

# PATENT SYSTEM REFORM: ECONOMIC ANALYSIS AND CRITIQUE

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## I. INTRODUCTION

The chorus of complaints about the U.S. patent system has grown louder in recent years. Notably, some of the most powerful complaints now are coming from companies that themselves own many patents. These companies devote substantial resources to research and development (R&D), and they appreciate that patent protection can be crucial for earning a return on their R&D expenditures. Although these companies rely on patents to protect their inventions, they feel strongly that defects in the patent system are raising costs, imposing uncertainty, and restricting product design choices. Ultimately, the companies claim these defects

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hinder their ability to compete, to innovate, and to contribute to economic growth.<sup>1</sup>

Complaints regarding the patent system typically allege that the U.S. Patent and Trademark Office (USPTO) issues many questionable patents, for example, patents that are likely to be invalid or contain overly broad claims. In terms of the statutory requirements for patentability, these concerns typically involve patents covering technologies that either were not novel or were obvious at the time the patent application was filed. In particular, critics have berated the quality of patents in the areas of computer software and Internet business methods.<sup>2</sup> Everyone seems to have his or her favorite example of an absurd patent issued by the USPTO.<sup>3</sup>

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1. See, for example, the extensive transcript from hearings held in 2002 by the Federal Trade Commission. FTC, *Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy*, <http://www.ftc.gov/opp/intellect/index.htm> (last visited Aug. 1, 2004) [hereinafter FTC, *Hearings*] (providing speeches and transcripts from the FTC's 2002 hearings). These concerns were also voiced at the conference on patent reform hosted by the Berkeley Center for Law and Technology and *Berkeley Technology Law Journal*, which was held in Berkeley, California on April 15-16, 2004. Symposium, *Ideas into Action: Implementing Reform of the Patent System*, 19 BERKELEY TECH. L.J. 857 (2004) [hereinafter Symposium, *Ideas Into Action*].

2. See, e.g., Julie E. Cohen, Reverse Engineering and the Rise of Electronic Vigilantism: Intellectual Property Implications of "Lock-Out" Programs, 68 S. Cal. L. Rev. 1091 (1995) (examining patent protection for computer programs); Mark Lemley, *Rational Ignorance at the Patent Office*, 95 Nw. U. L. Rev. 1495, 1495 ("The PTO has come under attack of late for . . . allowing bad patents to slip through the system. The criticism is particularly strong in specific industries, notably software and Internet "business method" patents, in which the PTO has arguably failed to respond quickly enough to changing legal circumstances.") (footnotes omitted); 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).

3. Amazon's "one-click" patent may be the most often criticized software patent. Amazon.com, with two highly publicized Internet business-method patents, ignited the furor last September, when the U.S. Patent and Trademark Office (PTO) awarded the company patent number 5,960,411. The patent, although it does not explicitly use the phrase "one-click," protects Amazon's online ordering system, which allows consumers to make purchases with a single mouse click. A month after the patent was issued, Amazon filed a lawsuit against barnesandnoble.com, claiming that its ordering system infringed the one-click patent. Just before Christmas, Amazon won a preliminary injunction, prohibiting its competitor from using any one-click shopping method.

Evan Ratliff, *Patent Upending*, WIRED, June 2000, at 208, available at <http://www.wired.com/wired/archive/8.06/patents.html>. Previously, U.S. Patent No. 5,241,671, issued to Compton's New Media on August 31, 1993, served as a poster child for patents that the PTO should never have issued. This patent "contained 41 claims that broadly covered any multimedia database allowing users to simultaneously search for text, graph-

Questionable patents can harm competition and hinder innovation by forcing market participants to pay licensing royalties, incur substantial legal expense to defend against infringement claims, engage in design-around efforts that raise costs and/or hinder product performance. Numerous industry participants asserted at the Federal Trade Commission Hearings that these costs are substantial for patents they insist are invalid.<sup>4</sup> According to critics, a patent holder can have real power even without being a true inventor because the systems for patent issuance and patent litigation are tilted in favor of patent applicants and patent holders. The result is that the patent system, while intended to promote innovation, instead places sand in the gears of our innovation engine.

To examine the balance between competition and patent law and policy, the Federal Trade Commission (FTC) and the Antitrust Division of the U.S. Department of Justice (DOJ) held twenty-four days of hearings, with testimony from more than 300 panelists. Based on these hearings, in October, 2003 the FTC released an extensive report, "To Promote Innovation: A Proper Balance of Competition and Patent Law and Policy" ("FTC Report"), calling for a number of major reforms in the U.S. patent system.<sup>5</sup> Further fueling interest in patent reform, the National Academies of Science (NAS) released its own report in April 2004, "A Patent System for the 21st Century" ("NAS Study"), also calling for significant changes in the U.S. patent system.<sup>6</sup>

Does the U.S. patent system need major legislative reform? Or is some tinkering around the edges sufficient to correct imperfections in the system? All in all, there is compelling evidence that the U.S. patent system

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ics, and sounds—basic features found in virtually every multimedia product on the market." Simson L. Garfinkel, *Patently Absurd*, WIRED, July 1994, at 104, 109, available at <http://www.wired.com/wired/archive/2.07/patents.html>. A more recent, if less visible, example is Microsoft's patent for a "time based hardware button for application launch." U.S. Patent No. patent number 6,727,830 (issued Apr. 27, 2004). This patent covers technology enabling different applications to be launched depending upon the length of time that a button on a hand-held computer is pressed. See Victoria Shannon, *Pioneer Who Kept the Web Free Honored With a Technology Prize*, N.Y. TIMES, June 14, 2004, at C4.

4. See FTC, *Hearings*, *supra* note 1.

5. FTC, TO PROMOTE INNOVATION: A PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY (2003) [hereinafter FTC REPORT], <http://www.ftc.gov/opa/2003/10/cpreport.htm>.

6. NAT'L ACAD. OF SCIENCES, A PATENT SYSTEM FOR THE 21ST CENTURY (Stephen A. Merrill et al. eds., forthcoming 2004) [hereinafter NAS STUDY], <http://www.nap.edu/books/0309089107/html>; see also BD. ON SCI., TECH., AND ECON. POLICY, NAT'L ACAD. OF SCIENCES, PATENTS IN THE KNOWLEDGE BASED ECONOMY (Wesley M. Cohen & Stephen A. Merrill eds., 2003) (providing accompanying research from the National Research Council of the National Academies of Science).

could benefit from significant reform. Reform is needed both in the process by which patents are granted by the USPTO and in the procedures used when patents are litigated in the Federal courts.

In Part II, I address the role of the FTC in the patent reform process. I then explain why antitrust law alone cannot, and should not, be expected to solve problems with the patent system. Next, I evaluate the evidence regarding the changing role of patents and the commercial impact of questionable patents, which are empirical issues at the core of the patent reform debate. With this essential background, the remainder of this article is devoted to an economic critique of a number of the FTC and the NAS proposals for patent reform.<sup>7</sup>

## II. THE ROLE OF THE FTC—PATENT POLICY AND COMPETITION ADVOCACY

Fault lines in the patent policy debate are exposed by asking why the FTC, an agency that focuses on consumer protection and competition policy, is proposing reforms to the patent system, a system established by Congress and operated largely by the USPTO and the Federal Courts. Given that the antitrust authorities have displayed hostility to intellectual property rights in the past,<sup>8</sup> one may ask whether the FTC is the proper

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7. I also report reactions to the FTC proposals by some industry participants and association representatives. In April, 2004, the FTC and NAS, among others, co-sponsored a conference with the Berkeley Center for Law and Technology and the *Berkeley Technology Law Journal* to discuss the substance and process of patent reform. Symposium, *Ideas Into Action*, *supra* note 1. At this conference, I served as moderator of a panel consisting of representatives of a number of major companies (Cisco, eBay, Genentech, Google, Intel, Microsoft, and Symantec) along with representatives of several associations of attorneys (ABA IP Section, AIPLA, BIO, and IPO). See *Edited & Excerpted Transcript of the Symposium on Ideas into Action: Implementing Reform of the Patent System*, 19 BERKELEY TECH. L.J. 1053, 1122 (2004) [hereinafter *Symposium Transcript*]. These panelists provided their reactions to the FTC proposals, some of which are incorporated in this article.

8. The difference now from the antitrust treatment of intellectual property at the Department of Justice (DOJ) in the 1970s can be seen by considering the list of prohibited practices that came to be known as the “Nine No-No’s.” See R. Hewitt Pate, *Antitrust and Intellectual Property*, Address Before the American Intellectual Property Association (Jan. 24, 2003) [hereinafter *Pate, Address*] (citing Bruce B. Wilson, *Patent and Know-How License Agreements: Field of Use, Territorial, Price and Quantity Restrictions*, Address Before the Fourth New England Antitrust Conference (Nov. 6, 1970)) (providing also a recent statement by the current Assistant Attorney General for Antitrust explaining that the DOJ is far more willing to consider the pro-competitive aspects of various licensing arrangements than it was thirty years ago), at <http://www.usdoj.gov/atr/public/speeches/200701.htm>; see also Richard J. Gilbert and Carl Shapiro,

agency to propose reforms designed in part to make it harder for patent applicants to obtain and enforce patents. Is the FTC overly focused on eliminating the short-term market power that the patent system is designed to grant? Does the FTC give insufficient attention to the long-term positive effects of patents on innovation?

