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UNDERSTANDING PATENT-QUALITY MECHANISMS

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## INTRODUCTION

The cry to “improve patent quality” is heard anywhere patent lawyers gather and is a centerpiece of many of the political and academic establishments’ major reform agendas.<sup>1</sup> Indeed, although the modern patent system is entangled in policy disputes across a huge range of issues, the need to improve patent quality is essentially undisputed.<sup>2</sup>

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<sup>1</sup> See, e.g., FED. TRADE COMM’N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY ch. 5 (2003), available at <http://www.ftc.gov/os/2003/10/innovationrpt.pdf> (offering recommendations designed to improve patent quality); NAT’L RESEARCH COUNCIL OF THE NAT’L ACADS., A PATENT SYSTEM FOR THE 21ST CENTURY (Stephen A. Merrill et al. eds., 2004) (evaluating the current patent system and recommending seven changes to it); Robert Pear, *Patent Bill Is Bonanza to Lobbyists*, N.Y. TIMES, Apr. 30, 2008, at C1 (reporting views on patent reform and quoting the U.S. Patent and Trademark Office (USPTO) Director as stating that “[w]e are getting more and more unpatentable ideas, worse and worse quality applications”). The need for patent-quality reform has also spurred various lobbying groups. See, e.g., Intellectual Prop. Owners Ass’n, Patent Reform, [http://www.ipo.org/AM/Template.cfm?Section=Action\\_Center&Template=/CM/ContentDisplay.cfm&ContentID=3361](http://www.ipo.org/AM/Template.cfm?Section=Action_Center&Template=/CM/ContentDisplay.cfm&ContentID=3361) (last visited Apr. 15, 2009); Patent Fairness Coalition, <http://patentfairness.org> (last visited Apr. 15, 2009); The Coalition for 21st Century Patent Reform, Patents Matter, <http://patentsmatter.com> (last visited Apr. 15, 2009).

<sup>2</sup> One prominent critic of efforts to improve patent examination is F. Scott Kieff, who argues that a better approach is to move to a “soft-look” examination process. F. Scott Kieff, *The Case for Registering Patents and the Law and Economics of Present Patent-*

This is, in a significant sense, unsurprising. Basic structural facts flag the issue quite clearly: as the amount of patenting activity has grown rapidly worldwide, the administrative apparatus of the patent system has been strained to its limits, raising urgent concerns about the viability of its basic mission of evaluating patentability.<sup>3</sup> At the same time, the substantial costs of inappropriately granting large numbers of patents—uncertainty, additional litigation, and perversion of the incentives generated by patents themselves—are reasonably well understood.<sup>4</sup> Despite the near-universal agreement surrounding the question of patent quality, relatively little attention has been paid to the mechanisms that support (and undermine) it. Improving patent quality is generally viewed as an administrative concern—a question of funding levels, regulatory process, bureaucratic reform, and so on.<sup>5</sup> While there have been many interesting and innovative proposals for enhancing patent quality by reforming (even radically) the patent-prosecution process, less work has been done to identify the underlying mechanisms of patent quality.<sup>6</sup>

What has largely been lost in this drumbeat for improved patent quality is that the modern patent system affirmatively *encourages* low patent quality<sup>7</sup>—the incentives at work are such that we cannot reasonably expect anything other than very large numbers of low-quality patents. For this reason, virtually all of the proposed reforms directed to patent quality are doomed to fail; until we change the incentives (and change them quite significantly), the patent-quality problem will continue to grow.<sup>8</sup>

In this Article, I suggest that only by understanding the mechanisms of patent quality—the incentive structure that not only discourages “good” patent behavior but also encourages “bad” patent behavior—will we make any real progress in improving the situation. Low patent quality, I argue, is not simply the problem of the U.S. Patent

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*Obtaining Rules*, 45 B.C. L. REV. 55, 56-58 (2003) [hereinafter Kieff, *Registering Patents*]; see also F. Scott Kieff, *The Case for Preferring Patent-Validity Litigation over Second-Window Review and Gold-Plated Patents: When One Size Doesn't Fit All, How Could Two Do the Trick?*, 157 U. PA. L. REV. 1937, 1947-63 (2009) (arguing against a “beefed-up” segregated examination system in the PTO, and emphasizing the beneficial information learned during the patent litigation process). I explore this approach in more detail *infra* Part III.

<sup>3</sup> See *infra* Section II.B.

<sup>4</sup> See *infra* Section I.B.

<sup>5</sup> See *infra* Section III.A.

<sup>6</sup> See *infra* Section III.B.

<sup>7</sup> See *infra* Part II.

<sup>8</sup> See *infra* Section III.D.

and Trademark Office (USPTO) and its counterparts worldwide, and no patent office can “fix” patent quality alone. Indeed, given the number of annual filings, it is hard to imagine any scenario in which enough resources could be directed toward this effort to have a meaningful impact. Instead, a serious effort to improve patent quality will need to address the reasons *why* patentees increasingly adopt a high-volume, low-quality patenting strategy, *why* litigation has become virtually the only reliable tool for determining a patent’s scope and validity, and *why* memes such as “patent trolls” and “patent thickets” have become embedded in current legal-policy discourse.

A patent system that yields high-quality patents is an attainable goal. But administrative reforms—although they might well help—will not alone get us there. Until patentees have strong, unequivocal incentives to seek patents that clearly meet the standards of patentability, that are explained in the context of the prior art, and that draw clear and unambiguous lines around their subject matter, we will not succeed. The tools are there—we just need to understand which ones to use.

## I. PATENT QUALITY: A READER’S GUIDE

### A. *What Is Patent Quality?*

At the outset, it is important to be precise about what I mean by “patent quality” in this context. Patent quality is the capacity of a granted patent to meet (or exceed) the statutory standards of patentability—most importantly, to be novel, nonobvious, and clearly and sufficiently described.<sup>9</sup> Thus, a “low quality” patent is one granted for an invention that does not meet these standards. And, although it should be clear, I want to make plain that there is a definite distinction between the quality of a patent (as I use the term here), and its value. Although there may at times be a relationship between value and quality in patenting—in an ideal world, the correlation would be rather strong—at other times these characteristics will be independent. A patent’s value depends on factors well beyond those of concern to the patent law—the size of the relevant market, the relationship be-

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<sup>9</sup> See 35 U.S.C. § 102 (2006) (requirement of novelty); *id.* § 103 (requirement of nonobviousness); *id.* § 112 (requirement of specification). While other provisions of the U.S. Code might also be described as standards of validity, including the subject matter and utility requirements, *id.* § 101, and the inventorship requirement, *id.* § 116, the novelty, nonobviousness, and specification requirements are overwhelmingly the most important.

tween the patent's scope and a marketable good or service, and many others. Some of these factors will suggest the quality of the patent, such as the nature of the advance over the prior art, but others have little or nothing to do with patent quality as defined above.

### B. *Should We Care About Patent Quality?*

Another threshold question is whether there is a problem with patent quality worthy of further consideration. That is, an argument might be put forth that although higher patent quality is better than lower patent quality, there is no particular reason to believe that the current state of affairs is dramatically suboptimal. A stronger form of this argument would posit a tradeoff between patent quality and costs, and suggest that perhaps "high" patent quality is an inefficient goal: it is better, perhaps, to allow market forces (in the form of litigation and licensing) to sort the wheat from the chaff in terms of quality in the same way that patent value is cleared.<sup>10</sup>

I have significant sympathy for this line of argument. Reaching a state of affairs where every granted patent meets or exceeds the standards of patentability seems both implausible and likely a misallocation of resources. The patent-prosecution process is fraught with serious information problems of the sort that a robust marketplace might be able to resolve at least as well as an over-taxed administrative agency.<sup>11</sup> However, the case for better patent quality still carries the day, for the several reasons that follow.

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<sup>10</sup> F. Scott Kieff and Mark Lemley have both made versions of this argument. Kieff suggests that much patent-quality assessment is best left to the marketplace, while Lemley makes the less vigorous argument that it is likely rational to be relatively uncertain about patent quality ("rationally ignorant") at the USPTO, as so few patents have any substantial value in the marketplace. See Kieff, *Registering Patents*, *supra* note 2, at 67-69 (describing with approval the "commercialization" model of patents, in which the "screening role" is played by the "competitors of the patentee"); Mark A. Lemley, Essay, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1531 (2001) (concluding that determinations of patent quality "can be made much more efficiently in litigation, because only a tiny percentage of patents are ever litigated or even licensed to others").

<sup>11</sup> I, as well as many others, have observed the information problems inherent in patent prosecution. See, e.g., Lee Petherbridge, *Positive Examination*, 46 IDEA 173, 181-84 (2006) (explaining patent prosecution procedures and noting that "the information costs incurred by the Patent Office are quite high"); Michael Risch, *The Failure of Public Notice in Patent Prosecution*, 21 HARV. J.L. & TECH. 179, 209-10 (2007) (noting the information problems of patent prosecutions resulting from "a lack of clarity in patent claims"); John R. Thomas, *Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties*, 2001 U. ILL. L. REV. 305, 312-17 (explaining how the "overload" of information necessary to patent examiners may negatively impact "Patent Office work

## 1. Uncertainty

Particularly compelling is the recognition that a patent system characterized by low patent quality sows substantial uncertainty at all levels of the patent system: uncertainty about the validity of granted patents, uncertainty about the scope of granted patents, uncertainty about whether a particular invention is patentable, and uncertainty about whether a valid patent will be fully enforced.

Uncertainty obviously makes business decisions based on patents (whether by patentees, prospective licensees, investors, etc.) much more difficult and costly. To be sure, I recognize that uncertainty exists in virtually every human activity, and that robust markets can function well despite that uncertainty. But it is important to remember that patent laws are an intervention into the free operation of the market—a well-justified intervention, in my view, but an intervention nonetheless.<sup>12</sup> Accordingly, the basis of the patent system is that the proprietization of certain ideas (“patentable” ones, of course) will stimulate behaviors that will enable the market to better support innovation.<sup>13</sup> The strongest case for the patent system, then, is where it

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product”); R. Polk Wagner, *Reconsidering Estoppel: Patent Administration and the Failure of Festo*, 151 U. PA. L. REV. 159, 169-77 (2002) (discussing the “significant informational costs of patent prosecution”).

