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PATHOLOGICAL PATENTING: THE PTO AS CAUSE OR CURE

INNOVATION AND ITS DISCONTENTS: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION AND PROGRESS, AND WHAT TO DO ABOUT IT. By *Adam B. Jaffe* and *Josh Lerner*. Princeton and Oxford: Princeton University Press. 2004. Pp. ix, 236. $29.95.

Rochelle Dreyfuss[*]

INTRODUCTION

The Patent Act was last revised in 1952. The hydrogen bomb was exploded that year, vividly demonstrating the power of the nucleus; in the ensuing postwar period, the Next Big Thing was clearly the molecule.[1] Novel compounds were synthesized in the hopes of finding new medicines;[2] solid-state devices exploited the special characteristics of germanium and other semiconductors;[3] as investments in polymer chemistry soared, advice to the college graduate soon boiled down to "one word . . . just one word[:] . . . Plastics."[4]

Over the next half-century, things changed dramatically. "Better living through chemistry" has begun to sound dated (if not sinister).[5] Genomics and computer science have come into their own. The molecule is still valued, but not so much for its reactivity as for its informational content. Even the business of knowledge production has evolved. Once the border between

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1. RICHARD RHODES, DARK SUN: THE MAKING OF THE HYDROGEN BOMB 498–512 (1995).

2. *See, e.g.*, JAMES LE FANU, THE RISE AND FALL OF MODERN MEDICINE 159–86 (1999).

3. P.R. MORRIS, A HISTORY OF THE WORLD SEMICONDUCTOR INDUSTRY 26–63 (1990).

4. THE GRADUATE (Embassy Pictures Corporation 1967); *see also* ROBERT W. CAHN, THE COMING OF MATERIALS SCIENCE (2001).

5. *See, e.g.*, Judson Knight, *E.I. du Pont de Nemours and Company: Better Things for Better Living Through Chemistry Campaign*, *in* ENCYCLOPEDIA OF MAJOR MARKETING CAMPAIGNS 522–26 (Thomas Riggs ed., 2000).

science and technology was clear; now it is a blur.[6] There are scholars who patent fundamental research, and commercial firms that are run like academic departments.[7] And while knowledge has always grown cumulatively, the relationship among inventions has become more complex as products have become interoperable, functionality has converged, and markets have globalized.[8] With the character of inventiveness changing so drastically, the need to reexamine the patent system has become evident. In the last three years, the Federal Trade Commission, the National Academy of Sciences, and even the Patent and Trademark Office ("PTO") have suggested that it is time for reform.[9] As I write, Congress is contemplating significant revision of the system.[10]

Given this context, Adam Jaffe[11] and Josh Lerner[12] have given us a wonderfully timely book—and also one that is beautifully executed. If Congress is to reform the system, the public ought to understand its current failings. Interest group politics have played an especially corrosive role in this field because the law is complex and creates substantial economic benefits on behalf of particularly well-organized parties. Further, as the authors note, the "second class status" of patent law within the academy has meant that the perspective usually provided by legal scholars has largely been absent here (p. 161). Their book is a splendid antidote. It lays out the basic structure of patent law in a manner that is sure to educate and intrigue both readers unfamiliar with law and lawyers unfamiliar with the patent system. It uses as examples patents on inventions that are accessible to even the congenitally innumerate: the ubiquitous peanut butter and jelly sandwich, the oxymoronic comfortable high-heel shoe, and (of course) the proverbial better way to "catch[] . . . mammalian pests not exceeding 100 grams" (pp. 32, 52, 28). There is also a nice historical section demonstrating that there are

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6. *See, e.g.*, Francis Narin & Dominic Olivastro, *Status Report: Linkage Between Technology and Science*, 21 RES. POL'Y 237 (1992) (demonstrating the ever-closer tie between science and technology).

7. *See, e.g.*, Dante Di Gregorio & Scott Shane, *Why Do Some Universities Generate More Start-ups than Others?*, 32 RES. POL'Y 209 (2003); Walter W. Powell, *Networks of Learning in Biotechnology: Opportunities and Constraints Associated with Relational Contracting in a Knowledge-Intensive Field, in* EXPANDING THE BOUNDARIES OF INTELLECTUAL PROPERTY: INNOVATION POLICY FOR THE KNOWLEDGE SOCIETY 251 (Rochelle Cooper Dreyfuss et al. eds., 2001) [hereinafter EXPANDING THE BOUNDARIES].

8. *See, e.g.*, Pamela Samuelson & Suzanne Scotchmer, *The Law and Economics of Reverse Engineering*, 111 YALE L.J. 1575 (2002) (describing the need for the law to evolve in order to accommodate the kinds of reverse engineering needed to produce products for the current technological environment).

9. FED. TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY (2003), http://www.ftc.gov/os/2003/10/innovationrpt.pdf; NAT'L RESEARCH COUNCIL, NAT'L ACADS., A PATENT SYSTEM FOR THE 21ST CENTURY (Stephen A. Merrill et. al. eds., 2004), http:// www.nap.edu/html/patentsystem/0309089107.pdf; U.S. PATENT AND TRADEMARK OFFICE, THE 21ST CENTURY STRATEGIC PLAN (2003), http://www.uspto.gov/web/offices/com/strat21/stratplan_03feb2003.pdf.

10. *See, e.g.*, H.R. 2795, 109th Cong. (2005).

11. Professor of Economics and Dean of Arts and Sciences, Brandeis University.

12. Jacob H. Schiff Professor of Investment Banking, Harvard Business School.

no easy answers and that the debates over the patent system are enduring and cyclical (pp. 78–95).

Neither Jaffe, an economics professor at Brandeis University, nor Lerner, who teaches finance and entrepreneurial management at Harvard Business School, is a lawyer. As a result, there are small technical errors. As specialists in the economics of innovation, however, the authors provide a superb analysis of the trade-offs inherent in designing a system that protects innovators from those who would free-ride on their investments but leaves inventions accessible to those who would build upon earlier work. Their book would make excellent supplemental reading for students in a patent law or an innovation theory class. I can only hope that it will be studied by policymakers.

Despite the title's reference to "discontents," the book projects an image of pathology: according to the authors, thickets of strong but invalid patents are raising transaction costs and creating a drag on innovation. Their diagnosis is that these symptoms arise from the confluence of two congressional moves that began in the mid-1980s: establishing the Court of Appeals for the Federal Circuit to hear all federal patent appeals and underfunding the PTO. Their proposed cure lies in improving the efficacy with which patent validity is tested. This is a simple story, and keeping it simple may be the best strategy for a book aimed at a lay audience. It is also fairly accurate. There is, however, little to substantiate the assertion that bad calls by the PTO and the Federal Circuit constitute the only plagues on patenting. In fact, the problems go far deeper, raising questions about institutional competence to grapple with the changing face of science. Nonetheless, the reforms suggested have strong institutional implications. With some modification, they could go a long way toward healing the system.

I. Symptoms

No one can lay out a case more graphically than two empiricists. Their core thesis is that the patent system has undergone a fundamental change in the last twenty-five years and has done so across two dimensions. As their figures illustrate, in that period, the number of patents skyrocketed (p. 12), and the exclusionary power of these patents increased dramatically (pp. 105, 107).