Currently the FTC and the DOJ appreciate that intellectual property can confer short-term monopoly power that is not necessarily anti-competitive.<sup>9</sup> More recently, R. Hewitt Pate, currently Assistant Attorney General for Antitrust, noted:

A few decades ago, it might have been accurate to say that anti-trust and IP were in conflict. In fact, for many years my own agency had a “Professions and Intellectual Property” section that was active in opposing the exercise of IP rights. In that era, our view was that intellectual property rights regimes created monopolies to spur innovation, while the antitrust laws sought to eliminate monopolies. The modern view, in contrast, is that intellectual property and antitrust laws both seek to promote innovation and consumer welfare.<sup>10</sup>

From an economic standpoint, the FTC and the DOJ have a legitimate and important role to play in the debate over reforming the patent system. This role is part of their broader, well-recognized competition advocacy mission. With their general expertise in competition policy, the FTC and the DOJ regularly comment on the activities of many other expert agencies.<sup>11</sup> So long as the FTC and the DOJ recognize that their comparative advan-

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*Antitrust Issues in the Licensing of Intellectual Property: The Nine No-No's Meet the Nineties*, in BROOKINGS PAPERS ON ECONOMICS: MICROECONOMICS (1997) (discussing how much the 1995 DOJ/FTC Guidelines for the Licensing of Intellectual Property differ from the earlier enforcement approach).

9. The DOJ/FTC “Antitrust Guidelines for the Licensing of Intellectual Property” states clearly, “The Agencies will not require the owner of intellectual property to create competition in its own technology.” U.S. DEP’T OF JUSTICE & FTC, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY 7 (1995) [hereinafter ANTITRUST GUIDELINES], <http://www.usdoj.gov/atr/public/guidelines/ipguide.pdf>.

10. Pate, Address, *supra* note 8. Assistant Attorney General Pate’s speech should leave no doubt that the DOJ no longer condemns as *per se* violations most of the infamous “Nine No-No’s” from the 1970s.

11. The list includes: Department of Transportation regulations affecting competition in the airline industry; Federal Energy Regulatory Commission rules affecting electricity competition; Federal Drug Administration rules affecting markets for pharmaceutical drugs; and Federal Communications Commission rules governing telecommunications and media. Also, comments filed by the Antitrust Division of the DOJ in a wide variety of regulatory proceedings can be found at <http://www.usdoj.gov/atr/public/comments/comments.htm>.

tage is in competition policy and not in a given industry or policy area, they can contribute their valuable perspective to the debate. There is no reason patent policy should differ in this respect.

While it is fair to question the FTC's expertise with regard to the details of how the patent system operates, especially as regards USPTO procedures, there are legitimate policy reasons to listen carefully to the FTC's concerns and proposals. Put simply, the USPTO tends to focus on the interests of its "customers," namely patent applicants and patentees, while the FTC and the DOJ have an institutional interest in serving the interests of consumers and competition.<sup>12</sup>

Furthermore, two general principles of economic regulation teach us to be wary that the USPTO may be issuing too many patents, or patents that are overly broad. First, the general theory of regulatory capture teaches us to be on the lookout for regulatory agencies that come to serve the interests of those they are intended to regulate, rather than the broader public interest.<sup>13</sup> In the case of the USPTO, the theory of regulatory capture suggests that the USPTO is too inclined to issue patents, or to allow broad claims, without giving sufficient weight to the costs that these patents impose on parties other than patent applicants, namely other companies and final consumers.<sup>14</sup> Second, general principles of competition policy teach us that monopolies created by the government can be among the most powerful and most durable. Without questioning the principle that a patent holder's exclusive rights are justified when they are based on genuine invention, from an antitrust perspective such patent monopolies should not be granted lightly. Therefore, it is a bit jarring that the burden of proof is on the USPTO to establish that a patent should not be granted, especially given the presumption of validity then afforded to a patent when its validity is challenged in the Federal courts.

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12. See, e.g., Brian Kahin, Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, Presentation Before the Federal Trade Commission and Department of Justice (Mar. 19, 2002), <http://www.ftc.gov/opp/intellect/020319briankah.in.pdf> ("[T]he USPTO is focused on its internal operations rather than on the proper functioning of the patent system as a whole. It does not engage economists and does not participate in mainstream debate on innovation, competition, and economic growth.").

13. See, e.g., *id.* ("[The PTO] system operates by rewarding strong private property rights on an *ex parte* basis.").

14. See, e.g., *id.* ("Once the patent is granted, the administrator [of the patent system] plays no further role and can therefore be indifferent to how patents play out in practice.").



### III. PATENT REFORM IS PREFERABLE TO COMPULSORY LICENSING

Given their concerns about competition policy, the FTC and DOJ naturally ask for justifications when the government grants monopolies to private parties. All too often historically, such grants, whether in the form of explicit monopoly franchises or trade barriers erected to protect local industry, have served powerful private interests at the expense of the general public.<sup>15</sup> Competition authorities have an important role to play in curbing unjustified monopoly power by advocating against policies that raise entry barriers and protect incumbents without promoting economic efficiency or other important social goals. Patents granted for technologies that were not novel or were “obvious” when the patent applicant was filed certainly benefit those patent applicants who are able to obtain such undeserved patents. However, innovation, competition, and consumers suffer as a result.<sup>16</sup>

How can the competition authorities address and control this particular type of unjustified monopoly power? At times when these authorities have exhibited hostility to patent monopolies, they restricted the rights of patent holders by imposing compulsory licensing or by limiting the ways in which patent holders could exploit their own technology through licensing.<sup>17</sup> Fortunately, the DOJ and the FTC have moved away from such policies over the past twenty-five years. As noted above, the DOJ/FTC’s “Antitrust Guidelines for the Licensing of Intellectual Property” disavow mandatory licensing and generally inquire whether a licensing agreement harms competition that would have arisen in the absence of the license:

The Agencies will not require the owner of intellectual property to create competition in its own technology. However, antitrust concerns may arise when a licensing arrangement harms compe-

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15. See, e.g., W. KIP VISCUSI ET AL., *ECONOMICS OF REGULATION AND ANTITRUST* ch. 13 (1992) (“Franchise Bidding and Cable Television”); George T. Stigler, *The Economic Theory of Regulation*, 2 *BELL J. OF ECON.* 3 (1971).

16. Below I discuss evidence regarding the commercial impact of questionable patents.

17. One well-known case was the FTC’s challenge to Xerox’s licensing practices in the 1970s. *In re Xerox Corp.*, 86 F.T.C. 364 (1975); see also Willard K. Tom, *The 1975 Xerox Consent Decree: Ancient Artifacts and Current Tensions*, 68 *ANTITRUST L.J.* 967 (2001) (providing a recent discussion of this case and the light it sheds on the antitrust treatment of intellectual property during that time period). Similarly, in the area of trade secrets, the DOJ brought suit against the float glass producer Pilkington in 1994. *Complaint, United States v. Pilkington* (D. Ariz. May 1994), at <http://www.usdoj.gov/atr/cases/f0000/0014.htm>.

tion among entities that would have been actual or likely potential competitors in a relevant market in the absence of the license  
 . . . .<sup>18</sup>

More recently, Assistant Attorney General R. Hewitt Pate has been quite clear that the Antitrust Division does not regard a patent holder's unilateral refusal to license its patents as an antitrust violation.<sup>19</sup>

However, the courts have been less clear about this principle. In a widely criticized decision, the Ninth Circuit found in *Image Technical Services v. Eastman Kodak Co.*,<sup>20</sup> that Kodak's refusal to sell its patented parts to rivals seeking to service Kodak's copiers constituted an antitrust violation. The court reasoned that Kodak's refusal to deal was based on its desire to earn a return on its R&D investments rather than based directly on protecting its rights as a patent holder.<sup>21</sup> In contrast, the Federal Circuit's decision in *Xerox*<sup>22</sup> has stated clearly that a patent holder's mere refusal to license does not constitute an antitrust violation:

In 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.<sup>23</sup>

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18. ANTITRUST GUIDELINES, *supra* note 9, at 7.

19. Pate stated:

Even outside the intellectual property context, the monopolist's general right unilaterally to refuse to deal is a fundamental and well-recognized part of antitrust law. Likewise, the right not to license is a fundamental aspect of patent law. Using antitrust to permit subjective inquiry into the intellectual property holder's motivations for refusing to deal cuts at the very heart of the intellectual property right—the right to exclude.