<sup>12</sup> Although it is well beyond the scope of this Article to explore the underlying policy basis for the patent system, the highlight is that innovation has characteristics of a public good (i.e., the cost of providing the good does not increase with consumption, and it is generally infeasible to exclude others from consuming the good), and is likely to be underproduced in the absence of market intervention. The classic articulation of this idea is found in Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in *THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS* 609, 614-16 (Nat’l Bureau of Econ. Research ed., 1962). For an overview of public-good economics, see HAL R. VARIAN, *MICROECONOMIC ANALYSIS* ch. 23 (3d ed. 1992). For my views, see generally R. Polk Wagner, Essay, *Information Wants to Be Free: Intellectual Property and the Mythologies of Control*, 103 COLUM. L. REV. 995 (2003) (arguing that the quantity of “open” information in the public domain is likely to increase where information goods are more proprietized). For further information, see WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW* 18-20 (2003) (describing the “public-good character of intellectual property”); Peter S. Menell & Suzanne Scotchmer, *Intellectual Property Law*, in 2 *HANDBOOK OF LAW AND ECONOMICS* 1473, 1476-78 (A. Mitchell Polinsky & Steven Shavell eds., 2007) (explaining how the economic interest in intellectual property has grown “out of the critical importance of innovation to social welfare”).

<sup>13</sup> It is important to remember that the patent system does not merely introduce incentives to create inventions, but also to commercialize inventions and invest in inventive activity—that is, to create, more broadly, a market for innovative activity. See, e.g., F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 MINN. L. REV. 697, 710 (2001) (“The patent right to exclude competitors . . . provides incentives

best performs the function of enabling the market for innovation. And it cannot do so particularly well when the basic component of the implementation mechanism—property rights in (patentable) ideas—are so imbued with uncertainty.<sup>14</sup> Again, uncertainty is both unavoidable and unlikely to be crushing (at least at moderate levels) in this context. But I am convinced that the current patent system has too much uncertainty, and that low patent quality bears substantial responsibility for it. It is the patent reformer's version of the Hippocratic Oath: first, consider uncertainty.

## 2. Type I and Type II Errors<sup>15</sup>

By definition, a low-quality patent system is characterized by a large number of errors in the patent-granting process. Paradigmatically, we think of these errors as being inappropriate grants—that is, patents granted that do not meet the standards of patentability. But errors in the patent-granting process also involve inappropriate denials—those where patentable inventions are turned away. These errors may well be as costly to society as inappropriate grants, for they may undermine the incentives for important innovations to be fully commercialized or have demoralizing effects on future research efforts.<sup>16</sup>

## 3. The Cure Is Worse than the Disease

Another reason to be concerned about patent quality is that many of the current responses to low-quality patents may have unintended pernicious effects across the patent system. For example, in *eBay Inc. v. MercExchange, L.L.C.*, the Supreme Court's widely reported rejection of the Federal Circuit's longstanding presumption in favor of injunctive relief for patent infringement was largely based on four Justices'

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for the holder of the invention and the other players in this market to come together and incur all costs necessary to facilitate commercialization of the patented invention.”); Wagner, *supra* note 11, at 193 n.105 (collecting sources describing “the number of activities that are stimulated by the existence of the patent system”).

<sup>14</sup> See, e.g., Henry E. Smith, *Property and Property Rules*, 79 N.Y.U. L. REV. 1719, 1729, 1754-64 (2004) (discussing uncertainty in property rules).

<sup>15</sup> In statistics, “type I” errors are false positives, while “type II” errors are false negatives. See GRAHAM UPTON & IAN COOK, A DICTIONARY OF STATISTICS 200-01 (2d ed. 2006) (discussing type I and type II errors in the “hypothesis test” entry). In the context of this Article, a type I error would be the inappropriate grant of a patent that did not fully achieve the standards of patentability, and a type II error would be the inappropriate denial of a patentable application.

<sup>16</sup> These errors are also, of course, far less visible by their very nature.

sense that patent quality was too low to support permanent injunctive relief in many cases.<sup>17</sup> The rule change, of course, at least marginally reduces the power of patents, and increases uncertainty surrounding the enforcement of both high-quality and low-quality patents. Likewise, the various reform efforts to curtail the activities of so-called “patent trolls” have produced similarly undesirable results. Many of these measures, such as limiting the damages available to infringed patentees, would also diminish patent power while increasing uncertainty regarding enforcement, again irrespective of patent quality.<sup>18</sup>

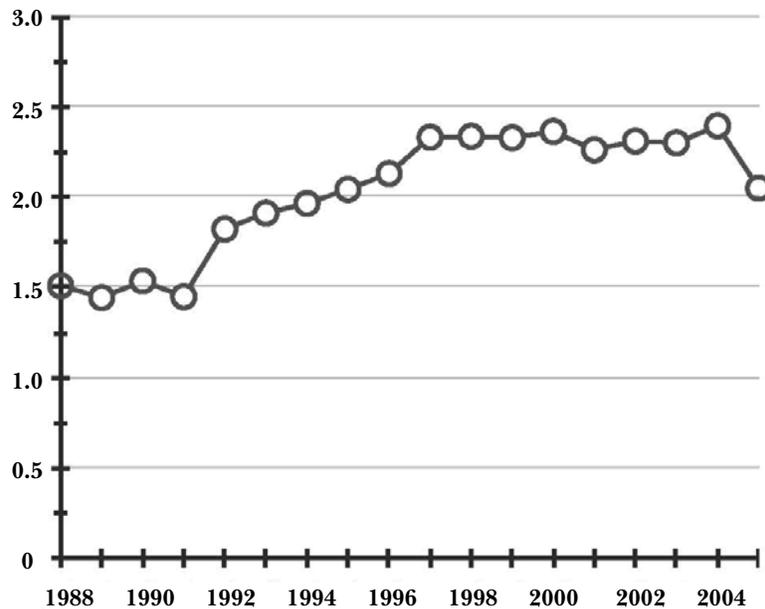
#### 4. Litigation and Strategic Behavior

Perhaps the most obvious consequence of low patent quality is the increase in litigation observed over the past decade or so—both in terms of raw filings and “litigation intensity,” gauged by the number of suits filed per in-force patent. Figure 1 below shows this trend.

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<sup>17</sup> 126 S. Ct. 1837, 1842-43 (2006) (Kennedy, J., concurring) (noting the “potential vagueness and suspect validity” of many patents obtained by patent trolls). For subsequent developments, see Andrew Beckerman-Rodau, *The Aftermath of eBay v. MercExchange*, 126 S. Ct. 1837 (2006): A Review of Subsequent Judicial Decisions, 89 J. PAT. & TRADEMARK OFF. SOC'Y 631, 633 (2007) (positing greater uncertainty, but finding relatively little change in courts' subsequent granting or denial of injunctions); Jeremy Mulder, Note, *The Aftermath of eBay: Predicting When District Courts Will Grant Permanent Injunctions in Patent Cases*, 22 BERKELEY TECH. L.J. 67, 72 (2007) (noting that, because *eBay's* equitable-standards approach provided little practical guidance to district courts, and because district court determinations are only reviewable for abuse of discretion, “district courts will shape the future of patent injunction case law”).

<sup>18</sup> See John Markoff, *Two Views of Innovation, Colliding in Washington*, N.Y. TIMES, Jan. 13, 2008, § 3, at 3 (noting disagreement over the effect that legislation intended to combat “patent trolls” will have on innovation and prices).

**Figure 1: Patent Litigation Intensity, 1988–2005**

Note: This chart represents the number of patent-infringement suits filed per 1000 in-force patents between the years 1988 and 2005.<sup>19</sup>

A low-quality patent system means that there are more patents with greater uncertainty, leading to increasing disputes over patents and increasing appeal to the decision maker of last resort—the court system. Further, a greater number of uncertain patents means that litigation becomes more complex and expensive, adding to both the private and social costs of the system as a whole. What might be some-

<sup>19</sup> Lawsuit information is provided by the Administrative Office of the U.S. Courts (AO) in its Annual Reports. Patent-filing data are provided by the USPTO Annual Reports. Calculation of in-force patents is conducted by reducing the total potential number of in-force patents (using expiration-date data) by the proportion of patents that expire early due to failure to pay maintenance fees. For AO data, see Judicial Business of the United States Courts, <http://www.uscourts.gov/judbususc/judbus.html> (last visited Apr. 15, 2009). For USPTO data, see USPTO Annual Reports, <http://www.uspto.gov/web/offices/com/annual/index.html> (last visited Apr. 15, 2009). Patent-renewal-rate data are also reported and compiled in Gideon Parchomovsky & R. Polk Wagner, *Patent Portfolios*, 154 U. PA. L. REV. 1, 15 tbl.1 (2005).

what less apparent is that a low-quality patent system enables greater opportunities for socially harmful strategic behavior: with more patents and more uncertainty (both in terms of the patents themselves, as well as the possible scope of enforcement), the system can be exploited—whether by filing low-probability, high-cost suits or by seeking large numbers of low-quality patents to use as leverage for settlement.

Litigation is a necessary, important, and unavoidable part of the private enforcement scheme that is fundamental to the patent system, and strategic behavior exists in every form of human economic activity. Even a patent system with only the highest, most valid, and most clear patents will have both litigation and strategic behavior. But it is also clear that low-quality patents will create more of the costs associated with such litigation.

### 5. The Public Believes that There Is a Patent Problem

Although most academics likely believe that patent quality could (and should) be higher, it seems very clear that even those less familiar with the patent system are convinced that there is a serious problem. In part, this reflects the mass media's treatment of the patent system in recent decades: articles and editorials headlined "Patently Absurd" (and variations thereof) are all-too-common features of the popular press's coverage.<sup>20</sup> Several Supreme Court Justices likewise seem to see a serious problem with patent quality (apparently they read the *New York Times* as well).<sup>21</sup> Certain industries, notably the high-tech industry, have been engaged in a concerted public relations effort that, among other things, highlights patent quality problems.<sup>22</sup> And as the patent system grows in importance—by both increasing in size and in visibility to the modern knowledge economy—the importance of this public perception will increase. It determines the future direction of the system and the role it will play in innovation policy.

