenth century Britain and those of the modern-day United States, many of the significant elements of the modern patent law reform agenda have antecedents in British patent abolitionism. The abolitionism literature therefore can, and should, inform modern patent reform debate in the United States. First, modern reform proponents who seek to invoke core arguments about the limitations of juries, or the efficacy of expert tribunals, in patent litigation; the foundational justifications for systems of exclusive property rights as compared to reward systems; or the notion that domestic patent policy interacts with considerations of global trade, can find the positions staked out with clarity in the abolitionism literature. Even arguments about Congressional diversion of PTO surplus fees have nineteenth century British counterparts.<sup>199</sup>

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the disharmony in patent protection, easing their concerns over unfair advantages in international trade. COULTER, *supra* note 14, at 176.

198. For an account of the origins of the Paris Convention, see STEPHEN P. LADAS, *PATENTS, TRADEMARKS, AND RELATED RIGHTS: NATIONAL AND INTERNATIONAL PROTECTION* ch. 4 (1975); see also COULTER, *supra* note 14, at 176-80.

199. For an argument about fee diversion in the nineteenth century British patent system, see MACFIE, *COPYRIGHT AND PATENTS*, *supra* note 98, at 378, reproducing extracts from Commons' Committee's Report of 1871, Mr. Webster's Evidence:

[T]here is a surplus fund of £60,000 a year, which we call the Inventors' Fee Fund, and there is the accumulative fund of £750,000 more than that, accumulating at the rate of £50,000 or £60,000 a year, which I say is inventors' money, and ought not to go into the Consolidated Fund. I say let the inventor have the benefit of it in the shape of a proper Patent Office . . . .

For a sample of recent discussions on the fee diversion issue in the U.S., see, for example, *Union Chief Assails Diversion of PTO Fees*, 61 PAT. TRADEMARK & COPYRIGHT J. (BNA) 600 (2001), noting that President Bush's PTO budget proposal diverts a record \$207 million and that H.R. 110 has been introduced in an attempt to curb annual fee diversion; *New Bills Would Implement Madrid Protocol, Curb PTO Fee Diversion*, 61 PAT. TRADEMARK & COPYRIGHT J. (BNA) 420 (2001), discussing the introduction of H.R. 740 which would prevent future fee diversion; *PTO Funding Falls Short of Goal Sought by Senate*, 61 PAT. TRADEMARK & COPYRIGHT J. (BNA) 7 (2000), stating that H.R. 4942 withholds \$161 million from PTO's estimated income and is diverting the fee income to other general programs; *Panel Approves PTO Funding Bill with Fee Diversion*, 60 PAT. TRADEMARK & COPYRIGHT J. (BNA) 122 (2000), noting that the House

Second, those of us who dabble in U.S. patent law reform might take away from the abolitionism literature a general lesson in humility. As frequently as we may invoke the exigencies of new technology and new economic circumstances as motivation for patent law reform, many of our reform proposals return to decidedly old themes. In 1894, one commentator, writing in the *Yale Law Journal*, outlined the three major defects of the then-existing U.S. patent system: “[f]irst, that there is little reliance to be placed on the patent itself; second, that the time which it takes to carry on a suit to enforce any patent rights is great; and third, that the expense of such litigation is enormous.”<sup>200</sup> According to the author, several reform measures ought to be taken in view of these complaints, including arriving at a satisfactory definition of the standard of “invention,” and incorporating an *inter partes* element to the *ex parte* examination system.<sup>201</sup>

The *Yale Law Journal* paper could have been written at nearly any point in the twentieth century. Among some serious scholars, its core observations would still ring true today. Indeed, in 2000, John Barton wrote a brief article in *Science* entitled, “Reforming the Patent System.”<sup>202</sup> He advocated reform of the nonobviousness standard and weakening of the presumption of validity,<sup>203</sup> and incorporation of a more robust *inter partes* reexamination scheme into U.S. law.<sup>204</sup>

The Roosevelt administration in both the 1930s<sup>205</sup> and 1940s,<sup>206</sup> the Johnson administration in the 1960s,<sup>207</sup> and the Bush administration in the

Judiciary Committee has approved H.R. 4034, which would end the yearly diversion of fees, but that such legislation is unlikely to be enacted.

200. Brewer, *supra* note 9, at 149.

201. The author also would have limited or even barred the use of expert testimony in patent litigation. *Id.* at 155 (recounting complaints that such experts might charge sums as outrageous as \$50 per day). The author rejected suggestions that the term of the patent be severely limited, to ten years, as Congress was then considering. *Id.* at 150 (discussing the relevant legislation).

202. John H. Barton, *Intellectual Property Rights: Reforming the Patent System*, 287 SCIENCE 1933 (2000).

203. *Id.* at 1933.

204. *Id.* at 1934. Professor Barton also suggested that “broad basic patents on fundamental research processes” might deter follow-on research, and could be subjected to a compulsory licensing regime. *Id.* at 1933-34.