Pate, Address, *supra* note 8.

20. 125 F.3d 1195 (9th Cir. 1997).

21. *Id.* at 1219-20.

22. *In re Indep. Serv. Orgs. Antitrust Litig. v. Xerox Corp.*, 203 F.3d 1322 (Fed. Cir. 2000).

23. *Id.* at 1327. My discussion here only relates to the patent holder's unconditional, unilateral refusal to license, not the broader set of conduct covered by this Federal Circuit Court of Appeal's dicta. Clouding the picture further, the European Court of Justice recently ruled that a refusal to license a copyright could, under certain circumstances, constitute an abuse of a dominant position under Article 82 EC. Case C-418/01, *IMS Health GmbH & Co. OHG v. NDC Health GmbH & Co. KG*, 2004 ECJ CELEX LEXIS 166 (29 Apr. 2004) (refining the Court's earlier decision in the *Magill* case, Case C-241/91, *RTE and ITP v. Commission*, 1995 E.C.R. I-743).



When a private party is granted a patent or copyright, giving the owner exclusive rights over certain intellectual property, and then antitrust rules are interpreted to require that these rights be licensed to others, public policy and the law are confused and contradictory. Apart from undermining precisely the exclusive rights that were granted, compulsory licensing raises the thorny issue of the *terms and conditions* on which such licenses must be granted.<sup>24</sup> As noted above, the current Assistant Attorney General for Antitrust declared that the DOJ does not consider a patent holder's unconditional refusal to license its technology to others an antitrust violation.<sup>25</sup> Compulsory licensing of patents is at odds with the antitrust principle that companies, even monopolists, are not generally required to deal with their competitors.<sup>26</sup>

From an economic perspective, imposing mandatory licensing on those whose innovations have the most significant economic effects makes

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24. For example, in *Kodak*, after finding that Kodak was required to sell its patented parts to independent service organizations, the court inevitably had to determine the *prices* at which Kodak was required to sell a large number of parts. *Id.* at 1224. Mandatory licensing inevitably leads to the imposition of some form of ongoing price controls, a task to which courts are very poorly suited.

25. Likewise, Susan DeSanti, Deputy General Counsel for Policy Studies at the FTC and a major force behind the FTC Report, has made it clear in her speeches that the FTC seeks to reform patent law and policy in part because the FTC does *not* want to impose licensing duties on patent holders. See Susan DeSanti, The FTC Report: Balancing Competition and Patent Policy, Presented at the American Bar Association Antitrust Section Conference (May 20, 2004). Former FTC Chairman Muris also does not appear to favor mandatory licensing of patents. See Timothy J. Muris, *Competition and Intellectual Property Policy: The Way Ahead*, Remarks at the American Bar Association Antitrust Section Fall Forum (Nov. 15, 2001), <http://www.ftc.gov/speeches/muris/intellectual.htm>; see also Timothy J. Muris, *The FTC and the Law of Monopolization*, 67 ANTITRUST L.J. 693 (2000).

26. For the most recent articulation of this general principle, see the Supreme Court's decision in the *Trinko* case, *Verizon Communs., Inc. v. Law Offices of Curtis V. Trinko, LLP*, 124 S. Ct. 872 (2004) (holding that traditional antitrust principles do not justify making the present case an addition to the few existing exceptions to the proposition that there is no duty to aid competitors). The Antitrust Division recently expressed its concerns about imposing duties to deal on monopolists generally in its Amici Curiae Brief in the *Trinko* case:

When . . . a monopolist's refusal to deal . . . on particular terms does make business sense apart from exclusionary consequences, antitrust law should avoid interfering with such business choices. At one extreme, a refusal to sell an input to a rival when it requires the incumbent to forfeit profits would make obvious business sense.

Brief of Amici Curiae U.S. Dep't of Justice Antitrust Division, *Verizon Communications, Inc. v. Law Offices of Curtis V. Trinko, LLP*, 124 S. Ct. 872 (2004) (No. 02-682), <http://www.usdoj.gov/atr/cases/f201000/201048.pdf>.

little sense. Imposing mandatory licensing on patent holders who obtain a monopoly would undermine the rights of inventors whose innovations are the most valuable, as evidenced by their ability to transform an industry and, by dint of their superior technology, drive older technologies from the market. Innovation and competition are best promoted by carefully and properly defining the property rights awarded by the patent system, by taking steps to insure that such rights are only granted for true innovations, and then by letting patent holders assert those rights to exclude infringing rivals. This set of policies rewards genuine innovators, in some cases with monopoly power, and allows innovators to determine how best to exploit their own inventions. Under these policies, an innovator can refuse to license its invention to rivals and exploit the invention through internal growth, even if those rivals will be unable to compete effectively against the patent holder's improved technology.<sup>27</sup>

Both patent and antitrust law and policy are far better served by reforming the patent system than by distorting antitrust law to curtail the rights of patent holders.<sup>28</sup> Were the FTC and/or the DOJ to use the antitrust laws to impose compulsory licensing in order to reduce the perceived harmful effects of an overly generous patent system, the result would be far inferior to sensible patent system reform.

#### IV. EVIDENCE THAT PATENT REFORM IS NEEDED

Before looking specifically at the proposals by the FTC and the NAS to reform the patent system, let us step back and ask: how strong is the evidence that patent reform is needed?<sup>29</sup> After all, a series of anecdotes about so-called questionable patents issued by the USPTO need not imply that the patent system is in need of major reform. Nor does the observation that many litigated patents are found invalid imply that the system is bro-

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27. Alternatively, the patent holder can choose to exploit its invention by forming a joint venture with another company, or by subdividing its patent rights and licensing them to various third parties subject to a variety of use restrictions. Many options are viable so long as the patent holder does not suppress competition that is *not* based on using its invention or suppress competition that would have arisen in the absence of license(s) with the patent holder.

28. Indeed, under this view of patent and antitrust law and policy, the need for reform of the patent system is greater precisely *because* antitrust law cannot, and should not, solve the problem of questionable patents by imposing mandatory licensing. The antitrust agencies or the courts cannot, as a practical matter, impose mandatory licensing only in the cases of questionable patents.

29. The FTC and NAS Reports, and the references they cite, contain extensive evidence in various forms. Interested readers should delve more deeply using these sources. See FTC REPORT, *supra* note 5; see also NAS STUDY, *supra* note 6.

ken. Some critics of the FTC Report simply do not believe that the FTC has established the need for reform of the patent system.<sup>30</sup>

To provide context for this discussion, it is important to remember that the USPTO issues some 180,000 patents each year, with patent examiners spending an average of less than twenty hours on each patent application.<sup>31</sup> Under this system, some mistakes must be made simply because one cannot expect the far quicker, and cheaper, review by the USPTO to be as accurate as the extensive review that takes place in prolonged, expensive patent litigation. So, merely finding that many litigated patents are later held invalid hardly proves that the patent examination system is working poorly. Since criticism of the USPTO for issuing questionable patents is as old as the patent system itself, it is fair to ask what has changed lately to make patent reform more important, or urgent, than previously.

The quantity of patent-related activity undisputedly has surged in the last twenty years. According to the NAS Study, the number of U.S. patents issued nearly tripled from 66,290 in 1980 to 184,172 in 2001.<sup>32</sup> The “propensity to patent” also grew, from 0.35 to 0.51 patents per million dollars R&D spending.<sup>33</sup> Likewise, the number of patent lawsuits handled by the federal district courts doubled from 1200 in 1988 to nearly 2400 in 2001.<sup>34</sup>

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30. See, e.g., Ian Simmons et al., *Safer Than a Known Way? A Critique of the FTC's Report on Competition and Patent Law and Policy*, ANTITRUST, Spring 2004, at 39. Simmons et al. state,

[T]he report ultimately fails to establish that its most significant proposed “new remedies” are needed to redress an actual imbalance between the goals of competition law and the operation of “the patent system”—an imbalance the report too often assumes but does not demonstrate with specific examples examined in the context of specific anti-trust relevant markets.

*Id.*

31. The PTO issued 173,072 patents during fiscal year 2003. USPTO ANN. REP. (2003), available at <http://www.uspto.gov/web/offices/com/annual/2003/2003annualreport.pdf>. According to the FTC Report, “Hearings participants estimated that patent examiners have from 8 to 25 hours to read and understand each application, search for prior art, evaluate patentability, communicate with the applicant, work out necessary revisions, and reach and write up conclusions.” FED’L TRADE COMM’N, TO PROMOTE INNOVATION: A PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY: EXECUTIVE SUMMARY 10 (2003) [hereinafter FTC EXECUTIVE SUMMARY], reprinted in 19 BERKELEY TECH. L.J., 861, 870 (2004).