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<sup>20</sup> E.g., James Gleick, *Patently Absurd*, N.Y. TIMES MAG., Mar. 12, 2000, at 44; Editorial, *Patently Absurd*, WALL ST. J., Mar. 1, 2006, at A14; Editorial, *Patently Flawed*, BOSTON GLOBE, July 23, 2007, at A10; *Patently Obvious*, ECONOMIST, May 5, 2007, at 78; Editorial, *Patently Obvious*, WALL ST. J., May 3, 2007, at A16; Editorial, *Patently Ridiculous*, N.Y. TIMES, Mar. 22, 2006, at A24.

<sup>21</sup> See, e.g., *eBay*, 126 S. Ct. at 1842 (Kennedy, J., concurring) ("An industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees.")

<sup>22</sup> See Pear, *supra* note 1 (reporting that brand-name drug companies lobbied Congress for a patent bill that would make it harder for the generic drug companies to assert claims of inequitable conduct on the part of brand-name patent holders).

## 6. Feedback Effects

Finally, and most importantly, a low-quality patent system is likely to be self-reinforcing. If low-quality patents create uncertainty, spur increased litigation, and provide opportunities for strategic behavior, one important response will be for firms to file more low-quality patents. While I consider this issue in more detail in Part II below, the basic outline is that a firm's rational response to a patent system with large numbers of low-quality patents is to seek more patents, irrespective of their individual quality.<sup>23</sup> As Professor Parchomovsky and I have argued, this phenomenon nicely explains some important recent trends in patenting behavior, especially the increase in filings and patent intensity.<sup>24</sup> It may well be that the feedback effects from low-quality patents have created a spiral-down effect, meaning that, without intervention, we should expect patent quality to worsen over time.

But it might well be that the converse is also true. A patent system with higher-quality patents seems likely to be more certain and less prone to strategic manipulation, thereby encouraging patentees to seek fewer, better, and clearer patents than they would under a low-quality system.

\* \* \*

To return to the question noted above, is there a serious patent-quality problem? The short answer, as with so many issues in patent law, is that we do not know for sure. But, as I have outlined above, even those skeptical about the seriousness of the problem should nonetheless care about patent quality.

## II. PATENT-QUALITY MECHANISMS: WHAT CAUSES LOW PATENT QUALITY?

Why are so many patents of low quality? That is, why does the USPTO grant a substantial numbers of patents every year that do not meet the required standards of patentability? This is not merely a rhetorical question: the core mission of patent offices worldwide is to

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<sup>23</sup> See *infra* Section II.C.

<sup>24</sup> See *generally* Parchomovsky & Wagner, *supra* note 19 (presenting a patent-portfolio theory, which argues that it is in a firm's best interest to obtain an aggregation of related patents regardless of their individual worth, as an explanation of the recent increase in patent filings and intensity).

evaluate applications against the standards of patentability, and it is not self-evident that an invalid patent is in the interest of the holder.<sup>25</sup> Furthermore, as has been noted above, low-quality patents are costly to society at large and are vilified in the popular press and academic circles alike. Why, then, are there so many of them?

The easy answer is that evaluating inventions in light of the statutory standards of patentability is a difficult and uncertain business, fraught with serious information problems and with shifting legal tests and frameworks, and it must take place against a backdrop of limited resources.<sup>26</sup> This is all certainly true; even under the best of circumstances, one would expect a nontrivial number of invalid patents to slip through the system and a number of patentable inventions to be inappropriately rejected. Yet this answer, I think, is incomplete. It accounts for neither the pervasive sense of most observers of the patent system that patent quality is poor and worsening, nor the various metrics that appear to signal growing concern.<sup>27</sup> If patentees, the USPTO, and the public are all put in a worse position by low-quality patents, *why does patent quality not improve?*

Understanding this puzzle—that is, why patent quality is low despite the near-universal agreement that low quality is suboptimal and despite the focus on quality by the administrative agencies—is the first step to any serious effort to address the issue. A careful analysis reveals that low patent quality is supported by a series of powerful incentives: (1) incentives that encourage patentees to draft patent applications that effectively obscure the true scope of the invention and its relationship to the prior art; (2) incentives that lead the administrative agencies (the USPTO and other patent offices) to conduct relatively ineffective examinations of many patents; and, most importantly, (3) incentives that compel modern innovative firms to adopt a high-volume, low-quality patenting strategy. I discuss these three sets of incentives (as well as others) in more detail below. A consideration of these incentives suggests that patent quality is not a question of bureaucratic incompetence or administrative process, but instead a problem of interlocking incentive structures that impose themselves on the entire patent system.

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<sup>25</sup> Even were we to set aside the substantial resources involved in obtaining patents for argument's sake, invalid patents are still not cost-effective because they will bar their holders from later patents on the same or similar inventions.

<sup>26</sup> See *supra* note 11 and accompanying text (citing sources arguing that patent prosecution is rife with informational problems).

<sup>27</sup> See *supra* Section I.B (discussing the reasons for such concern).

### A. *Deferring Clarity*

I start with the unremarkable premise that a patentee has a strong incentive to draft, file, and prosecute a valid patent with claims that cover appropriate subject matter. Applications rejected by the Patent Office, and those found invalid by courts during litigation, are ultimately worthless and often leave the patentee in a far worse position, given the capital expenditures,<sup>28</sup> opportunity costs,<sup>29</sup> and preclusive effects<sup>30</sup> incurred by the process. Yet this tenet is too simple for a few reasons. First, it overlooks the dual-stage nature of patent-validity analysis, wherein a first evaluation is conducted by the Patent Office and a second during any enforcement action that may occur.<sup>31</sup> These stages have critical differences. By necessity, the first stage of this analysis involves a softer look: resources are limited, patent examiners are likely underinformed, and so forth.<sup>32</sup> Further, without a particular “targeted” good or service in hand, a careful analysis of the scope of the patent (i.e., the subject matter encompassed within the claims) is understandably unlikely.<sup>33</sup> During the litigation stage of the analysis,

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<sup>28</sup> According to surveys by the American Intellectual Property Law Association, it costs upwards of \$10,000 to prosecute a patent application of even moderate complexity, and it can cost much more if extensive amendments are required. AM. INTELLECTUAL PROP. LAW ASS'N, REPORT OF THE ECONOMIC SURVEY 21 (2007).

<sup>29</sup> The opportunity costs of an invalid patent involve those resources which could have been dedicated to a valid patent and the missed opportunity to adequately protect a patentable invention.

<sup>30</sup> These generally preclude the patentee from seeking a patent on ideas—even her own—disclosed more than a year prior to application. See 35 U.S.C. § 102(b) (2006) (considering an invention to have been disclosed if it was either “patented or described in a printed publication,” whether in the United States or abroad).

<sup>31</sup> That those accused of patent infringement may seek to have the patent invalidated is an important (and unique) aspect of the patent law. See *id.* § 282 (listing various defenses to patent infringement, including “invalidity of the patent”).

<sup>32</sup> See, e.g., Thomas, *supra* note 11, at 314 (noting how patent examiners “are allowed only a limited time to sift through enormous amounts” of information, and explaining the limitations inherent in their “information-gathering techniques”).

<sup>33</sup> Indeed, one problem with the current patent-examination process is that the USPTO does not explicitly determine the meaning of claim language but rather uses what it describes as “the broadest reasonable construction” analysis. See U.S. PATENT & TRADEMARK OFFICE, DEP'T OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE § 2111 (8th ed., 7th rev. 2008) [hereinafter USPTO, MPEP] (“During patent examination, the pending claims must be ‘given their broadest reasonable interpretation consistent with the specification.’”). The Federal Circuit has acknowledged (and apparently blessed) this approach:

The Patent and Trademark Office (“PTO”) determines the scope of claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction “in light of the specification

patents are given a much closer look by virtue of the adversarial litigation process and the need to analyze the scope of the patent against a particularized target (the accused infringing good). Of course, this harder look comes at a substantial cost, both to the patentee and to the challenger or accused infringer. Accordingly, the grant (i.e., the completion of the first stage of analysis) will attach a market value to the patent—irrespective of the patent's validity—that relates to the cost of obtaining a decision on validity from the courts. Thus, even clearly invalid patents, once granted, have some recognized value to patentees.<sup>34</sup>

It is also important to recognize the critical component of timing in any analysis of patent incentives. Patent prosecution can take years, and most enforced patents are still subject to suit several years after they are issued.<sup>35</sup> This means that a patent applicant must necessarily be a futurist: she must look down the road of technological advancement, perhaps a decade or more, to predict the market for the technology and the behavior of competitors, among other things. A patent application written in year zero might be enforceable only in year three (due to the pendency of prosecution), and the market might not be significant until year five. By then, competitors will have the benefit of intervening technological advancements and the teachings of the patent itself. In order for the patent to retain power (and thus value for the patentee) in the marketplace, it will have to be written in anticipation of these changes and be a substantial advance over the prior art alternatives.

I want to be clear that the set of circumstances above is precisely as designed, and almost certainly socially beneficial: that very few pat-

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as it would be interpreted by one of ordinary skill in the art." Indeed, the rules of the PTO require that application claims must "conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description."

Phillips v. AWH Corp., 415 F.3d 1303, 1316-17 (Fed. Cir. 2005) (en banc) (citation omitted).

<sup>34</sup> However, that value may be (and I think is *likely* to be) less than the sum of the sunk costs, opportunity costs, and costs of preclusion. See *supra* notes 28-30 (explaining these costs).