The rise in numbers is troublesome on its own: the authors suggest that as the volume of patents increases, it becomes more difficult to assemble the rights needed to pursue lines of research or manufacture products. Thickets of rights are especially problematic for new entrants (often the most vibrant competitors), who must search through existing patents to determine how free they are to operate. They cannot afford to pay for, or bear the risk of, protracted litigation, so they are inclined to improvident settlement. And because these firms lack patents of their own, they are unable to offer cross licenses to those who sue them. The payments they are forced to make divert resources from research activities (pp. 13–15).

But as bad as the raw numbers are, the problem is aggravated by the increased power associated with these patents. The authors demonstrate that in the last two decades, the probability that a patent will be found valid and infringed has risen substantially. Furthermore, there is greater likelihood that permanent injunctions and substantial monetary damages will be awarded. With increasing confidence in the efficacy of patent litigation, new business strategies have emerged. Because patents are now more attractive than other ways of appropriating the benefits of inventiveness (such as relying on first-mover advantages), firms that might once have allowed their advances to fall into the public domain instead tie down new technologies with patents. Furthermore, the prospect of a rich award or settlement leads firms to look for "Rembrandts in the Attic" to assert against their rivals.[13] Indeed, there are now "patent trolls"—firms whose only business is to hold up established companies and force them to pay hefty fees (*see, e.g.*, pp. 56–64).

The result is a vicious cycle. The better patents are at protecting investments in innovation, the more firms rely on patents; the more evident it is that patents are good sources of income, the more they are used as investment vehicles. As the thicket of rights grows, it becomes harder to maneuver without attracting litigation. Since the best defense is often a good offense, firms patent to the hilt, creating a base for even more suits.[14]

So far, so good. There is no reason to doubt that these numbers are accurate and worrisome. However, at the crux of the book is the claim that improving examination will fix the system. For that to be true, the authors must demonstrate not only that there are many more patents, but also that these new patents are largely invalid. Unfortunately, it is difficult to evaluate that claim because Jaffe and Lerner never say what they mean by invalidity. Because subsequent arguments are mainly directed at the PTO and the Federal Circuit—especially their failure to adequately consider earlier materials ("prior art") when determining patentability—the concern is presumably with patents on advances that are not inventive as defined by statute or precedent.

Understood this way, the authors' support is spotty. They furnish four types of evidence. First, there are the anecdotes: they dwell on the peanut butter and jelly sandwich patent (pp. 32–33), and also cite patents on Amazon's "one-click" checkout procedure (p. 75), a remote control that enables a T.V. to display adjustment instructions (p. 121), a garbage bag that looks like a jack-o'-lantern when filled (p. 122), and two methods for pricing expirationless options (pp. 145–46). These stories do make one wonder what is going on in the Patent Office. However, none of the patents described is likely to tax innovation heavily. Further, mistakes are sure to happen—indeed, the authors suggest (for reasons discussed below) that it would be foolish to expend resources on too much accuracy at the earliest stage of

13. *See* KEVIN G. RIVETTE & DAVID KLINE, REMBRANDTS IN THE ATTIC: UNLOCKING THE HIDDEN VALUE OF PATENTS (2000).

14. A vivid illustration can be found on page 14.

examination (pp. 174–75). But that means that the existence of some bad patents does not tell us whether the system as a whole is sick.

The next two forms of evidence are comparative. The authors first consider data on validity and infringement before and after the 1980s, showing that findings of validity have increased substantially (pp. 98–107). This information is suggestive, but before concluding that the marketplace is now awash with bad patents, one needs to know whether the validity determinations in the earlier era were accurate. Perhaps courts were previously too quick to *invalidate* patents. And, in fact, there is reason to think that in the 1970s, the research community believed that patents were offering insufficient protection against free-riders; there may have been a flight to trade secrecy that inhibited the flow of information and, in its own way, impeded scientific progress.[15]

The second comparison offered by the authors is between the rates of growth of U.S.-origin patents in the United States and abroad. From these statistics, the authors reason as follows:

> If the examination standards in the United States were not changing, we might expect successful applications in the United States by U.S. inventors to grow at about the same rate as our measure of internationally important inventions originating in the United States . . . . The fact that the growth in successful PTO applications was, instead, twice as large as the growth of international [counterparts] is hard to explain in any manner other than declining standards in the U.S. PTO, producing an ever-growing proportion of U.S. patents the patent-holders themselves did not think merited patenting elsewhere. (p. 143)

Again, this is provocative. However, the inference that the excess U.S. patents must be invalid is not so straightforward. National laws differ. For example, inventors who publicly reveal information about their inventions have a one-year grace period to file for U.S. patents.[16] Because this is not so elsewhere, a university professor who presents cutting-edge research at a conference will be unable to acquire foreign rights, but could get a (valid) U.S. patent. More important, the cost of worldwide protection is high: all but the richest applicants must make choices. Since the U.S. market is more likely to be a core source of business for U.S.-based inventors, some will file only locally.[17] Nor will this decision hurt them as much as Jaffe and Lerner assume. Patenting is like playing chess: because of economies of scale and

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15. *See, e.g.*, *Industrial Innovation and Patent and Copyright Law Amendments: Hearings Before the Subcomm. on Courts, Civil Liberties, and the Administration of Justice of the H. Comm. on the Judiciary*, 96th Cong. 574–75 (1980) (statement of Sidney A. Diamond, Comm'r of Patents and Trademarks). The same baseline problem affects the claim that patent remedies are now too strong. Pp. 110–15.

16. 35 U.S.C. § 102(b) (2000).

17. *See, e.g.*, Kara M. Bonitatibus, Comment, *Community Patent System Proposal and Patent Infringement Proceedings: An Eye Towards Greater Harmonization in European Intellectual Property Law*, 22 PACE L. REV. 201, 210–11 (2001) (noting also the high cost of translation). Patentees who file only locally can also opt out of publication. 35 U.S.C. § 122(b)(2)(B) (2000).

brand loyalty on the part of multinational buyers, one square (a single large market) can control a large section of the board.

The last piece of evidence—published patents—demonstrates that prior art citations can be low. This too is worrisome, but—again—not necessarily a sign of pathology. The data, which are scattered throughout the book, are drawn largely from business methods (*e.g.*, p. 145), where the recent advent of patenting means that there is a thin literature on which to rely and a paucity of materials at the PTO itself. But these problems cannot be generalized to fields where patenting and publication have been the norm. Furthermore, there is also nothing to say what the right number of citations is. More is not necessarily better: if the applicant knows a "killer" cite, it can make more sense to hide it in a long list than to omit it and incur the risk that the patent will be unenforceable, antitrust laws will be violated, or the patent agent will be suspended.[18]

Quibbling about the evidence on validity is, however, something of a red herring. The deeper problem is that the authors largely ignore the many other factors contributing to the patenting explosion. They do admit that "in an area as complex as patent law, there are always going to be decisions that go the other way" (p. 125). Thus, they note that the Federal Circuit has cut back on use of the so-called "doctrine of equivalents," which has historically operated to expand the scope of patents beyond their literal meaning. But while they (quite properly) make this observation about the doctrine of equivalents in connection with the discussion of patent strength, they apparently miss its implication regarding the number of patents that issue. That is, the authors do not appear to see that when the court restricts use of the equivalents doctrine, the number of issuances is likely to rise as applicants who learn that their claims will no longer be read to cover a wide range of equivalents (and, indeed, that the court is also going "the other way" and constraining the literal meaning of claims[19]) begin to file many narrow patents that collectively provide broad coverage.[20] Of course, these patents may be problematic—they too create thickets that raise transaction costs—but the problem is not one of *invalidity*.