32. NAS STUDY, *supra* note 6, at 22.

33. *Id.*

34. *Id.* at 25.

Most of the growth in patenting is accounted for by the information technology sector.<sup>35</sup>

However, systematic empirical evidence regarding trends in patent quality is mixed. The NAS Study discusses three such measures: “(1) the ratio of invalid to valid patent determinations in infringement law suits; (2) the error rate in USPTO quality assurance reviews of allowed patent applications; and (3) the rate of claim cancellation or outright patent revocation in reexamination proceedings at the USPTO.”<sup>36</sup>

Using these measures, the NAS Study reports that (1) the probability that a patent will hold up under court challenge has risen over time, reaching just over 50 percent in the more recent period; (2) the error rate reported in USPTO quality assessment audits rose slightly during the 1990s, but has only ranged from 3.6% to 7% since 1980 and declined in recent years to around 4%; (3) only about 10% of patents reexamined in the U.S. are completely revoked.<sup>37</sup> Of these three measures, the NAS Study states:

Ostensibly, the USPTO’s audits come closest to producing a measure of quality and therefore deserve closer examination. . . In any case, the history of the USPTO’s quality review function does not inspire confidence that its results are meaningful and consistent over time. Created in 1974 in response to earlier criticisms of patent quality, the Office of Patent Quality Review was twice reviewed harshly by the Inspector General of the Department of Commerce.<sup>38</sup>

The FTC Report also assembles a great deal of evidence regarding patent quality, along with evidence on other aspects of the patent system.<sup>39</sup>

Looking at these reports and their underlying sources, defenders of the patent system point out that there is no compelling quantitative evidence that patent quality has declined. They further assert that whatever transi-

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35. *Id.* at 24.

36. *Id.* at 39.

37. *Id.* at 40. The PTO measured its error rate most recently at 4.4%. USPTO ANN. REP., *supra* note 31, at 17 (also defining error as “at least one claim within the randomly selected allowed application under quality review that would be held invalid in a court of law” and the error rate as “the ratio of allowed applications with errors to the total number of allowed applications reviewed”). The PTO reports error rates of 6.6% in 2000, 5.4% in 2001, and 4.2% in 2002, while its goal for fiscal year 2003 was an error rate of 4.0%. *Id.*

38. NAS STUDY, *supra* note 6, at 40.

39. FTC REPORT, *supra* note 5 (including evidence such as: the role of patents in several key industries (Ch. 3); the substantive standards for patentability and their affect on competition and innovation (Ch. 4); patenting procedures and presumptions and their affect on competition and innovation (Ch. 5)).

tion problems the USPTO may have had in certain areas, such as software and business methods patents, have been and will be adequately addressed as the USPTO gains experience and skill in these areas.<sup>40</sup>

The NAS Study acknowledges the lack of compelling quantitative evidence showing a decline in patent quality, but states, “There are nevertheless several reasons to suspect that more issued patents are deviating from previous or at least desirable standards of utility, novelty, and especially non-obviousness and that this problem is more pronounced in fast-moving areas of technology newly subject to patenting than in established, less rapidly changing fields.”<sup>41</sup> The NAS Study then presents evidence supporting this conclusion, citing (1) workload pressures on the USPTO; (2) patent approval rates; (3) changes in the treatment of genomic and business method inventions; and (4) application of the non-obviousness standard.<sup>42</sup>

On workload pressures, the NAS Study reports that the number of examiners has not kept pace with the number of patent applications, which doubled from 1991 to 2001.<sup>43</sup> The number of examiners per 1000 applications declined about 20% over the past four or five years and is now slightly below nine.<sup>44</sup> The NAS Study also notes that applications have become more complex, as measured by the number of claims and prior art citations per application. The average time spent per application has remained largely unchanged, but the average pendency has risen from 18.3 months in 1990 to 24 months in 2002 and 26.7 months in 2003.<sup>45</sup>

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40. See, e.g., Edward G. Fiorito, *Chair's Bulletin*, 2001 A.B.A. SEC. INTELLECTUAL PROP. L. REP. 5, <http://www.abanet.org/intelprop/chair/apr01chair.html>. Fiorito states,

A decade has passed and we don't hear the complaints about patenting software anymore. The patent system has learned how to handle this now established field of technology, and the media doesn't show any interest in the topic. However, the critics of the business method patents are singing the same tune that the critics of the software patents sang over a quarter of a century ago.

...

What Are We Doing About Business Method Patents? Plenty!

The United States Patent and Trademark Office is aggressively meeting the challenge of examining the growing number of business method patents classified in Class 705.

*Id.*

41. NAS STUDY, *supra* note 6, at 41.

42. *Id.* at 41-49.

43. *Id.* at 41.

44. *Id.* at 42.

45. *Id.*

Turning to patent approval rates, or the percentage of patent applications that ultimately result in patents, the FTC and NAS differ as to how to properly measure these rates. According to the FTC Report, one witness calculated the USPTO's grant rate at 98% in 2000, compared with 67% in Europe and 64% in Japan.<sup>46</sup> However, a USPTO witness criticized these calculations and stated that, properly measured, the USPTO grant rate was about 75%.<sup>47</sup> The NAS cites a study by Quillen and Webster finding that, after certain corrections are made, "the USPTO eventually issued patents on between 85 percent and 97 percent of the applications filed between 1993 and 1998—20 to 30 percent higher than official estimates, which have ranged between 60 percent and 70 percent for 20 years."<sup>48</sup> Recognizing that many factors influence patent approval rates, the NAS Study states, "The committee believes that high acceptance rates, especially if increasing over time relative to comparable rates in other industrialized countries would be reason to look more closely at examination quality."<sup>49</sup> The NAS Study then observes that patent approval rates at the European Patent Office and the Japanese Patent Office declined more rapidly since 1998 than did the patent approval rates at the USPTO.<sup>50</sup>

The NAS Study expresses particular concern regarding genomic and business method inventions. The USPTO reviewed its operations in these areas during 2000-2001 and instituted new policies designed to improve patent quality. Presenting data on rates of patenting and patent pendency, the NAS study states:

The new policies reflected a recognition by USPTO management that standards needed to be tightened, at least in two technologies attracting large investments and a great deal of publicity and exhibiting a controversial surge in patenting activity. The question of what practical effect the measures had on examiners' behavior and USPTO output is difficult to answer. It is complicated by the lag between application filings and patent grants, the downturn in the economy and in technology investments that oc-

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46. FTC REPORT, *supra* note 5, chs. 5, 6.

47. *Id.*

48. NAS STUDY, *supra* note 6, at 43 (citing C. Quillen and O. Webster, *Continuing Patent Applications and Performance of the U.S. Patent Office*, 11 FED. CIR. B.J. 1, 1-21 (2001), and R. Clarke, *U.S. Continuity Law and its Impact on the Comparative Patenting Rates of the U.S., Japan, and the European Patent Offices*, 8 J. PAT. & TRADEMARK OFF. SOC'Y 335, 335-49 (2003)).

49. *Id.* at 44.

50. *Id.*



curred in 2000, and other, nearly simultaneous, developments affecting patenting activity in these fields.<sup>51</sup>

Lastly, the NAS discusses the application of the non-obviousness standard at the USPTO. “A fourth reason to be concerned about patent quality is that there may have been some dilution of the non-obviousness standard as a result of court decisions and their incorporation in the examination guidance compiled in the USPTO’s Manual of Patent Examination Procedure (MPEP).”<sup>52</sup> The NAS Study cites various studies of Federal Circuit decisions in cases where patents were faced with non-obviousness challenges and asserts that “[a]lthough the committee considered these analyses, it did not reach a position on their significance regarding non-obviousness generally. Nevertheless, we are concerned about trends in the application of the obviousness standard to business method and genetic sequence inventions.”<sup>53</sup>

## V. WHAT IS THE COMMERCIAL IMPACT OF QUESTIONABLE PATENTS?

While reasonable people can differ in interpreting the evidence on patent quality, there are many indications that the patent system has been put under great pressure over the past ten to twenty years and could benefit from reform. In particular, the system would benefit from reforms in patent quality in areas of rapidly changing technology. To focus on those reforms that are most important for the economy, however, it is highly desirable to understand just *how* the problems with patent quality at the USPTO harm competition, innovation, and consumers.

In this respect, the natural tendency to focus on the most absurd patents issued fails to identify the most significant adverse commercial impact associated with the issuance of numerous questionable patents. Indeed, an argument can be made that if a patent is obviously invalid or almost sure to be found invalid if litigated, that patent should have little or no commercial impact. After all, the owner of such a patent would be unlikely to obtain a preliminary injunction to block sales of an alleged infringer, and anyone accused of infringing an obviously invalid patent would place very high probability on winning any infringement suit. Under these circumstances, the alleged infringer would have little reason to agree to significant royalties or engage in costly efforts to invent around the patent. Thus, it is far from clear that the patent holder could impose

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51. *Id.* at 45.