<sup>35</sup> See Scott Atkinson et al., *The Economics of a Centralized Judiciary: Uniformity, Forum Shopping and the Federal Circuit* 39 tbl.4 (May 2008) (unpublished manuscript), available at <http://ssrn.com/abstract=1129846> (finding that, since the establishment of the Court of Appeals for the Federal Circuit, the average age of a litigated patent is almost six-and-a-half years).

ents have real marketplace value<sup>36</sup> is, in my view, a tremendous benefit of the system to society.<sup>37</sup> But the fact that the deck is, in some ways, stacked against the patentee does create powerful incentives, and patentees will (and do) respond. Most obviously, of course, patent lawyers are trained with precisely this scenario in mind—I have always regarded teaching claim drafting as a short course in prognostication.<sup>38</sup> But the timing-based incentives also create strong interests in deferring a careful analysis of the patent (especially with regard to claim scope) for as long as possible, or at least retaining as broad a range of possibilities for as long as one can. Given that the patentee is solely in control of the words used to describe and claim the invention, a rational patentee will tailor the language accordingly. This strategy manifests itself in two ways. First, a patentee will almost certainly seek substantial vagueness, thus gaining flexibility to effectively alter the scope and description of the patent according to changing circumstances. Second, because of legal rules which penalize detailed descriptions, the less description the patentee can provide the better she will be.<sup>39</sup> Both of these strategies—creating vagueness and providing a lack of description—have important costs to the patent system. At best, they make it much harder to evaluate the scope and validity of a patent, and make it much more likely that mistakes will be made. In many cases, they allow patentees to exploit the dual-stage-analysis process noted above to obtain a patent under one understanding of the language (e.g., a narrow understanding) and later assert that same patent in a way that broadens the scope of coverage. And, in all cases,

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<sup>36</sup> For a discussion of how many patents are actually “valuable,” see Mark A. Lemley & Carl Shapiro, *Probabilistic Patents*, 19 J. ECON. PERSP. 75, 80-83 (2005), and Parchomovsky & Wagner, *supra* note 19, at 16-19.

<sup>37</sup> Patents are privately enforced (i.e., they act as a “hunting license,” not as a reward), and therefore society only “pays” a patentee when her patent has market value. The remaining patented inventions are disclosed to the public for free (and eventually, of course, enter the public domain). See Lemley & Shapiro, *supra* note 36, at 84 (noting that patents are “neither litigated nor licensed for a royalty” in ninety-five percent of cases). For a more general theory of how incomplete capture is a key tenet of intellectual property laws, see Wagner, *supra* note 12.

<sup>38</sup> For the classic treatment of claim drafting (one which nearly all patent lawyers experience at some time), see generally ROBERT C. FABER, *LANDIS ON MECHANICS OF PATENT CLAIM DRAFTING* (5th ed. 2006).

<sup>39</sup> For example, the Federal Circuit’s recent decision in *Phillips v. AWH Corp.*, regarding claim-construction methodologies, makes clear that the description in a patent’s specification will be used to alter claim scope. 415 F.3d 1303, 1315-17 (Fed. Cir. 2005) (en banc). See generally Wagner, *supra* note 11, at 214-16 (explaining the strategic gains of making “broad claims” and “vaguely” describing an invention).

they yield patents that are substantially less likely to comport with the statutory standards of validity—that is, low-quality patents.

It is important to note that although there are patent rules that discourage the deferral of clarity, there are also several rules that support it. First, although 35 U.S.C. § 112 requires clear and adequate disclosure as well as clear and distinct claim language,<sup>40</sup> the USPTO rejects fewer patent applications for § 112 disclosure problems than for prior art problems and virtually never provides a detailed analysis of claim language, meaning that serious § 112 analysis is left for litigation.<sup>41</sup> Second, the statutory presumption of validity<sup>42</sup> encourages patentees to pursue a flexible view of their patent: narrow during prosecution, when the risk of rejection because of prior art is higher, and broader during litigation, when patent scope is of paramount importance. Third, the Federal Circuit's rules regarding claim construction—that claims are to be understood in a contextual, holistic manner, without any established process or framework—encourage patentees to limit the disclosure of their invention (as such disclosure can be used to create “context” for fixing claim scope), and ensure that the final analysis of claim scope (and thus virtually all other valid-

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<sup>40</sup> 35 U.S.C. § 112 (2006) states the following:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

<sup>41</sup> Indeed, the USPTO itself notes in the USPTO, MPEP that “[b]y far the most frequent ground of rejection is on the ground of unpatentability in view of the prior art, that is, that the claimed subject matter is either not novel under 35 U.S.C. 102, or else it is obvious under 35 U.S.C. 103.” MPEP, *supra* note 33, § 706.02.

<sup>42</sup> 35 U.S.C. § 282 (2006) states the following:

A patent shall be presumed valid. Each claim of a patent (whether in independent, dependent, or multiple dependent form) shall be presumed valid independently of the validity of other claims; dependent or multiple dependent claims shall be presumed valid even though dependent upon an invalid claim . . . . The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity.

ity and enforcement matters) will only occur after appeal to the Federal Circuit.<sup>43</sup>

Deferring clarity then offers a number of critical advantages to the patentee. It allows the patentee to capture some value for an invention at a very early stage simply by receiving a grant. And it hedges against the patent being undermined by the passage of time and technology, allowing patents to change their scope to fit later circumstances. Further, while some legal rules oppose this strategy—most importantly, perhaps, § 112—others support it.<sup>44</sup> Therefore, it should be no surprise that many rational patentees would seek to defer clarity, and that such an action plays an important role in diminishing the quality of patents.

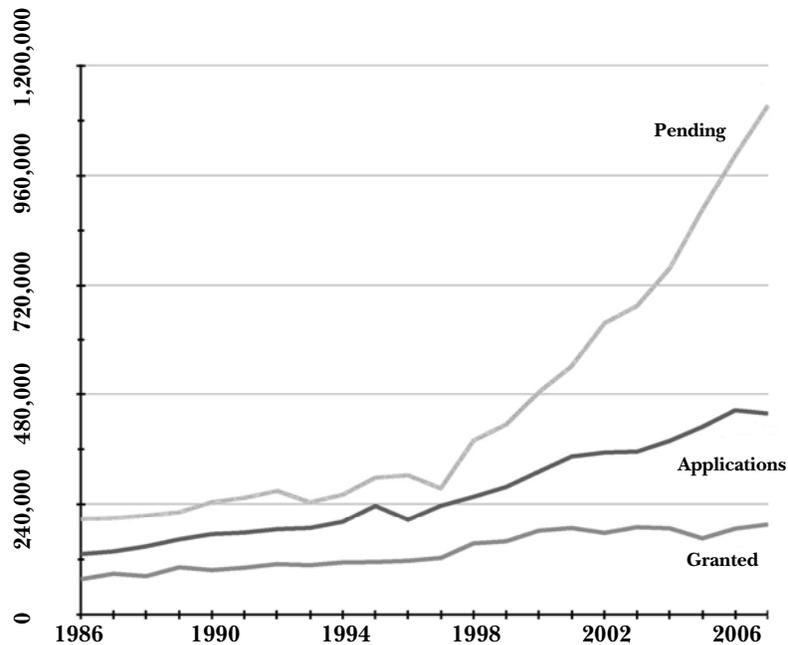
### B. Administrative Incentives

In addition to patentees' incentives to defer clarity, there are powerful incentives on the part of the USPTO that have the effect of reducing patent quality. Most of these are straightforward and understandable. The first set of administrative incentives encourages the Patent Office to issue many patents. Resources are limited, and filings continue to rise rapidly. Pendency—the number of patent applications in the prosecution process—has risen strikingly in the last few years.

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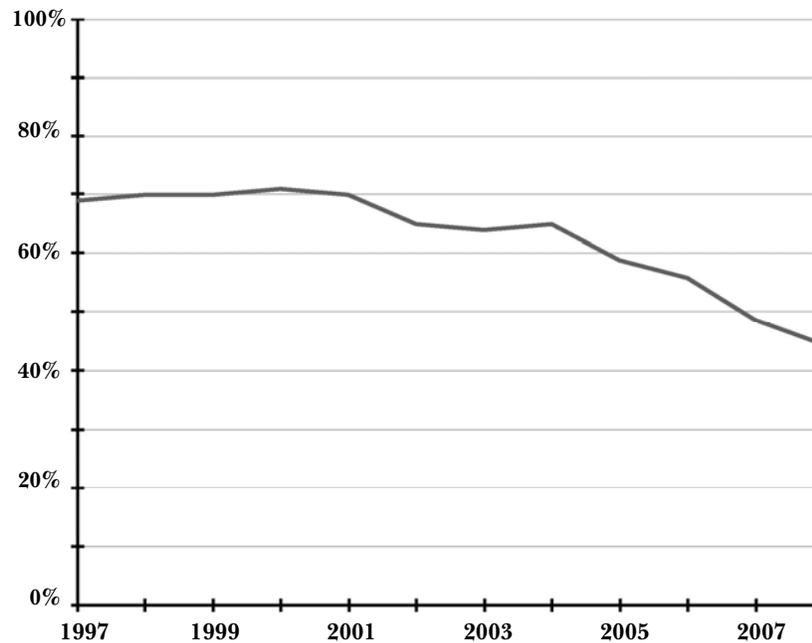
<sup>43</sup> See *Phillips*, 415 F.3d at 1313 (“[T]he person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.”); see also R. Polk Wagner & Lee Petherbridge, *Did Phillips Change Anything? Empirical Analysis of the Federal Circuit’s Claim Construction Jurisprudence* 27-33 (Apr. 3, 2008) (unpublished manuscript, on file with author) (criticizing the Federal Circuit’s opinion in *Phillips* for choosing a holistic—as opposed to procedural—approach to claim construction).

<sup>44</sup> See *supra* note 39 and accompanying text (explaining how legal rules tend to incentivize a lack of clarity in patent description).

**Figure 2: Patent Activity in the United States, 1986–2007**<sup>45</sup>

This leads to a strong push for higher throughput (i.e., more processed patents). There are two ways, of course, to raise throughput: deny more patent applications more quickly, and grant more patents more quickly. And while it appears that the USPTO has markedly lowered the allowance rate in the past couple of years, as seen in Figure 3, it is clear that the number of patents issued has risen as well.