More generally, during the time period on which the authors focus, a great deal happened in the sciences and in the relationship between science and patenting. In 1980 *alone*, the Bayh Dole Act, which encourages universities to patent government-supported work, created a new stakeholder;[21]

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18. See 35 U.S.C. § 32 (2000) (disbarment); Walker Process Equip., Inc. v. Food Mach. & Chem. Corp., 382 U.S. 172 (1965) (antitrust liability); J.P. Stevens & Co. v. Lex Tex Ltd., 747 F.2d 1553 (Fed. Cir. 1984) (unenforcability); In re Milmore, 196 U.S.P.Q. (BNA) 628 (Comm'r Pats. 1977) (suspension); 37 C.F.R. § 1.56 (2004) (duty to disclose).

19. *See, e.g.*, Univ. of Rochester v. G.D. Searle & Co., 358 F.3d 916 (Fed. Cir. 2004); Regents of the Univ. of Cal. v. Eli Lilly & Co., 119 F.3d 1559 (Fed. Cir. 1997).

20. An applicant could file one patent with many claims but may be required to separate them. 35 U.S.C. § 121 (2000).

21. 35 U.S.C. §§ 200–212 (2000).

Fred Sanger won the Nobel Prize for discovering how to sequence DNA;[22] Herbert Boyer and Stanley Cohen patented their recombinant DNA technology;[23] and the Supreme Court extended patents to "anything under the sun made by man."[24] These developments altered the nature of scientific discoveries, the pace of invention, the structure of the creative industries, and the productive capacity of individual scientists and technologists.[25] For example, rational drug development has largely replaced trial-and-error,[26] and Fred Sanger's Nobel-winning discovery is now performed by graduate students (and robots[27]). The impact on the patent numbers is obvious.

The authors understand that new technological fields open whole new areas to patenting,[28] but there are other pressures as well. Structural changes in the industry create new transactional opportunities—and therefore new demands for patents with which to transact.[29] The accelerating pace of change means that products and processes become obsolete more quickly. As a result, patent holders sometimes need wider protection—or more patents—to appropriate equivalent returns from their inventions. Because the factors that determine validity (such as inventiveness and disclosure) turn on the "person having ordinary skill in the art,"[30] many more patents—*valid* patents—will issue unless the capacity of the ordinary artisan in each field is regularly reevaluated.

These developments also tax innovation in ways that go well beyond the numbers. The near-merger of scientific advance with technological application erodes the lines the law once drew to protect basic science from

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22. Frederick Sanger—Autobiography, http://nobelprize.org/chemistry/laureates/1980/sanger-autobio.html (last visited February 20, 2006).

23. U.S. Patent No. 4,237,224 (filed Jan. 4, 1979).

24. Diamond v. Chakrabarty, 447 U.S. 303, 309 (1980).

25. *See, e.g.*, *supra* notes 6–9.

26. *See, e.g.*, Arti K. Rai, *The Information Revolution Reaches Pharmaceuticals: Balancing Innovation Incentives, Cost, and Access in the Post-Genomics Era*, 2001 U. ILL. L. REV. 173, 189–93.

27. *See, e.g.*, Pfizer, Genome: The Secret of How Life Works (2003), http://genome.pfizer.com/learn_more.cfm.

28. *See, e.g.*, pp. 115–19; *see also* Diamond v. Diehr, 450 U.S. 175 (1981) (software); Diamond v. Chakrabarty, 447 U.S. 303 (1980) (genomics and proteomics). Indeed, another reason why U.S. filings exceed foreign filings is because some of these new technologies are not considered patentable elsewhere. *See, e.g.*, Convention on the Grant of European Patents art. 52, Oct. 5, 1973, 1065 U.N.T.S. 255, *available at* http://www.european-patent-office.org/legal/epc/e/ar52.html (business methods not patentable); Japan Patent Office, Examination Guidelines for Patent and Utility Model in Japan pt. VII, ch. 1 (2000), http://www.jpo.go.jp/tetuzuki_e/t_tokkyo_e/Guidelines/PartVII-1.pdf (only computer-implemented business methods patentable). For a general discussion of the differences among national filing practices, see Robert M. Sherwood, *Intellectual Property Systems and Investment Stimulation: The Rating of Systems in Eighteen Developing Countries*, 37 IDEA 261, 275–78; 281–82 (1997).

29. *See* Robert P. Merges, *Institutions for Intellectual Property Transactions: The Case of Patent Pools*, *in* EXPANDING THE BOUNDARIES, *supra* note 7, at 123.

30. *See* 35 U.S.C. §§ 103, 112 (2000).

privatization.[31] University participation compounds the problem. The public spillovers that their basic research once generated are now protected with patents, patents that dominate broad swaths of inventive opportunities and block follow-on research. Patents, in short, are issuing without regard to the consequences of moving from rights in molecules to rights in information, of shifting protection from end-products to fundamental relationships of nature, or of changing the locus of inventive and patenting activity.

The real disease, then, is not merely invalidity, but rather the absence of meaningful accommodation of the law to a shifting technological landscape. Congress has revised the law in only minor respects, and (until very recently) the Supreme Court has not taken many patent cases.[32] While the Federal Circuit has gestured in the direction of keeping patent law current, its efforts have been largely ineffectual. The court tackled the phenomenon of patents over information products by clarifying the limitations of the common law research exemption.[33] But barring virtually all uses of the information contained in patents makes follow-on development more difficult.[34] And because one of the research exemption decisions involved use of a patented technology at a university,[35] it is now arguably harder for the academy to engage in the production and transmission of knowledge. The court has also tried to contain broad-ranging patents by adapting the disclosure requirement to limit patent scope, but that approach may be creating even denser thickets of rights. Most startlingly, despite the quickening pace of change, the court rarely revises the level of skill in specific arts.[36] To the contrary, its scope decisions entrench low levels of skill, virtually guaranteeing an explosion in (valid, but low-quality) patents.[37]

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31. *See* Brenner v. Manson, 383 U.S. 519 (1966) (utility does not include research uses); Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127, 131 (1948) (handiwork of nature unpatentable); O'Reilly v. Morse, 56 U.S. (15 How.) 62 (1854) (abstract principles unpatentable).