52. *Id.* at 50.

53. *Id.* at 51.

significant costs on the alleged infringer.<sup>54</sup> At best, the patent holder could threaten to engage in prolonged litigation to elicit a settlement from the alleged infringer just to avoid the costs of litigation. But even such a threat might lack credibility.<sup>55</sup>

Precisely because obviously invalid patents afford their owners relatively little bargaining power, it appears difficult to identify specific patents that (1) should never have been issued because the examiners should have known not to issue them in the very limited time for review *and* (2) have significant commercial impact.<sup>56</sup> In fact, in an *equilibrium* of the patent litigation and settlement game, one expects to find two key patterns in the sample of patents actually litigated. Both of these properties result because costly litigation tends to occur only when each side is relatively optimistic, making settlement difficult. First, litigated patents should be of relatively high commercial significance. Otherwise, the litigation costs would not be worth incurring, even if the parties differed greatly in their views of the likely outcome of the patent litigation. Second, the outcomes of patent litigation (again, for the patents actually litigated) should be highly unpredictable. If the outcome in a given case were easily predictable, one would expect settlement to avoid litigation costs, because the parties presumably would not differ much in assessing the likely outcome of the litigation.

These arguments tell us that the problems with the patent system so many industry participants perceive do not primarily fit the picture often painted: absurd or obviously invalid patents being brandished by non-inventors who are exploiting the patent system to extract royalties from upstanding companies who are the true innovators. Rather, there appears to be a much more subtle and deeper complex of problems, consisting of

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54. The analysis is more complex when a portfolio of patents of varying quality is asserted in combination, but the underlying principle that highly questionable patents afford their owners relatively little bargaining power still applies.

55. One could argue that even the weakest patent may be upheld by a jury, so alleged infringers always face a minimum litigation risk. If true, this implies that there really are no “obviously” invalid patents as I have defined the term, perhaps because of the requirement that invalidity be established by clear and convincing evidence. In this case, rather than pointing out their favorite “absurd” patents that have been issued, critics of the existing system should point out patents they consider to be “clearly invalid” (presumably due to lack of novelty or due to obviousness) yet have been upheld in litigation. Short of arguing that the infringing party botched its defense, this also appears to be a difficult task.

56. Of course, the examiner might have discovered the defect if given, say, twice as long to evaluate the patent application. But this type of situation seems more of an argument for increasing resources to the PTO rather than affecting more sweeping reforms.

the following basic elements: (1) a USPTO that lacks sufficient resources to handle the growing number of patents and whose expertise and knowledge of prior art can easily lag behind industry in areas where technology is rapidly advancing; (2) a USPTO process that favors patent applicants combined with a USPTO culture directed at issuing patents; (3) a narrow view of what should be considered “obvious” and thus not patentable; (4) the resulting presence of a very large number of patents that are likely to be invalid if actually tested in court; (5) the fear that many patents could be asserted against a given product, perhaps by a single entity holding a large portfolio of patents; (6) the danger that a company developing, designing, and even manufacturing a new product will be unaware of many patents which can then be asserted opportunistically against its products after it has made significant investments; (7) the danger that such an assertion can lead to an injunction, damages, and even treble damages in the case of willful infringement; (8) a very expensive and time consuming litigation process involving unpredictable juries; and (9) the legal requirement for “clear and convincing evidence” to prove a patent invalid.

Proving that such a complex of problems is widespread and important enough to warrant reforming the patent system is inherently difficult. The FTC Report and NAS Study are very helpful in assembling a variety of evidence, ranging from empirical studies to the testimony of practitioners, that provides considerable support for such reform. While more case studies of significant harm to competition and consumers due to questionable patents would be helpful and interesting, I consider the evidence convincing enough to warrant a number of reforms.<sup>57</sup>

One may fairly ask whether market forces, in the form of patent licensing agreements, can correct for poor patent quality, even if the underlying patent system is not well designed. Certainly, *ceteris paribus*, the “weaker” a patent, or the more likely that a patent will be found invalid if litigated, the lower the royalties it can command in licensing negotiations. After all, licensing takes place in the shadow of litigation, with licensing rates determined by the relative bargaining power of the patent holder and potential licensees/alleged infringers. Unfortunately, however, there is no reason to believe that the costs of a flawed patent system are eliminated through the operation of technology markets. To begin with, due to prob-

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57. *But see* Simmons et al., *supra* note 30, at 39 (finding the evidence assembled by the FTC unconvincing and calling for more case studies before engaging in patent reform).

lems of free-riding and pass-through of royalties, we cannot count on litigation to invalidate patents that should never have been issued.<sup>58</sup>

Furthermore, even holding aside the important free-riding and pass-through problems, a host of factors allows patent holders to wield significant negotiating power even when their patents are relatively weak: (1) the need for a challenger to present “clear and convincing” evidence to invalidate a patent; (2) the prospect that a plaintiff in a patent case may assert a whole portfolio of patents against the defendant; (3) the ability of patent holders to seek treble damages for willful infringement; (4) the prospect that significant investments made by the defendant that are specific to the patented technology will be lost or depreciate greatly if the patent holder obtains an injunction against the defendant’s products; and (5) the concern among patent defendants that jury trials are inherently unpredictable, so there is an irreducible risk that a jury will uphold the validity of a patent, even if that patent covers technology that objectively was not in fact novel and non-obvious. Therefore, even questionable patents can command non-trivial royalties in licensing negotiations. When many of these patents are issued, the effect is to create a “tax” on companies who are accused of infringing these patents. When many patents can read on a single product, as is common for computer hardware and software, the resulting “royalty stacking” can lead to substantial combined royalty rates and have serious economic consequences, even if each individual royalty rate is low.

## VI. FTC AND NAS PROPOSALS REGARDING PATENT PROSECUTION

This Part discusses specific FTC and NAS reform proposals, offers views on a number of these proposals, and reports reactions to those proposals from a number of companies and organizations.<sup>59</sup> My commentary on these proposals is divided into three sections, tracking chronologically the process by which a given patent is issued and asserted: (1) proposals relating to the process by which patents are issued by the USPTO, especially patent prosecution; (2) one proposal relating to a new post-grant re-

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58. See Joseph Farrell & Robert Merges, *Incentives to Challenge and Litigate Patents*, 19 BERKELEY TECH. L.J. 943 (2004); see also Mark Lemley & Carl Shapiro, *Probabilistic Patents*, J. OF ECON. PERSPECTIVES (forthcoming 2005) (manuscript at 25, on file with authors), available at <http://faculty.haas.berkeley.edu/shapiro>.

59. I convey here some of the reactions to those proposals from the companies and organizations represented on the industry/institutional panel that I moderated at the patent reform conference in Berkeley, California, in April, 2004. See *Symposium Transcript*, *supra* note 7, at 1122.

view procedure; and (3) proposals relating to the process by which patents are litigated.

The most direct way to address the problems of patent quality is for the USPTO to perform more careful and extensive examination of patent applications. Of course, the USPTO strives to issue patents only for inventions that are truly novel and non-obvious. Furthermore, the USPTO has its own plan for improving patent quality, “The 21st Century Strategic Plan” (“USPTO Report”).<sup>60</sup> However, the FTC and NAS perspectives are useful because there are good reasons to fear that the USPTO’s culture, mission, and incentives are oriented more towards issuing patents and serving the interests of patentees rather than the broader public purpose of promoting innovation and competition.

**A. Provide More Funds to the USPTO (FTC Recommendation 4, NAS Recommendation 4)**

The most obvious step to improve patent quality is to devote more resources to examining patent applications, at least for certain industries where the problems of patent quality are perceived to be greatest. The FTC Recommendation 4 states, “Provide Adequate Funding for the USPTO.”<sup>61</sup> Stated this way, the recommendation is hard to fault. Few would favor *inadequate* funding for the USPTO. NAS proposal 4 to “strengthen USPTO capabilities” is similar.<sup>62</sup>

What constitutes “adequate” funding for the USPTO is a far more difficult question. Often, this debate is cast in terms of eliminating “fee diversion,” and thus permitting the USPTO to keep all of the patent application fees it collects. However, there is no reason to believe that the optimal level of resources at the USPTO matches up with those fee revenues, any more than the optimal budget for the FTC’s merger control mission should equal the FTC’s revenues from Hart-Scott-Rodino filings. More generally, there is no reason to expect the optimal funding of government regulatory functions to equal to fees raised from the parties directly subject to those regulations. So, while framing the debate in terms of “fee diversion” may be politically convenient, it avoids the question of what the USPTO’s budget should be.

To answer that question, we need to know about the USPTO’s “production function”: what changes in patent quality would result if the

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60. USPTO, THE 21ST CENTURY STRATEGIC PLAN (Feb. 3, 2003) [hereinafter USPTO Plan], <http://www.uspto.gov/web/offices/com/strat21/index.htm>.