<sup>45</sup> These data are compiled from the USPTO Performance and Accountability Reports. To view these reports, see USPTO Annual Reports, *supra* note 19.

**Figure 3: Allowance Rate for U.S. Patent Applications, 1997–2008<sup>46</sup>**

Second, there are inherent institutional biases that may serve to favor weaker, lower-value patents. Patent law is a specialized field, with many repeat players; in this context, there are always concerns that the views of the insiders (here, large patentees) will carry more weight than those of the public at large. Although this does not necessarily mean that the institutional biases will favor lower quality patents, if the insiders' interests tend toward lower quality patents then the institutions may well reflect those views. Further, even beyond the inherent institutional biases, there are other internal, bureaucratic incentives at the USPTO in favor of granting patents, as a component of an examiner's performance evaluation depends on "production counts," which are most easily and quickly obtained by allowing patent applications.<sup>47</sup>

<sup>46</sup> These data are compiled from the European Patent Office Trilateral Statistic Reports. To view these reports, see Trilateral Statistical Reports, <http://www.trilateral.net/statistics/tsr.html> (last visited Apr. 15, 2009).

<sup>47</sup> An examiner receives a "count" towards his productivity for an "allowance or a non-final rejection." U.S. PATENT & TRADEMARK OFFICE, DEP'T OF COMMERCE, FINAL INSPECTION REPORT NO. IPE-15722, USPTO SHOULD REASSESS HOW EXAMINER GOALS, PERFORMANCE APPRAISAL PLANS, AND THE AWARD SYSTEM STIMULATE AND REWARD EX-

C. *Feedback Effects: The Prisoner's Dilemma of Patent Quality*

Perhaps one of the thorniest incentive mechanisms to unravel in this context is the fact that one important mechanism favoring lower-quality patents is the large quantity of existing low-quality patents. That is, a patentee has incentives to seek low-quality patents at least in part because of what might be best described as the “feedback effect” of low patent quality. This phenomenon is related to what Professor Parchomovsky describes as the “patent paradox”: if virtually all patents have negative cash value (i.e., their acquisition cost is greater than their expected value), then why do so many otherwise quite rational firms file for so many patents and in fact increase their patent intensity over time?<sup>48</sup> Although there are several possible reasons for this, Parchomovsky and I think the simplest explanation is that rational patentees adopt a high-volume, low-quality patenting strategy because it maximizes the possibility of gaining an advantage from the current patent system.<sup>49</sup> In our earlier work, we sketch a range of important reasons why a high-volume, low-quality strategy—what we call a portfolio strategy—is advantageous in the modern innovation economy.<sup>50</sup> Having many patents, even if their quality is low, can provide much-needed marketplace power in a world where individual patents become increasingly less certain in scope and validity.<sup>51</sup> More specifically, having many patents, even if they are of low quality, can hedge against the difficulties in predicting the future noted above; by casting a broader net, with many patents in a particular field, less emphasis is placed on the need for any individual patent to endure into the future.<sup>52</sup> Also, having many patents, even if they are of low quality, can

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AMINER PRODUCTION 7-8 (2004), available at <http://www.oig.doc.gov/oig/reports/2004/USPTO-IPE-15722-09-04.pdf>. Because an examiner will presumably take more time before rejecting an application and exposing herself to the appeals process, the easiest way to ensure “productivity” is to quickly accept patent applications.

<sup>48</sup> See generally Parchomovsky & Wagner, *supra* note 19, at 16-19 (describing the “patent paradox” through an analysis of the falling value of patents and the increase in the volume of filings).

<sup>49</sup> See *id.* at 27-43 (presenting a theory of patent portfolios that argues that the benefits of a high-volume patent strategy “are substantial enough to encourage patenting behavior irrespective of the expected value of the underlying individual patents themselves”).

<sup>50</sup> *Id.*

<sup>51</sup> See *id.* at 32-37 (describing how a portfolio of related patents acts as a “super-patent,” which “allow[s] the holder to exclude others from the *collective* scope of its claims”).

<sup>52</sup> See *id.* at 37-41 (“[D]iversity—the fact that no single patent determines the value—is a major benefit of patent portfolios. By distributing the importance of the total portfolio across the constituent individual patents, a patent portfolio allows holders to significantly hedge against aspects of risk and uncertainty . . .”).

hedge against changes in the law itself.<sup>53</sup> This is not to suggest that a patent-portfolio approach inevitably leads to low quality—indeed, high volume, high quality would clearly be better. But, given resource constraints, the point is that the major participants in the modern patent system appear to have chosen a strategy that privileges volume of patents over quality.

Further, as we suggest in *Patent Portfolios*, the fact that others in the patent system are adopting a portfolio strategy is likely to further encourage the high-volume, low-quality approach. If the “coin of the realm” in the innovation economy is an ever-increasing patent portfolio, then firms will increase their patent portfolios (again, at the expense of quality).<sup>54</sup> Thus, there exists a feedback effect, whereby low-quality patents (organized into ever-larger portfolios) beget even more low-quality patents. In this way, low patent quality might resemble a prisoner’s dilemma: even if most firms would be better off with high-quality patents (and fewer of them), adopting such a strategy in the face of others’ more numerous (and lower quality) patents is disadvantageous. Thus firms maintain the suboptimal strategy, unable to successfully increase patent quality without widespread agreement among peers.

#### D. Cognitive Biases and Patent Quality

One additional mechanism that may support lower patent quality comes in the form of cognitive biases on the part of patentees—biases that encourage patentees to seek more patents than necessary, but to expend fewer resources on each patent. Consider that the distribution of patent value is very highly skewed, with a very small number of patents being very valuable and virtually all others having little or even negative value. A patentee deciding whether to seek patents will, like any decision maker, be subject to cognitive biases of various sorts. Most importantly for our purposes is the prospect theory, which holds that decision makers will tend to overweight low-probability events and invest resources even where rational assessment of the probability would suggest otherwise (this theory is used to explain, among other

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<sup>53</sup> See *id.* at 39-41 (explaining how “the diversity-features of patent portfolios” specifically address “uncertainty related to the patent law itself”).

<sup>54</sup> See *id.* at 60 (predicting that “innovation-driven firms will increasingly view patent portfolios as essential to their long-term success and behave accordingly”).

things, the success of lotteries).<sup>55</sup> In the patent context, the prospect theory would suggest why too many patents are filed: patentees overweight the likelihood that a patent will in fact have significant value. At first blush, this might also suggest that patentees would overinvest in patent quality, because an invalid patent is virtually certain to have no value.<sup>56</sup> But research into cognitive biases suggests that decision makers alter their assessments of probabilities based on the framing of the decision, and that people tend to make decisions that avoid even small chances of loss. If patenting decisions are made in stages—first an essentially binary decision to seek a patent or not, and later (or even ongoing) decisions about resources to invest into the patent-prosecution process—then it is probable that decision makers would simultaneously decide to patent too much, while underinvesting in each patent. That is, once a decision is made to seek a patent on a particular invention, assume that a decision maker has to decide whether to spend \$10,000 or \$50,000 on acquisition costs. Because the decision to patent has already been made, the acquisition cost is likely framed as a loss, and loss aversion would suggest that the cheaper, lower-quality route would be taken. Note that, given the initial bias leading to overpatenting, the choice to underinvest in the patent might well be fully rational—there is an exceedingly small chance of the patent possessing positive value, after all. But even if this second decision is rational for the patentee, the two-stage decision process—to patent, but underinvest in quality—will obviously lead to lower-quality patenting behavior.

Understanding the patenting choice as a series of two decisions (to patent, then invest) suggests that other forms of cognitive bias might support low-quality patents. For example, prospective patentees might be overconfident about the expected value of their invention, leading to a positive patenting decision, followed later by the analysis about resource expenditures noted above. In this way, cognitive biases can support low-quality-patenting behavior.

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<sup>55</sup> For a comparison of how the patent system is like “a lottery where players have a low probability of winning a large jackpot,” see Dennis D. Crouch, *The Patent Lottery: Exploiting Behavioral Economics for the Common Good*, 16 GEO. MASON L. REV. 141, 142, 149-59 (2008).

<sup>56</sup> This is subject to the exception noted above—there is some value in any granted patent, due to the cost that others will incur to have it declared invalid. See *supra* text accompanying note 34. But, in this context, this exception will have little impact, as it is certain that an invalid patent will not have a very large return.

E. *Nontraditional Uses of Patents*

It is now common to note that patents are obtained for reasons other than what is often assumed by classical theory. That is, the traditional understanding is that a patentee obtains a patent to protect an investment in knowledge by utilizing the patent's right to exclude others from the scope of a good or service that is based on the patented idea. We now understand that patentees often patent for many reasons in addition to (or instead of) the classic explanation. And, in each of these cases, if the long-term enforceability of the patent is relatively less important, then the importance of patent quality is reduced as well. For example, if a patentee is patenting primarily (or even partly) for defensive purposes—so as to have an arsenal of possible patents to use in counterclaims in any lawsuits, or as a means to preclude competitors from obtaining relevant patents—then that patentee will care less about patent quality; what matters to the patentee in such a case is not the ability to withstand a validity challenge in litigation, but simply the ownership of the patent.<sup>57</sup> The bare minimum required to squeak through the Patent Office is sufficient. Similarly, Professor Long's suggestion that patentees use patents as signals of innovative acumen or technological savvy should likewise lead to lower-quality patents: if patents are used as external signals independent of themselves, their quality is relatively unimportant.<sup>58</sup> As more patentees adopt these nontraditional approaches, we can expect patent quality to drop.