32. *See* John F. Duffy, *The* Festo *Decision and the Return of the Supreme Court to the Bar of Patents*, 2002 SUP. CT. REV. 273, 275. This appears to be changing, *see, e.g.*, MedImmune, Inc. v. Genentech, Inc., 427 F.3d 958 (Fed. Cir. 2005), *cert. granted*, 74 U.S.L.W. 3457 (Feb. 21, 2006) (No. 05-608); MercExchange, LLC v. eBay, Inc., 401 F.3d 1323 (Fed. Cir. 2005), *cert. granted*, 126 S. Ct. 733 (2005); Independent Ink, Inc. v. Ill. Tool Works, Inc., 396 F.3d 1342 (Fed. Cir. 2005), *vacated and remanded*, 126 S. Ct. 1281 (2006); Metabolite Laboratories, Inc. v. Laboratory Corp., 370 F.3d 1354 (Fed. Cir. 2004), *cert. granted*, 126 S. Ct. 601 (2005).

33. Madey v. Duke Univ., 307 F.3d 1351 (Fed. Cir. 2002), *cert. denied*, 539 U.S. 958 (2003); Embrex, Inc. v. Serv. Eng'g Corp., 216 F.3d 1343 (Fed. Cir. 2000).

34. In *Merck KGaA v. Integra Lifesciences I, Ltd.*, 125 S. Ct. 2372 (2005), the Supreme Court interpreted a statutory experimental-use exception broadly, but the exception applies only to a narrow class of research within the pharmaceuticals sector.

35. *See* Griffith v. Kanamaru, 816 F.2d 624, 628 (Fed. Cir. 1987) (refusing to tailor rules on priority to pedagogical interests).

36. Dan L. Burk & Mark A. Lemley, *Biotechnology's Uncertainty Principle*, 54 CASE W. RES. L. REV. 691, 701–02 (2004).

37. *See, e.g.*, cases cited *supra* note 19; *see also* Hilton Davis Chem. Co. v. Warner-Jenkinson Co., 114 F.3d 1161, 1164 (Fed. Cir. 1997) (relating scope to skill in the art).

II. DIAGNOSIS

The authors do not have a particularly difficult time diagnosing the source of the problems upon which they concentrate. Both the spurt in the number of patents and the augmentation in their power began in the mid-1980s, as two important changes were made in the patent system. In 1982, the Court of Appeals for the Federal Circuit was given exclusive jurisdiction over federal patent appeals (pp. 107–26); beginning in the 1990s, the Patent Office was turned into a "profit center" (p. 11)—it was initially required to support itself out of filing, examination, and maintenance fees, and later told that some of these fees would be diverted to the general revenue (pp. 130–44).

In the authors' view, the concurrence of these events is especially lethal (pp. 149–50). Fee diversion has impoverished the PTO, making it difficult for the Office to search or examine prior art comprehensively. Further, the PTO's profit orientation disposes it to grant its customer/clients' patents. Nor are these patents invalidated when they get to court. Because the Federal Circuit is so specialized and hears mainly from patent lawyers, there is always a suspicion that, in the authors' words, the judges will "turn inward," be "swayed by a belief in the unique importance of the field," and be "prone to [getting] 'captured' by those who benefit from [it]" (p. 103). Among the examples of Federal Circuit actions too supportive of patents, the authors cite the burden of rebutting the statutory presumption of validity with clear and convincing evidence, which they believe is inappropriate in light of the deficiencies in examination (pp. 108, 152, 192–95), and the court's failure to limit juries, which are "too easily swayed by a beribboned patent document" (p. 124).

The authors' concerns about the PTO are seconded by other commentators, including Rob Merges, who has made many perceptive observations about the operation of the Office.[38] It is also easy to be persuaded that a bench immersed in patenting might adopt rules that are simple to apply and review, even if these results happen to make it harder to attack validity. The authors' example of *In re Lee*, the case about the television remote control, is particularly well chosen.[39] The invention incorporated two known features, and the PTO rejected the application on the ground that ordinary artisans would have had the common sense to combine them. The Federal Circuit's reversal, which requires the Office to demonstrate a specific suggestion to combine in the prior art, is a poster child for the quality problem:

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38. 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, 589–91 (1999); *see also* Joseph Farrell & Robert P. Merges, *Incentives To Challenge and Defend Patents: Why Litigation Won't Reliably Fix Patent Office Errors and Why Administrative Patent Review Might Help*, 19 BERKELEY TECH. L.J. 943, 960–64 (2004).

39. *In re* Lee, 277 F.3d 1338 (Fed. Cir. 2002).

in the name of facilitating review, the court essentially rejected use of common sense.[40]

The authors' straightforward diagnosis of the pathology in patenting is, of course, extremely attractive, for it makes the prescription for a cure obvious. It does not, however, fully account for the symptoms observed. For one, it is not entirely accurate on its own terms. It is probably correct to blame the Federal Circuit for strengthening patent remedies and for making it harder to prove invalidity. But the court cannot be held responsible for such factors as fostering jury trials or extending patents to new kinds of subject matter.

With respect to jury trials, the authors are right that they too have soared.[41] And the Federal Circuit may be a cause, but only indirectly: it may be that litigants, wary of the Federal Circuit's expertise, choose jury trials because their verdicts are perceived as harder to overturn than judicial findings. But there is not much that the Federal Circuit can do about that. The right to a trial by jury is grounded in the Constitution[42] and the law allocating decisionmaking authority and setting standards of review is virtually all of the Supreme Court's making.[43] Ironically, the Federal Circuit once did try to write its own law on an issue of review, but the Supreme Court summarily reversed.[44]

As to expanding patentable subject matter (pp. 115–19), the Federal Circuit had an even smaller role to play. In fact, the default rule changed: at one time, new technologies were regarded as unpatentable unless Congress acted to extend protection to them; now new technologies are patentable unless Congress says no. But the Supreme Court effectuated that change (in *Diamond v. Chakrabarty*[45]), not the Federal Circuit. Similarly, it was the Supreme Court (in *Diamond v. Diehr*[46]) that extended patents to software. While the authors are right that *Diehr* did not go as far as the Federal Circuit in approving patents on software and business methods (p. 116), the Court

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40. *Id.* at 1345 ("[Case law] did not hold that common knowledge and common sense are a substitute for evidence, but only that they may be applied to analysis of evidence.").

41. The authors provide another wonderful graphic on page 123.

42. U.S. CONST. amend. VII.

43. The authors' treatment of *Markman v. Westview Instruments*, 517 U.S. 370 (1996), is particularly curious. They claim it expands the scope of jury trials, p. 124, when it contracts it, *Markman*, 517 U.S. at 372; they cite it as a Federal Circuit case, pp. 124 n.115 & 196 n.223, when it was reviewed (and affirmed) by the Supreme Court. Similarly, they attribute the standard for reviewing a jury verdict to the Federal Circuit's decision in *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226 (Fed. Cir. 1989), p. 124 n.116, even though that decision explicitly depends on Supreme Court precedent, *Richardson*, 868 F.2d at 1235.

44. Dennison Mfg. Co. v. Panduit Corp., 475 U.S. 809 (1986) (per curiam) (rejecting the Federal Circuit's construction of FED. R. CIV. P. 52(a) to allow it to reverse a trial court finding of obviousness).

45. 447 U.S. 303 (1980); *see* Rebecca S. Eisenberg, *The Story of* Chakrabarty*: Technological Change and the Subject Matter Boundaries of the Patent System*, *in* INTELLECTUAL PROPERTY STORIES (Jane C. Ginsburg and Rochelle C. Dreyfuss eds., 2006).