61. FTC EXECUTIVE SUMMARY, *supra* note 31, at 12, *reprinted in* 19 BERKELEY TECH L.J. 857, 872 (2004).

62. NAS REPORT, *supra* note 6, at 5.

USPTO were given more resources? To learn this, the USPTO could experiment with devoting greater examination time to some patent applications to see if it reduced the error rate during the audit phase. The USPTO could also experiment further with the allocation of examiner time across different areas of technology. Or the USPTO could test whether error rates are systematically related to characteristics of examiners such as training or experience. Indeed, the NAS recommends, “[T]he USPTO should create a strong multidisciplinary analytical capability to assess management practices and proposed changes, provide an early warning of new technologies being proposed for patenting, and conduct reliable, consistent, reputable quality reviews that address office-wide and individual examiner performance.”<sup>63</sup>

Providing the USPTO with more resources also would permit faster processing of patent applications. All parties agree that reducing the pendency of patent applications is desirable. The USPTO Report sets a goal of reducing the average pendency (measured from filing to ultimate disposal) to twenty-seven months by 2008.<sup>64</sup> While achieving this goal may indeed take hard work and good management at the USPTO, an outside observer is not impressed by an average lag of twenty-seven months in five years as a goal for processing patent applications, especially if each patent application is only given a few days work by a patent examiner.<sup>65</sup> There is also a tension between faster processing of patent applications and greater accuracy in the examination process.<sup>66</sup>

The industry panel widely supported giving more resources to the USPTO. Yet no one wants a larger USPTO budget to translate into more

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63. *Id.*

64. PTO Plan, *supra* note 60.

65. According to the PTO,

The two primary measures of Patent Organization processing time are: (1) first action pendency, which measures the average time in months until an examiner’s initial determination is made of the patentability of an invention; and (2) total pendency, which measures the average time in months until an examiner either allows the patent to issue or the application is abandoned by the applicant.

USPTO ANN. REP., *supra* note 31, at 18. For fiscal year 2003, the PTO’s goal for first action pendency was 18.4 months; this goal was achieved with an average first action pendency of 18.3 months. *Id.* The PTO’s goal for total patent pendency was 27.7 months; this goal was achieved with an average total patent pendency of 26.7 months. *Id.* However, total pendency was higher in 2003 than in the three previous years where it ranged from 24.0 to 25.0 months. *Id.*

66. Indeed, the PTO states that “[w]hile the USPTO’s long-term patent pendency goal remains 18 months, this goal will not be achieved in the near future because of the higher priority placed on quality and patent e-Gov initiatives.” *Id.*



questionable patents. So, the provision of additional funds to the USPTO was generally conditioned on the USPTO improving its operations. The USPTO Report provides one model for such improvements.<sup>67</sup>

**B. Reforming the Operations of the USPTO (FTC Recommendation 5, NAS Recommendation 4)**

Apart from simply providing more resources to the USPTO, the FTC offers four specific recommendations to improve patent quality by modifying USPTO rules and implementing portions of the USPTO Report. The most popular of these with the industry panelists was to expand the USPTO's "second-pair-of-eyes" review from the area of business method patents, where it apparently has been well received, to "fields with substantial economic importance, such as semiconductors, software, and biotechnology, as well as other new technologies as they emerge."<sup>68</sup> One addition point was stressed by panelists, which was general support for the proposition that reducing pendency times for patent applications was commercially quite important.<sup>69</sup>

Unfortunately, the FTC's proposals do not seek to address the possible "regulatory capture" concerns noted above, as reflected by evidence that the USPTO apparently sees its mission as serving its "customers," namely patent applicants. This concern is heightened by evidence that the USPTO issues patents for a very high fraction of patent applications.<sup>70</sup> While it is understandable that the FTC would steer clear of advocating a major overhaul of the USPTO, the NAS Study is critical of the USPTO and from a good-government perspective one wonders whether deeper institutional changes designed to alter the incentive structure at the USPTO would prove beneficial. For example, the governance of the USPTO could be

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67. PTO Plan, *supra* note 60.

68. FTC EXECUTIVE SUMMARY, *supra* note 31, at 14, *reprinted in* 19 BERKELEY TECH L.J. 857, 878 (2004). Two of the other proposals are quite specific and designed to give the examiner better information: (1) to require applicants, upon the request of the examiner, to submit statements of relevance regarding their prior art references, and (2) to encourage the use of examiner inquiries under Rule 105 to obtain more complete information and to reformulate Rule 105 to permit reasonable follow-up. The last part of FTC Recommendation 5 is much more general: to continue to implement the recognition that the PTO "forges a balance between the public's interest in intellectual property and each customer's interest in his/her patent and trademark." *Id.* at 13-14, *reprinted in* 19 BERKELEY TECH. L.J. 857, 877 (2004).

69. *See, e.g., id.* at 1145 (remarks by Herb Wamsley, Intellectual Property Owners); 1146 (remarks by Jeffrey Kusham, Sidley Austin Brown & Wood and BIO).

70. NAS STUDY, *supra* note 6, at 43 (especially the study cited there, C. Quillen and O. Webster, *Continuing Patent Applications and Performance of the U.S. Patent Office*, 11 FED. CIR. B.J. 1, 1-21 (2001)).

changed so that consumer interests were better represented, or the incentives facing USPTO management could be redesigned to place much greater weight on patent quality.

**C. Publish All Patent Applications After 18 Months (FTC Recommendation 7, NAS Recommendation 7)**

A number of industry representatives, especially those in the information technology sector, are especially concerned about possible infringement actions arising from submarine patents that are invisible to them when their companies make major investment decisions.<sup>71</sup> Economists have long understood that such opportunism, for example, appropriation of sunk investments reliant upon the patented technology that were made by others when they were unaware of the pending patent, can provide excessive returns to patent holders and deter investment by others. Naturally, problems of opportunism are less significant the sooner patent applications are visible to third parties.

Fortunately, most problems associated with submarine patents were solved by the American Inventors' Protection Act of 1999, which has resulted in roughly 90% of patent applications being published after eighteen months.<sup>72</sup> The FTC states: "This new procedure appears to have increased business certainty and promoted rational planning, as well as reduced the problem of unanticipated 'submarine patents' used to hold up competitors for unanticipated royalties. For these reasons, Hearings participants advocated expanding the 18-month requirement to include [all patents]."<sup>73</sup>

Great commercial problems can be caused by patents that are issued years after their initial application, perhaps because the applicant files continuations. In extreme cases, submarine patents have remained secret in the patent office for decades, during which time companies or even entire industries made investments that later became subject to hold-up. In such cases, patentees can easily obtain bargaining power out of proportion to their innovative contributions. Hoping to eliminate the last vestiges of these problems, the panelists uniformly supported the proposal to publish

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71. *See id.* at 1147 (remarks by Carl Shapiro, Haas School of Business, University of California, Berkeley (co-moderator), summarizing the consensus).

72. FTC REPORT, *supra* note 5, ch. 4, at 27.

73. FTC EXECUTIVE SUMMARY, *supra* note 31, at 15, *reprinted in* 19 BERKELEY TECH L.J. 857, 875 (2004). The NAS Study addressed this issue as part of its Recommendation 7 to "reduce redundancies and inconsistencies among national patent systems," including "the U.S. exception to the rule of publication of patent applications after 18 months." NAS STUDY, *supra* note 6, at 6.

all patent applications after eighteen months. The NAS Study reaches the same conclusion.<sup>74</sup>

One argument against this proposal is that some inventors may refrain from filing a patent application for fear that their inventions will be disclosed after eighteen months, yet no patent (or a very narrow patent) will be issued. After all, the basic *quid pro quo* in the patent system is that the patent holder obtains exclusive rights in exchange for fully disclosing his or her invention. While disclosure of all patent applications after 18 months might discourage some inventors who lack confidence that their inventions will be judged novel and non-obvious from filing patent applications, that may be a small price to pay to prevent the hold-up and opportunism that can arise with submarine patents. But even better might be a system whereby the USPTO is required to provide its First Office Action to the applicant before 18 months have elapsed.<sup>75</sup> Under that system, a patent applicant who received a discouraging first response could withdraw its application and thus retain its trade secrets.

## VII. FTC AND NAS PROPOSAL REGARDING POST-GRANT REVIEW AND OPPOSITION

I turn now to the next stage in the life of a patent application: after a patent has been issued. Given the short time available to review patent applications, it is inevitable that some applications will be granted in error.<sup>76</sup> Currently, virtually the only way for third parties to get such errors corrected is through very expensive and time-consuming litigation in the federal courts. What about a quicker, less expensive process, like a post-grant review procedure, by which third parties could have the USPTO take a second, more intensive look? If such a procedure were effective, the adverse commercial impact of questionable patents might be greatly reduced, even if many such patents were still issued.