The core incentive mechanisms identified above—deferring clarity, administrative incentives, feedback effects, cognitive biases, and nontraditional uses for patents—are likely not the only incentive mechanisms supporting low-quality patents in the modern patent system. And, as I noted above, there are certainly plenty of incentives

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<sup>57</sup> See, e.g., Bronwyn H. Hall & Rosemarie Ham Ziedonis, *The Patent Paradox Revisited: An Empirical Study of Patenting in the U.S. Semiconductor Industry, 1979–1995*, 32 RAND J. ECON. 101, 125 (2001) (describing how stronger patent rights correlate with the defensive tactic of using patents as “bargaining chips,” which can lead to “patent portfolio races”); Lemley, *supra* note 10, at 1504 (noting that the defensive strategy relies on sheer volume of patents, and not necessarily on patent quality); Wesley M. Cohen et al., *Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or Not)* 17 (Nat'l Bureau of Econ. Research, Working Paper No. 7552, 2000), available at <http://www.nber.org/papers/w7552> (finding that eighty-two percent of respondents to a survey listed “blocking rival patents on related innovations” as a motive for patenting).

<sup>58</sup> See, e.g., Clarisa Long, *Patent Signals*, 69 U. CHI. L. REV. 625, 655–58 (2002) (considering patents as a means of credibly publicizing information).

(and rules) supporting high-quality patents. The point here is that there are several powerful (and, in many cases, growing) incentives in favor of low-quality-patenting behavior. We should therefore not be surprised that most observers believe that patent quality is a serious and growing problem: we are merely seeing the harvest of what has been sown (intentionally or unintentionally) by the incentive structures in the modern patent system.

### III. THE DURABILITY OF LOW PATENT QUALITY: WHY MOST REFORMS WILL FAIL

If the preceding outline of the several significant incentive structures that support low-quality-patenting behavior demonstrates anything, it is that low patent quality is not a simple matter of reforming—even quite radically—the Patent Office. Instead, low patent quality is a problem with roots deeply embedded in the incentive structure of the current patent system, and, is in fact aligned with major long-term trends such as the rise in patenting activity and the changing use of patents in the marketplace. Yet most of the efforts and proposals that have emerged to date treat patent quality as mainly an administrative issue, to be adjusted primarily through the alteration of the patent-prosecution process. In this Part, I briefly sketch some of the major reform efforts—both undertaken and proposed—and note whether they are likely to overcome (or at least address) the incentives that create low-quality patenting behavior.

#### A. *Administrative Changes*

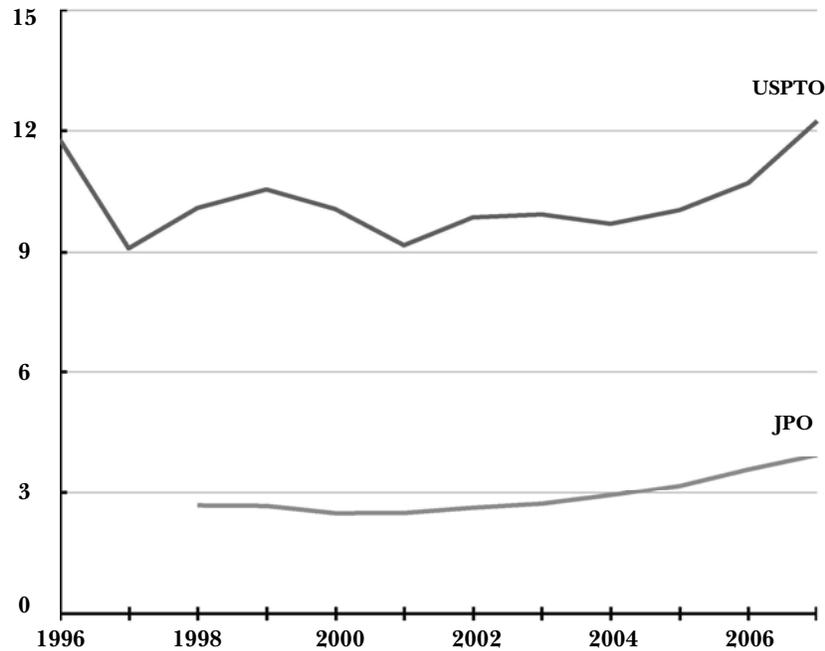
Because patent quality has topped many lists of problems with the patent system, patent offices (most especially the USPTO) have made a number of administrative adjustments to try to address the issue.

##### 1. Increasing Examiner Headcount

Prompted in large part by the rise in filings and apparent explosion in pendency, the USPTO has hired many additional examiners. This has obviously required a substantial effort, including hiring and training thousands of new examiners, to say nothing of the ancillary resources dedicated to the project. And yet, this effort has seen only modest results, even at the most basic level: the presence of these additional examiners, especially in the last two to three years, has effectively returned the USPTO to the applications-to-examiner ratio wit-

nessed in the mid-1990s (which itself is not generally considered to be a golden era for patent quality). All the while, of course, pendency has continued to rise.

**Figure 4: Patent Examiners per 1000 Applications Filed (U.S. & Japan), 1996–2007<sup>59</sup>**



Importantly, a comparative look at the ratio of other national patent offices (Figure 4) suggests that there may be only limited gains in quality when increasing examiner headcount. For example, although the Japan Patent Office (JPO) has about one-third fewer examiners per application than the USPTO, there is a widespread perception that patent quality in Japan is at least equal to—if not better than—that in the United States. Further, given the scale of the recent increases in filings and pendency, and assuming that these roughly continue, even keeping the application-to-examiner ratio steady will consume enormous amounts of resources over the next several years. It

<sup>59</sup> For the USPTO data, see USPTO Annual Reports, *supra* note 19. For the JPO data, see Trilateral Statistical Reports, *supra* note 46.

thus seems implausible that we can make significant gains in patent quality merely by hiring more examiners.

## 2. Improving Search Tools

Evaluating a patent application against the standards of patentability presents serious information problems because it requires examiners to identify the most relevant concepts in the prior art and then evaluate whether the pending application is novel and nonobvious. Moreover, as technology in many areas becomes increasingly integrated, the problem of finding the best-possible prior art has become increasingly difficult. Accordingly, a major effort has been made to improve patent offices' search technologies and processes, such as by the deployment of electronic search tools. The Japanese have even gone beyond implementing new search technology, outsourcing the majority of searches to private organizations, including a nonprofit agency dedicated to performing these searches.<sup>60</sup>

## 3. Institutionalizing Patent Quality

As the issue of patent quality has come to the attention of observers' and policymakers, patent offices have begun to institutionalize patent-quality efforts by forming internal offices that are tasked with assessing and disseminating information about patent quality. In the United States, such an office has been in operation for several years; in Japan, this type of office was created in July 2008. Unfortunately, relatively little of the work done in these offices reveals substantial progress on patent quality. In the United States, the quality-management office reports that the rate of high-quality examination is around ninety-five percent—a number that many observers find either dubious or useless as an actual metric of quality.<sup>61</sup>

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<sup>60</sup> JAPAN PATENT OFFICE, ANNUAL REPORT 2008, at 44-45 (noting that, in fiscal year (FY) 2007, the JPO outsourced 79.3% of all prior art searches). There are eight "registered search organizations" in Japan, though one (a nonprofit foundation) conducts the bulk of the searches. *Id.*

<sup>61</sup> U.S. PATENT & TRADEMARK OFFICE, U.S. DEP'T OF COMMERCE, PERFORMANCE AND ACCOUNTABILITY REPORT: FISCAL YEAR 2008, at 5 (citing this statistic as proof that "[s]earching and examination continued to show quality improvement" in FY 2008).

#### 4. Broadening Public Access to Prosecution

Traditionally, the patent-prosecution process has been a secretive affair between the applicant and the assigned examiner. Increasingly, however, more access to the prosecution process is being offered to the public. Most patent applications, even if pending, are published eighteen months after filing. New inter partes reexamination proceedings allow third parties to be involved in reexamination,<sup>62</sup> and there has been a move to increase the ability of third parties to submit information to examiners during prosecution. Further, the USPTO has been engaged in a pilot test of the Community Patent Project, which seeks to engage interested outsiders in assisting examiners, especially with searches for prior art.<sup>63</sup>

#### 5. Postgrant Review

Finally, serious proposals have been made to incorporate a form of postgrant review into the U.S. patent system (similar to mechanisms already in place in Japan and Europe).<sup>64</sup> Postgrant review allows third parties to effectively extend the prosecution phase of a recently granted patent and is premised on the idea that market actors will be best positioned to determine which patents warrant further review and will be good sources of relevant information. In the United States, the details surrounding the implementation of a postgrant review system have been controversial, but the odds seem good that the United States will eventually follow Japan and Europe in this direction.

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<sup>62</sup> See 35 U.S.C. §§ 311–318 (2006) (providing for the Patent Office Director to conduct inter partes reexamination of a patent upon the request of a third party); see also Stephen G. Kunin & Anton W. Fetting, *The Metamorphosis of Inter partes Reexamination*, 19 BERKELEY TECH. L.J. 971, 973 (2004) (noting that “third parties have a limited pre-grant opportunity to protest or oppose issuance of a patent”).

<sup>63</sup> See Peer to Patent, Community Patent Review, <http://www.peertopatent.org/> (last visited Apr. 15, 2009) (describing how the website “opens the patent examination process to public participation”).

<sup>64</sup> See Patent Reform Act of 2007, S. 1145, 110th Cong. § 6(e) (2007) (proposing procedures for postgrant review of patents). *But see* Biotechnology Indus. Org., *Oppose New Postgrant Review Provision Which Allows Limitless Administrative Patent Challenges*, <http://www.bio.org/ip/domestic/postgrant.pdf> (last visited Apr. 15, 2009) (opposing postgrant review on five grounds, including the possibility that competitors will not mount a postgrant challenge right away but rather will wait “until the economic stakes are high, and use evidence discovered during the proceeding as ‘ammunition’ for legal arguments” in district court litigation).