46. 450 U.S. 175 (1981).

left the law in a state that was clearly unworkable; extending protection more broadly was not an irrational way to fix it.[47]

Further, while one could plausibly believe that some specialized courts could become biased, it seems unlikely that bias is the cause of the problems at the Federal Circuit. Not all the Federal Circuit's judges are ex–patent lawyers,[48] the docket is not entirely composed of patent cases,[49] and not all the patent cases on the docket are brought by lawyers whose business is prosecuting patents.[50] In infringement actions, both sides are often well-financed, enjoy the advantages of repeat play, and (because the patent bar is not split along plaintiff/defendant lines) have access to the same representation.[51] Because knowledge is cumulative, even those who invest in invention do not, in the long run, benefit from laws too protective of patent rights.[52]

Finally, as we have seen, many other things were happening at the time patenting was proliferating. The scientific enterprise restructured so significantly that major developments in patent jurisprudence should have occurred: not only updating "skill in the art," but also maintaining the law's coherence in a shifting technological environment—reevaluating the relationships between the pace of invention, claim scope, and patenting activity as well as reexamining the effect of upstream patenting on follow-on invention. To be sure, the authors occasionally acknowledge that the real issue is not invalidity but patents that *ought to* be invalid because they represent minor advances (*e.g.*, p. 12). However, they are strangely resistant to the notion that dramatic changes in science may require fundamental reconsideration of patent doctrine (pp. 198, 199, 202–05). A more nuanced critique would acknowledge the problems posed by technological change and ask why there has been so little effort to keep law abreast with it.

After all, things did not start out that way. The Federal Circuit was established for the express purpose of creating the expertise needed to bring coherence to patent law. In its early years, the court certainly appeared to understand itself to be playing that special role. Realizing that administering a field as fact-intensive as patent law would require the articulation of new policies and doctrines in a factual context, the court fashioned rules that allowed

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47. *See* ROCHELLE COOPER DREYFUSS & ROBERTA ROSENTHAL KWALL, INTELLECTUAL PROPERTY: CASES AND MATERIALS ON TRADEMARK, COPYRIGHT AND PATENT LAW 608–13 (2d ed. 2004).

48. *See* U.S. Court of Appeals for the Fed. Circuit, Judicial Biographies (Jan. 25, 2005), http://www.fedcir.gov/judgbios.html.

49. *See* 28 U.S.C. § 1295 (2000) (court's docket extends to matters other than patents).

50. *See* U.S. Court of Appeals for the Federal Circuit, Appeals Filed, Terminated, and Pending During the Twelve-Month Period Ended September 30, 2004, http://www.fedcir.gov/pdf/aosep04.pdf (last visited Jan. 10, 2006) (of 1,201 cases pending on Sept. 20, 2004, 364 arose from District Courts and fifty-six from the PTO).

51. *See, e.g.*, Rochelle Cooper Dreyfuss, *The Federal Circuit: A Case Study in Specialized Courts*, 64 N.Y.U. L. REV. 1, 29–30 (1989).

52. Some of the authors' favorite bad patents were, in fact, invalidated or narrowed by the court. *In re* Kretchman, 125 F. App'x 1012 (Fed. Cir. 2005) (per curiam) (the sandwich patent, discussed on pages 32–34); Amazon.com, Inc. v. Barnesandnoble.com, Inc., 239 F.3d 1343 (Fed. Cir. 2001) (one-click, discussed on pages 74–75).

it to give close scrutiny to all aspects of the decisions it reviewed.[53] But the Supreme Court refused to see things that way and instead required the Federal Circuit to accord the usual level of deference to district court (and later, to certain PTO) factual decisions.[54] Since that time, the court has been unable to come to terms with such a circumscribed role over fact-based issues.[55] But as an appellate court, it has been neither fish nor fowl—neither a supreme court of patent law, nor one among many circuit benches.

Of course, it cannot really be a supreme court. Because its rulings are binding everywhere, the Federal Circuit is unable to let matters percolate among the circuits and learn from the way differing doctrines play out in different regions of the country. But the court has also failed to adopt other methods the Supreme Court uses to improve the law. It does not ask the parties for so-called Brandeis briefs that would provide it with empirical data bearing on the potential impact of its actions. Nor does it find vehicles to perform "damage control"—cases that would allow it to examine how its rules are working, explicate their limits, and revise those that prove problematic. Instead, the court routinely instructs lawyers that the best briefs are those that stick to the facts of the case.[56]

At the same time, the Federal Circuit does not behave like other appellate courts. Because its jurisdiction rarely overlaps with the other circuits' and because it is relatively immune to Supreme Court scrutiny, it does not need to offer elaborate policy-based rationales to justify the doctrines it adopts. Isolated from the rough and tumble of debate, some of the jurists appear to have developed rather thin skins. Thus, while scholarly commentary might have substituted for Brandeis briefing or sister-circuit debate, there are judges who are uncomfortable with academic critique.[57] Similarly, lawyers worry that rearguing issues previously decided injures their capacity to represent their clients effectively.[58] The result is a "repeat-player disadvantage" that makes it hard for experienced lawyers to help the court engage in the kind of reevaluation needed to make good law. It is, for example, suggestive that although the PTO is rumored to be uncomfortable with *In re Lee*, it has not taken on a case challenging it.

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53. *See generally* Dreyfuss, *supra* note 51, at 8–25.

54. *See* Dickinson v. Zurko, 527 U.S. 150 (1999) (requiring the level of deference mandated by the Administrative Procedure Act, 5 U.S.C. § 706 (2000), to PTO patent denials); Dennison Mfg. Co. v. Panduit Corp., 475 U.S. 809 (1986) (per curiam) (requiring the court to apply the "clearly erroneous" standard of FED. R. CIV. P. 52(a)).

55. *See, e.g.*, Phillips v. AWH Corp., 415 F.3d 1303, 1330–35 (Fed. Cir. 2005) (Mayer, J., dissenting) (arguing the court should stop reviewing factual issues under the "delusion" they are legal questions).

56. *Cf.* Robert H. Mayer, Remarks at the United States Court of Appeals for the Federal Circuit 20th Anniversary Judicial Conference (Apr. 8, 2002), *in* 217 F.R.D. 554 (2003) (noting that the court has moved away from a policymaking approach).

57. *See* Craig Allen Nard, *Toward a Cautious Approach to Obeisance: The Role of Scholarship in Federal Circuit Patent Law Jurisprudence*, 39 HOUS. L. REV. 667 (2002).

58. *Cf.* Allen Eng'g Corp. v. Bartell Indus., Inc., 299 F.3d 1336, 1356 (Fed. Cir. 2002) (criticizing counsel for arguing Fifth Circuit precedents contrary to Federal Circuit law).