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74. "The United States should abandon its exception to the rule of publication after 18 months for applicants not intending to patent abroad." NAS Study, *supra* note 6, at 104.

75. *Symposium Transcript*, *supra* note 7, at 1148 (remarks by Ron Myrick, Finnegan, Henderson, Farabow, Garrett & Dunner, LLP and U.S. Council for International Business).

76. Indeed, in an influential paper, Mark Lemley argues persuasively that the optimal system cannot involve a detailed look at each patent application but rather must involve taking a closer and more costly look at patents that prove to be commercially important and disputed. See Lemley, *supra* note 2.

Both the FTC and the NAS propose creating a new procedure to allow post-grant review of and opposition to patents.<sup>77</sup> While there was general support for such post-grant review, many panelists pointed out that “the devil is in the details” when it comes to designing such a procedure.<sup>78</sup> Several panelists noted that the existing *inter partes* reexamination process is rarely used and thus ineffective, suggesting that the detailed procedural rules are crucial.<sup>79</sup> The FTC recommends that Congress enact legislation providing for post-grant review of patentability determinations covering a range of issues, presided over by an administrative patent judge, allowing cross-examination of witnesses, and permitting limited discovery.<sup>80</sup>

A number of other authors in this symposium address post-grant review procedures, so I will keep my comments on this proposal brief. Perhaps most important, as explained by Joseph Farrell and Robert Merges, there is no reason in general to expect that the incentives of private parties to challenge issued patents—either through an opposition process or through litigation—line up well with the social incentives.<sup>81</sup> Worse yet, as pointed out by several panelists, a firm that pro-actively challenges an issued patent is “painting a big target on its back,” because the challenge signals to the patent holder that the challenger has a major commercial interest in seeing that patent invalidated.<sup>82</sup> Therefore, any system that places great weight on such private challenges may run into serious problems. One solution might be to enable a public entity to bring challenges to issued patents, presumably based on input from interested private parties. That public entity would need to know enough about technology to challenge those patents most likely to be found invalid, and enough about markets to challenge those patents with the greatest commercial significance.

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77. See FTC REPORT, *supra* note 5, at 7 (FTC recommendation 1); NAS STUDY, *supra* note 6, at 5 (NAS recommendation 2).

78. See, e.g., *Symposium Transcript*, *supra* note 7, at 1137 (remarks by Ron Myrick, Finnegan, Henderson, Farabow, Garrett & Dunner, LLP and U.S. Council for International Business); *id.* at 1138 (remarks by Bart Eppenauer, Microsoft Corporation).

79. See generally *id.* at 1134-40.

80. FTC EXECUTIVE SUMMARY, *supra* note 31, at 7-8, reprinted in 19 BERKELEY TECH. L.J. 857, 869-70 (2004).

81. See Farrell & Merges, *supra* note 58, at 951-60 (discussing the various incentives to challenge patents).

82. See *Symposium Transcript*, *supra* note 7, at 1138 (remarks by Ron Myrick, Finnegan, Henderson, Farabow, Garrett & Dunner, LLP and U.S. Council for International Business); *id.* at 1138 (remarks by Bart Eppenauer, Microsoft Corporation); *id.* at 1140 (remarks by David Simon, Intel Corporation).

Such “patent busting” efforts could also arise in the private sector if groups of firms shared the expense of challenging certain patents, or if public interest groups took on this role. Given the benefits to consumers and competition when invalid patents are struck down, relying on dual public and private action to challenge patents seems highly desirable, much as we have dual enforcement of the antitrust laws. The Electronic Frontier Foundation and the Public Patent Foundation have begun efforts to file administrative challenges to some patents.<sup>83</sup> The antitrust authorities could reduce some potential barriers to private sector activity in this area by making it clear that cooperative efforts to challenge patents will generally not be considered illegal collusion, even when such efforts involve horizontal rivals who are seeking to pay less for a technological input, or license.

One of the most important dimensions of any opposition procedure is the *time period* during which it is available to would-be challengers. The FTC recommends “limitations be established to protect against undue delay in requesting post-grant review.”<sup>84</sup> The industry panel was divided on this issue. Some favored a relatively short window, such as nine months from the date of patent issuance, during which such oppositions could be initiated.<sup>85</sup> Others suggested that patents be subject to such opposition during their entire lifetime, at least by a third party who has reason to believe that the patent will soon be asserted against it by the patent holder.<sup>86</sup> A number of company representatives voiced concern that they may be quite unaware when a patent is issued that it can or will later be asserted against their products.<sup>87</sup> The counterargument was that patent holders, especially in the pharmaceutical and biotech industries, value some assurance that

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83. See, e.g., Ian Austen, *Claiming a Threat to Innovation, Group Seeks to Overturn 10 Patents*, N.Y. TIMES, July 5, 2004, at C4; Peter Galli, *Microsoft's FAT Patent Under Review*, EXTREME TECH.COM, June 14, 2004.

84. FTC REPORT, *supra* note 5, ch. 5, at 24.

85. See, e.g., *Symposium Transcript, supra* note 7, at 1134 (remarks by Robert Safford, Pattishall, McAuliffe, Newbury, Hilliard and Geraldson and ABA Intellectual Property Section); *id.* at 1135 (remarks by Gary Griswold, American Intellectual Property Law Association).

86. See, e.g., *id.* at 1135 (remarks by Herb Wamsley, Intellectual Property Owners); *id.* at 1136 (remarks by Jeffrey Kusham, Sidley Austin Brown & Wood and BIO).

87. See, e.g., *id.* at 1138 (remarks by Ron Myrick, Finnegan, Henderson, Farabow, Garrett & Dunner, LLP and U.S. Council for International Business); *id.* at 1140 (remarks by Gary Griswold, American Intellectual Property Law Association).

their patent will endure, so they can make the necessary investments to exploit the patented technology.<sup>88</sup>

There seem to be real advantages of permitting third parties to initiate the patent opposition process any time during the lifetime of the patent. If the patent holder requires more certainty that its patent will withstand such a challenge, the patent holder could itself ask for the more thorough review early in the lifetime of the patent. The NAS Study states, “Nearly one-half of *ex parte* reexaminations are brought by patent owners seeking to strengthen at least a portion of their own rights with or without a narrowing amendment because some prior art has come to light.”<sup>89</sup> Effectively, patent holders could self-select: those who are more confident, or who most value reducing uncertainty about the strength of their own patent, could voluntarily undergo a more thorough examination at any early date, knowing that third parties would not then be able to initiate such a process themselves at a later date. Thus, relying on self-selection could be an effective, incentive-compatible way to tailor the patent system to different industries, even if the USPTO itself lacks the information necessary to implement technology-specific policies.

### VIII. FTC AND NAS PROPOSALS REGARDING PATENT LITIGATION

Finally, I consider several proposals directed at the third stage in the lifetime of a patent application, namely actual or potential patent litigation. Of course, only a small fraction of patents are actually litigated, but the litigation process is crucial for the operation of the entire patent system because (1) the litigated patents tend to be those of the greatest commercial significance, and (2) licensing agreements and other settlements take place in the shadow of litigation, so the influence of the rules of litigation reaches far beyond the cases actually litigated.

#### A. Validity Challenges Based on a “Preponderance of the Evidence” (FTC Recommendation 2)

Perhaps the most far-reaching proposal by the FTC calls for Congress to enact legislation that would specify the use of a “preponderance of the evidence” standard, replacing the current standard that requires “clear and

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88. *See id.* at 1136-37 (remarks by Jeffrey Kusham, Sidley Austin Brown & Wood and BIO); *id.* at 1138-39 (remarks by David Simon, Intel Corporation).

89. NAS STUDY, *supra* note 6, at 122.



convincing evidence” that a patent is invalid.<sup>90</sup> Changing this standard of proof would be very significant, as it would apply to all patents. Most panelists felt that this change would undermine the functioning of the patent system and create added uncertainty.<sup>91</sup> In addition, several other panelists expressed the view that none of the FTC’s proposals would amount to much without this change, especially since it is uncertain whether changing USPTO examination procedures or adding post-grant review procedures will markedly improve patent quality.<sup>92</sup>

The various FTC proposals interact with each other. Essentially, the FTC has found that the current presumption of validity afforded to litigated patents is too strong, given the USPTO’s very limited review and the lack of any other procedure to weed out questionable patents before litigation. As a result, according to the FTC, even a patent that would not have been issued, had it been subjected to a reasonably careful *de novo* review of prior art, may hold up in court. This gives the holder of such a patent an undeservedly large amount of bargaining power with licensees, harming competition and innovation. However, if the USPTO examination process were improved, such as by increasing the time spent reviewing applications in selected industries or by relying on a “second-pair-of-eyes” in more cases or certain industries, then a patent clearing *that* process might deserve a real presumption of validity. Perhaps, then, both for practical and conceptual reasons, this FTC proposal should be held in reserve in case the other proposals prove ineffective at raising patent quality.