### B. *Reforming the Prosecution Process*

A second set of proposed reforms is more squarely directed at the prosecution process itself. Proposals to outsource some or all of the prosecution process have been around for some time; I noted above that Japan has outsourced most searching functions for the past several years.<sup>65</sup> Professors Lemley, Lichtman, and Sampat have proposed that a system be established whereby patentees can choose to “gold-plate” their patents—that is, seek a more exacting form of validity analysis than would be typical today.<sup>66</sup> Patents granted under a standard of heightened scrutiny would have the benefit of a stronger “presumption of validity” than others, and would also convey an important signal about their validity.<sup>67</sup> In a similar vein, Professors Abramowicz and Duffy have proposed allowing patentees to choose alternative patent-prosecution venues, which would end the USPTO’s monopoly over granting patent rights in the United States.<sup>68</sup> Both of these academic proposals are aimed at harnessing a patentee’s private information about her inventions, as well as her sense of their ultimate value, to improve the prosecution process (and thereby, the idea goes, improve patent quality as well).

### C. *Going in the Other Direction: Patent Registration*

Finally, a third category of proposed reforms would effectively abandon the administrative effort to grant only valid patents, and instead switch over to a registration system wherein patentees would file an application that would be granted by the USPTO after applying a relatively minimal level of scrutiny. The strong form of this argument proposes that the scrutiny would only involve a review of the formalities of the application (i.e., that all required components exist, are formatted properly, and so forth). A weaker version would implement a “soft look” system that would entail a relatively quick and cursory review of the application for basic validity requirements (e.g., whether the disclosure is clear and specific). In either version, a registration

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<sup>65</sup> See *supra* note 60 and accompanying text.

<sup>66</sup> Mark Lemley, Doug Lichtman & Bhaven Sampat, *What to Do About Bad Patents?*, REGULATION, Winter 2005–2006, at 10, 12–13.

<sup>67</sup> *Id.*

<sup>68</sup> See Michael Abramowicz & John F. Duffy, *Ending the Patenting Monopoly*, 157 U. PA. L. REV. 1541, 1566–75 (2009) (addressing the possibilities of relying on foreign nations’ patent determinations or permitting private firms to take on the burden of examining patents).

(or “registration-lite”) system would rely on a combination of private ordering and litigation to sort out valid from invalid patents.<sup>69</sup> It would, of course, allow many more low-quality patents; on the other hand, it would reduce the enormous costs incurred by the USPTO’s examination apparatus.<sup>70</sup> And, because relatively few patents have significant economic impact in any event, there would perhaps be only modest increases in litigation. Over time, service organizations would likely emerge to fill the void and provide assessments of patent quality.<sup>71</sup>

#### D. *The Weaknesses of These Approaches*

Each of these three distinct approaches—improving the administrative organization, altering the prosecution process, and abandoning the prosecution process—have significant value. Many of these ideas are uncontroversial: improving the measurement and analysis of patent quality is clearly a good thing (though very difficult in practice); improving search tools is obviously helpful; using an outsourcing approach for aspects of patent prosecution is likely to improve efficiency; and harnessing the private information of patent applicants should allow resources to be better allocated.

Given the findings of Part II above, however, I am skeptical that any of these proposals will make a substantial improvement in patent quality.<sup>72</sup> This skepticism is based on several reasons. First, attempts at improving the administrative organization—that is, at improving the performance and efficiency of the PTO—suffer from real problems of scale. As noted briefly above, merely keeping pace with increased filings will create an enormous (and possibly unsustainable) drag on resources without clear evidence that such expenditures will improve pendency, much less patent quality.<sup>73</sup> Similarly, I am skeptical

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<sup>69</sup> See generally Kieff, *Registering Patents*, *supra* note 2, at 70-74 (proposing use of the soft-look registration system in conjunction with the commercial-litigation system in order to reduce the current patent system’s significant social costs).

<sup>70</sup> See *id.* at 104 (“Under soft-look systems, especially the registration model, the private benefit an applicant would get from strategic games involving the filing of excessive variation in claims decreases. At the same time, for those claims that happen to have appropriate scope, the public cost decreases and the public benefit increases.”).

<sup>71</sup> See *id.* at 121 & n.285 (analogizing to the rating organizations formed in securities markets).

<sup>72</sup> I set aside the patent registration approach for now, because that approach does not directly seek to improve patent quality.

<sup>73</sup> See discussion *supra* subsection III.A.1 (noting that the increase in the number of examiners at the PTO has merely returned the Office’s examiners-to-filings ratio to that of the mid-1990s).

that broadening public access (e.g., allowing additional third party submissions, or implementing the Community Patent Project) will be scaled to anything near the size required to make a substantial contribution to patent quality, although these are each likely to be modestly helpful.

A second major problem is that none of these proposals is very likely to alter the basic incentive structure that supports low-quality patenting behavior. Gold-plating patents is a good idea, but to a considerable degree patentees have already “voted with their feet” for the choice between high- and low-quality patents, and they have chosen the latter. The benefits of a gold-plated patent could certainly be substantial, but as noted in Part II, the benefits of a low-quality patent are also powerful incentives. Given the odds that a patent will actually be enforced, I doubt that a more robust presumption of validity will shift behavior any more than a much higher likelihood of validity does under the current system. And, as for the idea of selective prosecution, my analysis suggests that most patentees will likely choose a prosecution venue that offers speed and low cost even at the expense of thoroughness. That is, to a substantial degree, patentees already choose between higher-cost, lower-volume, higher-quality patents on the one hand, and lower-cost, higher-volume, lower-quality patents on the other. Thus, it seems quite unlikely that this proposal will change the fundamental analysis much.

The basic problem with viewing patent quality as an administrative issue is that, given the incentives, there is relatively little that the USPTO (or any patent office) can do to change them. First, as long as the balance of interests tips in favor of high-volume, low-quality patenting behavior, we should expect to see those sorts of patents irrespective of the administrative process used. Second, in a great many cases, the die is cast with respect to a patent’s quality by the time that the application is filed: either the application has been drafted carefully and with a scope commensurate with the disclosed idea, or it has not; either a robust prior art search was conducted, and the patent was drafted with this knowledge, or it was not. To be sure, the USPTO will (and is required to) conduct its own search and make its own evaluation of the application, but the USPTO is inherently underinformed, severely resource constrained, and typically ignorant of important features of the application (such as its definition of the claims). There are real limits to how much quality the USPTO can “add” to a filed application: it can reject claims or request revisions, but the power of language remains in the patentee’s hands. In patent prosecution, it will often be a case of “garbage-in, garbage-out”: if the

filed application is low quality, the chances are that any granted patent will be low quality as well.

Accordingly, the focus on the administrative aspects of patent quality is misguided. Although unlikely to be harmful (and perhaps modestly helpful), such efforts are exceedingly unlikely to make any significant improvement in overall patent quality.

#### IV. AN INCENTIVES-BASED APPROACH TO ADDRESSING PATENT QUALITY

Perhaps the most important finding reported in this Article is that the mechanisms that underlie patent quality—that is, the incentives that encourage a patentee to file too many patent applications with too little attention to quality—are both remarkably durable and exist prior to, and largely independent of, the prosecution process. Any truly effective responses, then, will have to both directly address the incentive structure and be rather forceful in order to overcome the range of strong incentives that now operate on patentees.

The problem, of course, is that devising a strategy that seems likely to actually improve patent quality—that is, one that directly alters the incentive structure and is robust enough to change behavior—raises other concerns. Such a scheme is likely to have their own costs, raising the question of where patent quality ranks on the scale of problems to be addressed. For example, one straightforward way to incentivize higher patent quality is to make patents much harder and more costly to obtain. But, of course, this has other significant effects, including a disincentive for inventors to obtain patents altogether. The key question, then, is whether relatively modest reforms can be made—reforms that address the incentive structure of patent quality, but have relatively small spillover effects. While it seems wise to be relatively modest about the possibility of success, it seems to me that the basic strategy is clear: focus on reforms that increase the incentives to file high-quality patent applications, decrease the incentives to file low-quality applications, or both.

I have divided the discussion below so that it roughly corresponds to the three major incentive effects that I noted above.

##### *A. Encouraging Early Clarity*

As I noted in Section II.A, one of the major mechanisms supporting low-quality-patenting behavior is the advantage for patentees in deferring identification of their patents for as long as possible. For

the strategic patentee, avoiding clearly defining the scope of the patented invention offers a number of important advantages, including minimizing up-front risks while preserving critical flexibility in patent scope over time.

There are a number of ways to encourage clearly written patent disclosures and claims, and prevent the “nose of wax” problem that plagues patent litigation. The key component in these responses is the minimization of the differences between the two phases of patent validity analysis—prosecution and litigation. That is, if a patent’s meaning and scope were truly fixed at an early stage, then the advantages of deferring clarity would be reduced or eliminated.

One potentially fruitful area of experimentation would require the USPTO to conduct much more thorough claim-construction analyses—perhaps even drafting an administrative opinion on claim scope—defining key terms according to public reference works. Professor Petherbridge has made the case for such a system in an earlier work.<sup>74</sup> Note that this additional inquiry into claim scope may not greatly improve the Patent Office’s ability to evaluate validity.<sup>75</sup> But that is not the intent, at least in this context. The goal would be to fix the meaning of patent claims at as early a stage as possible, and to largely leave that early understanding intact. That is, in tandem with the increased USPTO attention would be a diminished role for the courts in claim construction. Ideally, the courts could largely defer to an administrative opinion on claim scope. In terms of the incentive structures discussed above, this change would shift the locus of detailed scope analysis to earlier in time, thus diminishing both the ability for patentees to defer clarity as well as the benefits of doing so.

Admittedly, the primary advantage of such a change is also its biggest weakness: shifting patent-scope analysis to earlier in time has important costs, and will not resolve all ambiguity surrounding a patent by any means. For the same reasons that deferring clarity is advantageous for the patents, shifting scope analysis to earlier places significantly more risk on the patentee, requiring earlier decisions that are

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<sup>74</sup> See Petherbridge, *supra* note 11, at 196 (noting that this procedural change would be “specifically directed to increasing the amount of information in the public administrative record that is precisely targeted to defining the boundaries of the patented property”).