205. Science Advisory Board, *Report of the Committee on the Relation of the Patent System to the Stimulation of New Industries*, 18 J. PAT. OFF. SOC’Y 94 (1936). The Science Advisory Board formed the Committee in response to a request from the Secretary of Commerce “for a broad policy program for the stimulation of new industries in this country.” *Id.* at 94. Vannevar Bush, then Dean of Engineering at MIT, chaired the Committee, which was composed primarily of representatives from large corporations. *Id.*

206. THE NATIONAL PATENT PLANNING COMMISSION, 78th CONG., THE AMERICAN PATENT SYSTEM: REPORT OF THE NATIONAL PATENT PLANNING COMMISSION (1943),

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early 1990s<sup>208</sup> all ordered special commissions to study patent law reform.<sup>209</sup> The table below illustrates the common themes among reform commissions over the decades,<sup>210</sup> reflecting a high level of congruence with the reform themes of the British patent abolitionist movement.

<b>Reform Proposal</b>	<b>Committee on the Relation of the Patent System to the Stimulation of New Industries (1936)</b>	<b>National Patent Planning Commission (1943)</b>	<b>President's Commission on the Patent System (1967)</b>	<b>Advisory Commission on Patent Law Reform (1992)</b>
<b>Reform of Obviousness Standard; Presumption of Validity</b>	Recommended	Recommended		
<b>Opposition/Revocation</b>		Considered & rejected	Recommended ex parte pre- and post-grant	Recommended reform
<b>Pre-Grant Publication</b>	Recommended	Not considered	Recommended	Recommended
<b>Single Appellate Patent Court</b>	Recommended	Recommended		N/A

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reprinted in 25 J. PAT. OFF. SOC'Y 456 (1943). President Roosevelt established the Commission by executive order.

207. PRESIDENT'S COMM'N ON THE PATENT SYSTEM, REPORT TO THE SENATE SUB-COMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF THE COMM. ON THE JUDICIARY, 90TH CONG., "TO PROMOTE THE PROGRESS OF . . . USEFUL ARTS" IN AN AGE OF EXPLODING TECHNOLOGY, S. Doc. No. 5 (Feb. 2, 1967). President Johnson established the Commission in 1965. *Id.* at ii. The Commission included public members as well as representatives from the Departments of Commerce and Defense, and the Small Business Administration and the National Science Foundation. *Id.* at iv.

208. THE ADVISORY COMMISSION ON PATENT LAW REFORM, A REPORT TO THE SECRETARY OF COMMERCE (1992). The Secretary of Commerce established the Advisory Commission in 1990. Members included lawyers, administrators from academia, and corporate executives. *Id.* at 5. The representative from the Association of University Technology Managers declined to sign the final report. *Id.* at iii.

209. In addition, Congress commissioned a series of studies on the patent system in the late 1950's. Several of those studies are cited in this article. *See, e.g., supra* notes 7, 37, 123, 156 and accompanying text.

210. I have not included each reform suggested in each commission report. Where I have left a blank, the commission did not report any recommendations on the topic.

<b>Patent Trial Courts</b>	Recommended the use of technical advisors		Recommended the use of "Civil Commissioners"	Recommended
<b>Compulsory Licensing</b>	Considered & rejected	Considered w/o recommendation		
<b>20-year Term</b>		Recommended	Recommended	Recommended
<b>First-to-File</b>			Recommended	Recommended

Obviously, these isolated examples of scholarship, and of reform commission publications, do not alone support a broad claim that U.S. patent law reform over the past century has been an exercise in reiteration; but it seems worthwhile to ask a few hard questions about the content of the patent law reform agenda. Are these repeated themes of twentieth century U.S. patent law reform simply the inevitable themes of any patent law reform? Or have we become imprisoned in a kind of patent law reformatory, in which patent law reform is little more than a repackaging of old debates?

This last query presents an important set of questions about the nature of the patent law reform process generally. Reflecting on the patent abolitionism literature and subsequent U.S. patent law reform efforts through 1950, Machlup and Penrose conclude, rather tartly, that "little, if anything, has been said for or against the patent system in the twentieth century that was not said equally well in the nineteenth."<sup>211</sup> Perhaps some would hold this up as the ultimate moral of the patent abolitionism story: abolitionism failed, patent law reform ever since then has stagnated, and a perpetual intellectual malaise has settled over the process.

I am attracted to a more optimistic bottom line. Batzel argues that, in the face of radical "solutions" and theoretical arguments offered in the abolitionist debate, the patent system survived because reformers pushed "pragmatic administrative reforms"<sup>212</sup> that strengthened the credibility of the patent system. The process became one of reciprocal adjustment at an incremental level; as the patent system reformed, attitudes about the patent system adjusted. "Custom and a growing sense of traditional practice" were "solidifying the place of patents in industrial England."<sup>213</sup> The his-

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211. Machlup & Penrose, *supra* note 129, at 10.

212. Batzel, *supra* note 96, at 198.

213. *Id.* at 199.

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tory of the British abolitionism movement should give pause to current U.S. patent policymakers. It should temper our enthusiasm for dramatic patent law reform through legislation, and encourage healthy skepticism about proposals that, when viewed in historical context, merely repackage century-old debates.