Of course, none of this would matter if the Supreme Court exercised its normal supervisory role. Recently, the Court has stepped up review of Federal Circuit cases, perhaps with this goal in mind.[59] But specialization ties its hands. Without circuit splits, lawyers seeking review rely on pre-Federal Circuit appellate opinions or old Supreme Court precedents. It is, however, hard to be persuasive with aged case law.[60] The Supreme Court is also confounded by the reluctance of lawyers to reargue decided issues. For example, the Court did not review *Madey v. Duke* because its procedural posture made the common law research exemption at issue in the case difficult to reach.[61] Another opportunity for review arose quickly in *Integra v. Merck* but the appellate attorney avoided the issue, relying instead on a statutory exemption tailored to the pharmaceutical industry.[62] The result is that the law on research uses of patented materials now benefits only one of the many technology sectors characterized by cumulative innovation.[63] There is yet another problem for the Supreme Court: it can only improve patent jurisprudence if its decisions are interpreted correctly. The Federal Circuit's thin skin may make that difficult.[64]

Congress may also be contributing to the strengthening of patent rights and the disarray in the law. As noted earlier, interest group politics tends to focus Congress on the benefits of intellectual property protection, not on its costs. Thus, it is not insignificant that the changes the authors observe in patenting are mirrored by legislative moves to expand the coverage and strengthen the benefits of *copyright* and *trademark* protection.[65] Congress' interest in patents may additionally derive from the way that the economic numbers are measured. Because patents on end-products convert consumer

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59. *See* Duffy, *supra* note 32, at 283.

60. *See, e.g.*, Petition for a Writ of Certiorari at 15, KSR Int'l Co. v. Teleflex Inc., 119 F. App'x 282 (Fed. Cir. 2005) (No. 04–1350) (claiming a split with *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273 (1976), which announced a rule that was unworkable from the moment the case was decided).

61. *See* Brief for the United States as Amicus Curiae, Duke Univ. v. Madey, 538 U.S. 959 (2003) (No. 02-1007), *available at* http://www.usdoj.gov/osg/briefs/2002/2pet/6invit/2002-1007.pet.ami.inv.html.

62. Integra Lifesciences I, Ltd. v. Merck KGaA, 331 F.3d 860, 874–76 (Fed. Cir. 2003) (Newman, J., dissenting) (noting the role of the common law exemption), *vacated and remanded*, 123 S. Ct. 2372 (2005).

63. *See* Merck KGaA v. Integra Lifesciences I, Ltd., 125 S. Ct. 2372 (2005) (interpreting 35 U.S.C. § 271(e)(1) (2000)).

64. *See, e.g.*, Indep. Ink, Inc. v. Ill. Tool Works, Inc., 396 F.3d 1342, 1347–48 (Fed. Cir. 2005) (taking an arguably crabbed view of the Supreme Court's antitrust jurisprudence), *vacated and remanded*, 126 S. Ct. 1281 (2006); Embrex, Inc. v. Serv. Eng'g Corp., 216 F.3d 1343, 1353 (Fed. Cir. 2000) (Rader, J., concurring) (noting tenuous interpretation of *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 34 (1997)); Arti K. Rai, *Engaging Facts and Policy: A Multi-Institutional Approach to Patent System Reform*, 103 Colum. L. Rev. 1035, 1055 (2003) (noting "resistance" to *Dickinson v. Zurko*, 527 U.S. 150 (1999)).

65. *See, e.g.*, 15 U.S.C. § 1125(c)–(d) (2000) (creating rights to prevent dilution and cyberpiracy of trademarks); 17 U.S.C. § 106(6) (2000) (extending copyright to audio transmissions); 17 U.S.C. § 106A (2000) (creating rights of attribution and integrity for certain copyrighted works); Digital Millennium Copyright Act, Pub. L. No. 105-304, 112 Stat. 2860 (1998) (codified as amended in scattered sections of 17 U.S.C. (2000)) (protecting copyrights in digitized works).

surplus, which is not easily measured, into producer surplus, which is monetized, lawmakers interested in creating the appearance of a strong economy will prefer strong patents. Of course, patent protection will often be a wash from the domestic viewpoint (since the profits patentees make are experienced as costs to those who use patented inputs[66]); the international perspective is different. The United States is a net technology exporter. Accordingly, strong patents (including strong rights for Americans abroad) improve its balance of payments. Thus, it is not surprising that comparable moves are underway in other countries—some as a result of internal forces, but often in response to efforts by the United States to strengthen rights for Americans abroad.[67]

This is not to say that the authors are completely off the mark in their diagnosis (or, as we shall see, their proposed cure). Jaffe and Lerner are right to suspect that the problem is one of institutional design, albeit not of the sort they posit. The Federal Circuit was arguably a grand experiment in shifting responsibility for keeping the law coherent from Congress to the Judiciary, but experience shows it was poorly structured. Creating a specialized appellate court can promote *uniformity*, but not, in this context, *coherence*. Without percolation or dialogue, perfecting the law is difficult; because the core issues in patent law are mixed questions of fact and law (What should ordinary artisans be deemed to know? What should the art be deemed to teach?), a court tied to an appellate role is poorly suited to the task of crafting doctrine in response to exogenous developments.

III. CURE

Despite its limitations, *Innovation and Its Discontents* makes a valuable contribution. Even if not all patent problems are about invalidity, low-quality patents are a high-priority issue and the authors' recommendations are insightful. And even if the diagnosis is incomplete, the proposals may, with modification, restore health to the system.

The authors' starting point is Mark Lemley's observation that comprehensive examination of every application is misguided because many patents are never exploited.[68] Their system devotes increasing resources to examination as the importance of an invention is clarified. It begins with pre-grant opposition, proceeds to postgrant reexamination, and ends with a revamped trial procedure (pp. 181–86, 191–97). Variants on this approach have been suggested previously,[69] but the authors explain how these stages interrelate, justify the contours of each stage, and, in the process, provide

66. Indeed, patents create deadweight losses because there will be consumers who value the product at the competitive price who will not buy it at the price charged by the patentee.

67. *See, e.g.*, SUSAN K. SELL, PRIVATE POWER, PUBLIC LAW: THE GLOBALIZATION OF INTELLECTUAL PROPERTY RIGHTS (2003).

68. Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1497 (2001).

69. *See, e.g.*, proposals cited *supra* note 9.

criteria for evaluating competing schemes. As they admit, however, the devil is in the details (p. 186)—and not all their details are fully specified or workable.

Pre-grant opposition takes direct aim at the PTO's problems searching prior art. Although denominated an "opposition," this would be an ex parte process, and, as such, it is nicely balanced to provide third parties with opportunities to furnish examiners with reference materials without creating opportunities for dilatory practice. There is not, however, much that is new here: the PTO already has such a procedure, albeit of narrow scope.[70] And even if submission practice is improved,[71] this stage is not likely to have a dramatic impact on quality. The small possibility of stopping a patent "on the cheap" does not provide much incentive to study applications as they are published.

Postgrant reexamination allows challengers to formally argue for invalidation. This inter partes procedure would entail the use of more resources, but because these resources would be devoted to patents considered significant enough to oppose, the added expense will not be wasted. Indeed, the value will be amplified, for if postgrant review operates effectively, it will set up a "virtuous cycle" and discourage the filing of unworthy applications (p. 185). Unfortunately, the details of this stage are not fully elucidated. The authors do not specify the standard of review, nor do they say how long the period for reexamination would last. These are important points because the burden of proof and the time period allowed for opposition balance the interest of inventors in stable rights against the public's interest in detailed scrutiny of the patent. Nonetheless, the authors make several useful suggestions. They would set the fee at around $50,000—low enough to attract users but sufficient to deter frivolous challenges and to create a good proxy for value (pp. 188–89). Unlike the current postgrant review procedure,[72] the estoppel effect of a decision is nicely set to protect the victorious patentee without discouraging use of the process. They also recommend the appointment of a specialized group of "reexaminers" to hear reexaminations within the PTO (p. 188).