#### **B. Prior Use Rights/Continuing Applications (FTC Recommendation 8)**

One reason many computer scientists view the patent system as dysfunctional is that a programmer can write software independently and later find that he or she has infringed a patent that was not even issued when the code was written. Thus, three complaints come together with force in the world of computer software: (1) the USPTO lacks a good understanding of prior art, and therefore issues many patents for code that is not “novel”; (2) the USPTO has a very cramped view of what someone with ordinary skill in the art can do, and therefore issuing patents on code that should be

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90. FTC EXECUTIVE SUMMARY, *supra* note 31, at 8, *reprinted in* 19 BERKELEY TECH L.J. 857, 868 (2004).

91. *See Symposium Transcript, supra* note 7, at 1141 (remarks by Robert Sacoff, Pattishall, McAuliffe, Newbury, Hilliard and Geraldson and ABA Intellectual Property Section); *id.* (remarks by Herb Wamsley, Intellectual Property Owners).

92. *See id.* (remarks by Herb Wamsley, Intellectual Property Owners); *id.* at 1141-42 (remarks by Jeffrey Kusham, Sidley Austin Brown & Wood and BIO); *id.* at 1143 (remarks by Robert Barr, Cisco Systems, Inc.).

considered “obvious”; and (3) once a patent is issued, it can be asserted against code written independently by others, very possibly before the patent was even issued. This last problem can be reduced (and not just for software) through prior user rights.

The FTC proposes to enact legislation that would protect parties from infringement actions based on patent claims first introduced in a continuation or other similar application by creating “intervening or prior user rights.”<sup>93</sup> The intended purpose of this proposal is to prevent hold-up problems that can arise, despite the publication of patent applications after eighteen months, because amending claims during the prosecution process can broaden claims beyond those published at eighteen months.<sup>94</sup> The FTC Report argues that the FTC proposal addresses competitive, hold-up concerns while protecting the legitimate uses of continuing applications.

Congress passed legislation in 1999 creating prior use rights specifically for business method patents.<sup>95</sup> These rights are only available to those who reduced the business method to practice at least a year before the patent application and used the method before the effective filing date of the patent application. The panelists generally believed that this legislation has worked well, and thus it provides a pilot for the FTC’s expanded proposal. The FTC seeks to expand the rights established by Congress in 1999 in three ways: (1) by granting these rights for all patents; (2) by reducing the lead time required to obtain such rights; and (3) by granting such rights to those who make substantial preparation for using a product or process.<sup>96</sup>

My own research supports the concept of prior use rights generally.<sup>97</sup> In principle, patents are intended to reward inventors for discoveries that would not otherwise have been made. In practice, patents are granted to the first inventor, regardless of whether others made the same discovery independently but later (or even earlier if they kept it secret). When a 20-year patent issues to a party who first made a discovery that was “in the air” and was made independently by someone else shortly thereafter, the private reward far exceeds the social contribution of the inventor. Prior use rights, therefore, provide a way for the patent system to calibrate rewards to inventors’ social contributions, without the need for the USPTO to rely

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93. FTC EXECUTIVE SUMMARY, *supra* note 31, at 16, reprinted in 19 BERKELEY TECH L.J. 857, 879-80 (2004).

94. *Id.* at 14, reprinted in 19 BERKELEY TECH. L.J. 857, 879 (2004).

95. First Inventor Defense Act of 1999, 37 C.F.R. § 1.215, <http://www.uspto.gov/web/offices/dcom/olia/aipa/index.htm>.

96. FTC REPORT, *supra* note 5, ch. 1, at 26-31.

97. Carl Shapiro, *Prior Use Rights in Patent Cases* (manuscript on file with author).

on industry-specific or technology-specific information (for example, by having longer-lived patents in industries where inventions are more valuable, harder to achieve, or less likely to be duplicated by others). Prior use rights also provide valuable incentives for companies and individuals engaged in R&D to focus their efforts in areas *not* pursued by others, for example, in terms of the overall portfolio of R&D products being undertaken. This is highly desirable in terms of maximizing the social return to R&D expenditures, since duplicate discoveries are of limited social value. The panelists uniformly supported the idea of expanded prior use rights.<sup>98</sup> Between the successful experience with prior use rights from the 1999 legislation, strong economic arguments in favor of prior use rights, and widespread industry support, one can hope that legislation will pass creating expanded prior use rights.

**C. Require Written Notice or Deliberate Copying for Willfulness (FTC Recommendation 9, NAS Recommendation 6)**

The final FTC proposal regarding patent litigation involves willful infringement. Similar ideas are expressed as part of NAS Recommendation 6, to “modify or remove the subjective elements of litigation.”<sup>99</sup> Many observers believe that patent holders have too much bargaining power in this area by virtue of their ability to seek treble damages. The FTC proposes to enact legislation that requires either “actual, written notice of infringement from the patentee, or deliberate copying of the patentee’s invention, knowing it to be patented” as a predicate for willful infringement liability.<sup>100</sup>

The panel uniformly believed the current willfulness rules badly need reform.<sup>101</sup> While this FTC proposal may not be a cure-all for the problems associated with the willful infringement regime, there was general agreement that it was a step in the right direction.<sup>102</sup> A number of panelists took the view that legislation in one specific area, namely the inference of willful infringement when an accused infringer refuses to waive privilege re-

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98. See *Symposium Transcript*, *supra* note 7, at 1149 (remarks by Gary Griswold, American Intellectual Property Law Association); *id.* (Robert Sacoff, Pattishall, McAuliffe, Newbury, Hilliard and Geraldson and ABA Intellectual Property Section).

99. NAS STUDY, *supra* note 6, at 6.

100. FTC REPORT, *supra* note 5, ch. 5, at 31.

101. See *Symposium Transcript*, *supra* note 7, at 1125 (remarks by Bart Eppenauer, Microsoft Corporation); *id.* at 1128 (remarks by Jay Monahan, eBay Inc.). See generally *id.* at 1149-54.

102. See *id.* at 1149-54.

garding an opinion letter from patent counsel, is premature at this time, at least until the Federal Circuit rules in the *Knorr-Bremse* case.<sup>103</sup>

Requiring written notice of infringement from the patentee may not limit willful infringement claims greatly. What prevents patent holders from broadcasting such notices to large numbers of potential defendants? And what should companies who receive a large volume of such letters do to avoid willful infringement? Those seeking more extensive reforms in this area are advised to look at the broader and more comprehensive set of proposals to deal with willful infringement claims offered by Mark Lemley and Ragesh Tangri in their article, *Ending Patent Law's Willfulness Game*.<sup>104</sup> The key to their approach is to narrow the definition of willful infringement to those who *develop* a technology with knowledge that it was derived from the patentee. Those who innocently develop products that they later learn may be infringing would not be considered willful infringers just because they later manufacture and sell those products knowing that they *might* be found infringing.

## IX. CONCLUSION

The Federal Trade Commission, the National Academies of Science, and many large companies now support some major changes to the U.S. patent system. The FTC has an important and legitimate role to play in protecting competition and consumers from a patent system that many believe too often awards exclusive rights without genuine justification in terms of innovation. And the NAS has prepared a very thoughtful study based on a wide-ranging review of relevant research findings.

Certainly, some of the reform proposals are controversial, and even unpopular among intellectual property lawyers. Most notably, FTC Recommendation 2, which proposes enacting legislation that specifies that challenges to patent validity are to be determined on a preponderance of the evidence basis. This proposal seems prompted by widespread concerns about the quality of the patents issued by the USPTO.

Even if one stops short of this controversial FTC recommendation, a number of the other proposals put forward by the FTC and the NAS have a very sound economic basis and have received widespread support. In particular, both the FTC and the NAS recommend that Congress seriously consider legislation to establish a new administrative procedure to allow

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103. *Knorr-Bremse Systeme Feur Nutzfahrzeuge GmbH v. Dana Corp.*, 344 F.3d 1336 (Fed. Cir. 2003) (granting *en banc* review).

104. Mark A. Lemley & R. K. Tangri, *Ending Patent Law's Willfulness Game*, 18 BERKELEY TECH. L.J. 1085 (2003).

post-grant review of and opposition to patents. In principle, such a post-grant review process can effectively and efficiently focus resources on patents that are both questionable and commercially significant. Further, the FTC and the NAS also favor: strengthening the USPTO with additional resources and instituting reforms at the USPTO to improve patent quality, publishing all patent applications after 18 months, and restricting the ability of patent holders to obtain treble damages for willful infringement. The FTC also recommends extending prior user rights. All of these recommendations were well received at the Ideas Into Action conference in April, 2004.

Perhaps the stars are aligned to enable in the near future some significant reforms to the patent system that reflect new learning as well as the changing, and growing, role of patents in our economy.