The next test of the patent would be at trial. Here, the recommendation has two components. First, there is the burden of proof. Although the authors believe it is now too high, they would not change it if reexamination were instituted. In their view, adopting a preponderance of the evidence standard is dangerous because validity would become so uncertain that incentives to invest in innovation would diminish. Besides, if a patent withstands reexamination, it deserves a strong presumption. The authors would also give the benefit of a strong presumption to any patent that has

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70. *See* 37 C.F.R. § 1.99(d)–(e) (2005) (providing a short period in which prior art can be submitted, but forbidding the submitter to explain how the art submitted is relevant to the decision on whether to grant the patent).

71. *See* H.R. 2795, *supra* note 10, sec. 10 (pre-grant submissions).

72. 35 U.S.C. §§ 311–318 (2000).

not been subject to reexamination, this time on the theory that if no one tried to challenge the patent, an inference can be drawn that it must be valid.

In many ways, this approach is odd. It assumes that the burden of proof in reexamination would be set to provide a meaningful opportunity to invalidate the patent and that challengers would have as long as they need to ask for reexamination. But if that is so, then reexamination could create as much uncertainty as lowering the burden of proof at trial.[73] More important, the inference that un-reexamined patents are valid assumes there are strong incentives to oppose. This is true in Europe, but that experience may not be transferable. The European Patent Office issues a bundle of national patents; the only way to "centrally attack" them is through post-grant opposition. Once that period lapses, challenges must be made in each country individually.[74] Because U.S. issue preclusion rules turn every challenge into a central attack,[75] reliance on PTO procedures will likely be less prevalent here. In some ways, the better approach would be to lower the burden of proof with respect to new evidence and retain the current standard for material reviewed by the PTO in examination or reexamination. Such a rule would have the added benefit of encouraging applicants to disclose what they know to the PTO.

The other recommendation is to eliminate juries. Noting that the Supreme Court recently assigned claim construction to the court,[76] the authors reason that validity can now also be tried to the bench: "It would be entirely feasible for the judge to 'construe' the novelty and obviousness of the patented invention . . . just as the judge 'construes' the claims . . ." (pp. 196–97). But there is no magic in the word "construe"—the Supreme Court allocated claim construction to the court because it recognized the "importance of uniformity."[77] But uniformity is exactly what is *not* needed on validity. The essence of the authors' proposal is to leave validity open for continuous reevaluation. In a sense, then, it is surprising that the ultimate recommendation is not to channel validity challenges that arise in litigation back to postgrant reexamination, where they can be decided by expert reexaminers, subject to appellate review.

But despite these weaknesses, this is an artfully designed proposal. It does, however, raise questions: If it is true that Congress has an independent interest in strong patents, will it act on the recommendations the authors put forth? If it does, will the observed pathology in the system be cured?

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73. The postgrant opposition contemplated by H.R. 2795 is heavily contested, partly because it proposes lowering the burden of proof and partly because the nine-month window for opposition is supplemented by a period to protest after infringement is alleged. H.R. 2795, *supra* note 10, sec. 9, § 323.

74. Convention on the Grant of European Patents arts. 99–112, *supra* note 28.

75. *See* Blonder-Tongue Labs., Inc. v. Univ. of Ill. Found., 402 U.S. 313 (1971) (once a patent is invalidated, nonmutual issue preclusion prevents the patentee from ever asserting it again).

76. Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996).

77. *Id.* at 390. In addition, the Court thought the historical evidence on construction was mixed. *Id.* at 388.

We may soon know whether Congress has the will to improve patent quality, for there is at least one bill pending that includes both an ex parte submission procedure and an inter partes opposition before a panel of administrative judges, using the preponderance of the evidence standard and providing a narrow scope of estoppel[78]—in other words, a system that essentially builds upon the one Jaffe and Lerner suggest. Whether the bill actually becomes law may depend on whether the book manages to convince lawmakers to recognize the downside of patenting.

The authors' efforts may be aided by the many patent scholars now poised to present their perspectives. The involvement of academia in the patenting arena may, however, also complicate matters because universities have unleashed a new force—the technology transfer officer. These officers style themselves as the voice of academia, but their interests align with patent holders. Indeed, their views can be particularly perverse. They enjoy the advantages of patenting (fees earned from faculty patents), but they see none of the costs: faculty pay for their use of patented inputs from their research grants. Further, despite *Madey*, most schools continue to use patented materials without authorization;[79] technology transfer officers bear no responsibility to limit infringement liability.

Notwithstanding these concerns, the situation is now so critical that Congress may well intervene. However, enacting the pending reforms will not substitute for an institution competent, over the long haul, to create coherent law responsive to technological advancement. Congress does not work quickly enough or at the level of detail required to perform that role. Indeed, to those who perceive the quality problem as about more than invalidity, the current bill, although the most comprehensive legislation of the last half-century, is disappointingly nonsubstantive. It does not, for example, deal with the issues of inventiveness, scope, or follow-on research.[80]

If Congress is unable to act and specializing appellate litigation impedes both the Supreme Court and the Federal Circuit, then the only actor left standing is the PTO. The problems Jaffe and Lerner observe may make the PTO appear an unlikely candidate for curing patenting problems. But in many ways, the patent system presents a classical case for administrative management. The law is technical and complex; it requires reconciliation of conflicting policies and the statute fails to clarify the appropriate accommodations.[81] When the Federal Circuit was created, deference to agency lawmaking generally, and to the PTO in particular, were not well understood. But in *Chevron U.S.A. v. Natural Resources Defense Council*[82] and

78. H.R. 2795, *supra* note 10, secs. 9–10.

79. *See* John P. Walsh, Charlene Cho & Wesley M. Cohen, *View from the Bench: Patents and Material Transfers*, 309 SCI. 2002 (2005) (finding that only five percent of academic scientists check for patents on research inputs).

80. H.R. 2795, *supra* note 10.

81. *See* Chevron U.S.A., Inc. v. Natural Res. Def. Council, Inc., 467 U.S. 837, 865 (1984) (delineating the circumstances when courts should defer to administrative agencies).

82. *Id.*

Dickinson v. Zurko,[83] the Supreme Court clarified both issues.[84] Accordingly, greater delegation of authority to the PTO should now be considered.

There is much about the PTO that makes this a desirable course. With its thousands of examiners, many of whom hold advanced degrees in the precise areas where they work, its resources outstrip the Federal Circuit's.[85] Turnover is high, but the continual need to hire brings in scientists fresh from the field. The PTO also stays abreast of developments by holding training sessions with outside experts and through notice-and-comment rulemaking.[86] *In re Lee* is also suggestive: in that case, the PTO *rejected* the application; the patent issued because the Federal Circuit reversed its decision.[87]

Admittedly, there are several impediments to according greater deference to the PTO. Some are legal. *Chevron* deference rests on a presumption of congressional delegation and requires that the agency's actions have the force of law and offer opportunity for public input.[88] Careful consideration needs to be given to each of these requirements. Although the force-of-law requirement may be satisfied when the PTO interprets the statute in the course of entertaining patent applications, the Office's expertise will likely be utilized most effectively through rulemaking. However, the absence of explicit rulemaking authority and the long history of denying deference may be enough to rebut the presumption of congressional delegation. Moreover, the ex parte procedures used in the PTO, even when coupled with the various forms of outside participation currently available, are likely insufficient to satisfy the public-input requirement.[89] Other impediments are practical. The Federal Circuit appears resistant to the idea of according substantial deference to the PTO.[90] More important, the PTO's managerial difficulties

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83. Dickinson v. Zurko, 527 U.S. 150 (1999) (describing circumstances in which courts should defer to decisionmaking by the PTO).

84. *See generally* STEPHEN G. BREYER ET AL., ADMINISTRATIVE LAW AND REGULATORY POLICY: PROBLEMS, TEXT, AND CASES 289–90 (5th ed. 2002).

85. Rai, *supra* note 64, at 1068–69.

86. *See, e.g.*, Patent and Trademark Office, Dep't of Commerce, Request for Comments on Interim Guidelines for Examination of Patent Applications Under the 35 U.S.C. 112 ¶ 1 "Written Description" Requirement, 63 Fed. Reg. 32,639 (June 15, 1998), *available at* http://www.uspto.gov/web/offices/com/sol/og/1995/week26/patreqs.htm.

87. *In re* Lee, 277 F.3d 1338 (Fed. Cir. 2002); *see also In re* Dembiczak, 175 F.3d 994 (Fed. Cir. 1999) (reversing rejection of the pumpkin/garbage bag patent). The PTO's assessment of its error rate is far lower than the book suggests. *See, e.g.*, U.S. PATENT AND TRADEMARK OFFICE, PERFORMANCE AND ACCOUNTABILITY REPORT FOR FISCAL YEAR 2004, at 17 (2004), http://www.uspto.gov/web/offices/com/annual/2004/2004annualreport.pdf (5.3%).

88. United States v. Mead Corp., 533 U.S. 218, 226–27 (2001). *See generally* Thomas W. Merrill & Kristin E. Hickman, Chevron*'s Domain*, 89 GEO. L.J. 833 (2001).

89. Even if *Chevron* deference is denied, the PTO may be entitled to (somewhat lesser) deference under *Skidmore v. Swift & Co.*, 323 U.S. 134 (1944). *See* Merrill & Hickman, *supra* note 88; *see also* United States v. Mead Corp., 533 U.S. 218 (2001) (according *Skidmore* deference when *Chevron* deference held inappropriate).

90. For example, in *In re Fisher*, 421 F.3d 1365 (Fed. Cir. 2005), the Federal Circuit affirmed the rejection of a patent application on a series of gene fragments on utility grounds, finding that the decision of the Board of Patent Appeals and Interferences was supported by substantial evidence.

and practices have created a strong public perception that it favors patentees. For example, applicants are actually called "customers"[91] and the method for overseeing examiners tends to reward grants over denials.[92]

In this connection, the Jaffe and Lerner proposals assume new significance. On the legal side, the procedures they envision create broad opportunities for public involvement, thereby arguably qualifying PTO decisions for *Chevron* deference. The new procedures suggested by Jaffe and Lerner would also improve operations within the Office, making its determinations worthy of that respect. For example, the reexaminer post would add a new rung to the career ladder, allowing the PTO to retain knowledgeable examiners while leaving room to recruit new scientists. These reexaminers would be important sources of new law. Their expertise as scientists and their experience as examiners would sharpen interpretation of factual matters dispositive of patent quality (such as skill in the art, the implications of disclosures and references, and the likelihood that those in the field would combine references) or implicit in patent policy (such as where in the invention pipeline patenting belongs). Furthermore, their caseload would position them to make adjustments as they see how the rules play out (for example, how claim scope affects claiming strategies). Initial examinations would also benefit. Decisions made within the Patent Office would quickly disseminate to the examining corps. The immediacy of review and the possibility of having decisions overturned would also counteract the propatent managerial biases currently affecting the allowance rate. Finally, the law enunciated in reexamination would lead to improved rulemaking.

Other changes would clearly be necessary. To assure the PTO a role in shaping patent jurisprudence (and to avoid conflicts between decisionmakers), Congress should expressly instruct courts to accord the PTO the deference given to federal agencies generally. Congress would also be required to abandon self-financing and fee-diversion. The PTO must be perceived to be neutral and in possession of the resources needed to protect the public interest in the public domain. Indeed, the fee structure should be accomplishing substantive goals: application fees should be low enough to attract patenting by all inventors and maintenance fees should be high enough to encourage abandonment of noncommercial patents. If the PTO is to shape policy, it will need experts outside of science, particularly in economics, to help understand the dynamics of innovation and the impact of patents on individual technologies. It could also benefit from opportunities

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However, there was no discussion of the possibility for agency deference; the court explicitly stated that the Utility Guidelines the Board applied were "not binding . . . but may be given judicial notice," *id.* at 1372 (quoting Enzo Biochem, Inc. v. Gen-Probe Inc., 323 F.3d 956, 964 (Fed. Cir. 2002), and ended its opinion by saying that the "public policy considerations" involved in deciding whether gene fragments were "useful" within the meaning of § 101 of the Patent Act was "more appropriately directed to Congress," *id.* at 1378.

91. *See, e.g.*, U.S. Patent and Trademark Office, Customer Profiles, http://www.uspto.gov/main/profiles/customerprofiles.htm (last visited Dec. 3, 2005).

92. Merges, *supra* note 38, at 607; *see also* Gregory Aharonian, *How To Subscribe*, INTERNET PATENT NEWS SERV., http://www.patenting-art.com/clients/patnews.htm (last visited Nov. 7, 2005) (collecting complaints about the PTO).

to consult officially with its counterparts in other countries. But the funds added to support these operations would, in effect, do triple duty. They would create the "virtuous cycle" Jaffe and Lerner envision, and also produce a new institutional capacity to interpret public law.

Of course, there would still be an important role for the Federal Circuit. It would review infringement decisions, but would have greater opportunities (and factual input) with which to fully consider the issues that arise in that context, such as the appropriate breadth of patents in light of rapid obsolescence and the correct role for a research defense in light of the needs of follow-on inventors. It would, of course, also continue to review the PTO.

CONCLUSION

The authors diagnose the recent proliferation of strong patents as symptomatic of a problem in the way the system is administered: by an agency supported by patent seekers and by a court overly-focused on patenting. The confluence of an explosion in patenting, the Federal Circuit's establishment, and the PTO's financial restructuring is provocative. However, when these events occurred, equally dramatic shifts were happening in the organization, methodology, and production of science. Because these changes altered the factual bases on which patent law is grounded, a strong argument can be made that the observed problems are not caused merely by the *implementation* of the law, but also by its *articulation*: by an institutional failure to keep patent law and policy abreast with developments at the technological frontier. The authors' proposals, although not designed for that purpose, would go a long way toward fashioning a PTO that could fill the vacuum.