<sup>75</sup> Though it seems unlikely to hurt. *See id.* at 206 (“The combination of better knowledge concerning the boundaries of the property being examined, and [the resulting] more efficient search for prior art should result in an improved likelihood that the Patent Office will make the correct decision on patentability.”).

made with less information about future technology, markets, and competitor behavior. On the one hand, this is the point—deferring clarity allows patentees to externalize these risks—but the net effect will be to make patents a less advantageous mechanism for protecting innovation. Further, it is entirely possible that even the USPTO's more detailed analysis of the patent's scope will not actually resolve ambiguities: a dispute during later litigation might just be concerned with the interpretation of the administrative scope determination instead of the actual words of the claim. Both of these concerns are well founded, I think. My own sense is that this reform would make a positive difference, but by no means would it resolve all problems.

Another approach to combat the incentive to defer clarity is to create disincentives for patentees to make significant alterations in claim scope during the prosecution process. As I have argued before, jurisprudential doctrines such as prosecution history estoppel, which eliminates or substantially limits the application of the doctrine of equivalents (and thus patent scope) when patentees amend their claims during prosecution, provide important incentives for patentees to draft clear, coherent, and appropriate claims.<sup>76</sup> By imposing a penalty when patent scope is altered, the law can strongly encourage early clarity.

The costs of this approach are similar to the proposal described above. First, and most simply, it imposes significant costs on patentees, and might undermine the basic incentives to seek patents. Second, penalizing amendments during prosecution will discourage such amendments, and amendments are often desirable in this context because they make patents more likely to comport with standards of patentability. Third, by discouraging patent applicants from accepting the requests for amendments from patent examiners, it is likely to extend the time and cost of the prosecution phase, and thereby increase the workload at the Patent Office.<sup>77</sup> The question, of course, is

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<sup>76</sup> See Wagner, *supra* note 11, at 232-39 (describing the benefits of a strong form of prosecution history estoppel doctrine).

<sup>77</sup> An additional problem with this proposal is that, unfortunately, the Supreme Court has limited the application of the doctrine of prosecution history estoppel. See *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 737-41 (2002) (holding that, where an amendment cannot reasonably be viewed as surrendering an equivalent that was unforeseeable at the time of application, and where claims of equivalence only have a tangential relation to the reason that the amendment was submitted, the presumption that prosecution history estoppel prohibits a finding of equivalence can be rebutted). However, the Federal Circuit has increasingly used closely related doctrines such as "disavowal" or "prosecution disclaimer" to similar effect. See, e.g., *Gaus v. Conair Corp.*, 363 F.3d 1284, 1291 (Fed. Cir. 2004) ("Having dis-

whether the costs of the proposal outstrip the advantages. My view is that in the longer term, as patentees adjust to a penalty regime, they will work harder to file applications that are higher quality and require less amendments. If true, then many of the costs should diminish over time.<sup>78</sup>

Weakening the presumption of validity is another possible way to address the incentive to defer clarity. That is, one of the reasons that patentees are encouraged to defer clarity is that the standards by which patents are evaluated for validity change over time: during litigation, the presumption of validity places the burden on a challenger to prove the invalidity of the patent. As I noted in Part II, this means that patents that are granted even when they do not meet the standards for validity have a greater chance of being found “not invalid” in later litigation, thus encouraging weak patenting behavior. If the presumption of validity were weakened or eliminated, this benefit of deferring clarity would disappear. The downside, of course, is that this change would weaken patents, and in some sense diminish the value of the USPTO’s administrative processes. Further, given the several other benefits of deferring clarity, I am skeptical that this change itself would have much effect.

#### B. *Addressing Feedback (Portfolio) Effects*

The next major set of incentives I outlined in Part II dealt with feedback effects: the encouragement to seek more low-quality patents because so many low-quality patents already exist. In prior work, I identified important advantages to obtaining large collections of patents (portfolios), even at the expense of patent quality.<sup>79</sup> The adoption by some in the patent system of a high-volume, low-quality strategy further encourages that behavior by others: if patent portfolios

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avored coverage of [certain] devices . . . the patentee cannot reclaim that surrendered claim coverage by invoking the doctrine of equivalents.”); *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003) (noting that the doctrine of prosecution disclaimer is a “fundamental precept in our claim construction jurisprudence”).

<sup>78</sup> See Wagner, *supra* note 11, at 222-25 (arguing that “an information-forcing penalty default rule” can be used to force patentees to internalize the costs of strategically underproducing relevant information, thereby eventually reducing the costs imposed upon society).

<sup>79</sup> See Parchomovsky & Wagner, *supra* note 19, at 31-43 (explaining the advantages of patent portfolios).

are the way to maximize returns from the patent system, then we can expect that strategy to become more popular over time.<sup>80</sup>

It is difficult to craft reform to reverse these incentives. As I briefly noted above, one straightforward approach is to simply make patents significantly more costly, thereby increasing the costs of a portfolio strategy.<sup>81</sup> Another approach, which Professor Parchomovsky and I briefly touched upon in *Patent Portfolios*, is to directly limit the number of patents granted (or applications filed), perhaps by adopting a series of yearly quotas or tradable patent-application rights.<sup>82</sup> Much like increasing the direct cash costs of patenting, such a system would have the effect of making a portfolio-driven strategy much more difficult to implement, if not impossible altogether. As we concluded in *Patent Portfolios*, the options for effectively diminishing the incentives to create patent portfolios are limited, and in some cases, the possible solutions seem likely to be as harmful as the problem itself.<sup>83</sup>

### C. Addressing Administrative Incentives

In Section II.B, I sketched a series of administrative incentives that together serve to encourage low patent quality.<sup>84</sup> These include the rising number of filings that pressure the USPTO to issue patents quickly (so as to diminish backlog), as well as the inherent biases of specialized regulators and courts, which might tend to place the interests of repeat players in the patent system over those of the public at large.

Several scholars have proposed ways to address the inherent administrative incentives, including rethinking the Federal Circuit as a specialized court<sup>85</sup> and offering additional administrative power to the

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<sup>80</sup> See *supra* note 54 and accompanying text.

<sup>81</sup> See *supra* p. 131.

<sup>82</sup> See Parchomovsky & Wagner, *supra* note 19, at 67-68 (describing the potential costs and benefits of implementing a mandatory “cap” on the number of patents companies can hold). Professors Parchomovsky and Ayres have also proposed a system of tradable patent rights, which they argue would reduce the number of patents. See generally Ian Ayres & Gideon Parchomovsky, *Tradable Patent Rights*, 60 STAN. L. REV. 863, 881-90 (2007).

<sup>83</sup> See Parchomovsky & Wagner, *supra* note 19, at 66-74 (addressing the cost and inadequacy of various policy options seeking to combat patent portfolios).

<sup>84</sup> See *supra* Section II.B.

<sup>85</sup> See Craig Allen Nard & John F. Duffy, *Rethinking Patent Law’s Uniformity Principle*, 101 NW. U. L. REV. 1619, 1642-50 (2007) (describing the Federal Circuit’s problem of overcentralization of appellate jurisdiction and arguing for “an institutional structure that is more atomistic”).

USPTO.<sup>86</sup> Because I do not think that the administrative incentives are the most important causal factor determining low patent quality, I am skeptical that any of those proposals would have a relevant effect on this paper (though they might well have important impacts in other areas).

As for the increasing number of filings, I noted above that it seems very unlikely that we can simply hire more examiners to address this long-term trend.<sup>87</sup> Many of the same proposals I noted with respect to the portfolio incentives (e.g., increasing the costs of obtaining patents or directly limiting their numbers) would impose substantial costs of their own in addressing this problem.<sup>88</sup>

#### D. Penalizing Bad Patents

One additional way to address the problem of low-quality patents is to impose significant penalties upon the holders of such patents. Because this approach would directly target the undesired behavior identified above as the key to low patent quality—the filing of low-quality patent applications—this approach appears to be quite promising. But two conceptual difficulties emerge at once. First, there is the problem of “powering up” these penalties; after all, there already is a penalty for holding a low-quality patent, insofar as the patent will be invalidated if subjected to litigation.<sup>89</sup> But, as I demonstrated in subsection I.B.4, this penalty appears woefully inadequate to deter low-quality-filing behavior: its application is probabilistic,<sup>90</sup> and the simple elimination of the low-quality patent is an insufficient cost to the holding patentee to deter strategic portfolio behavior. Thus, a penalty scheme would have to be devised that would impose costs far greater than simply the loss of the invalid patent.

The second conceptual difficulty is in determining when to apply these penalties. Professors Abramowicz and Duffy, in their contribu-

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<sup>86</sup> Stuart Minor Benjamin & Arti K. Rai, *Who's Afraid of the APA? What the Patent System Can Learn from Administrative Law*, 95 GEO. L.J. 269, 317-30 (2007) (proposing patent reform via the administrative law avenue of providing a more deferential standard of review to decisions of the USPTO).

<sup>87</sup> See *supra* subsection III.A.1.

<sup>88</sup> See *supra* notes 81-83 and accompanying text.

<sup>89</sup> In addition, a requirement to pay maintenance fees on invalid (but not-yet-adjudged-so) patents would work a cash loss on such patentees as well, thus providing another form of penalty.

<sup>90</sup> The risk that a patent will be litigated is on the order of one percent. Lemley, *supra* note 10, at 1507. Factor in the difficulty of proving a patent invalid (due to the presumption of validity and expense of litigation), and the probability of even an invalid patent being declared invalid would be substantially less than one percent.

tion on this issue, have proposed that the USPTO randomly select patents to evaluate their validity, and that penalties for invalid patents be applied on that basis.<sup>91</sup> This would raise the expected rate of screening. Further, oppositional procedures such as reexamination and postgrant review (if instituted) could be used to generate validity rulings. This combination—litigation, random selection, and oppositional proceedings—should raise the expected rate of screening to a level at which patent holders would take notice.

We thus return to the question of penalties. As noted above, simple invalidation of the patent is not enough. The most promising avenues here appear to be two-fold: cash fines and “infectious invalidity.”

Because they are straightforward, I will explore fines first. The idea is that a patentee would owe fines, likely paid to the government, that would significantly outstrip the losses associated with the loss of the patent. Obviously, assessing fines properly is important—set them too low, and the deterrence effects are too small; set them too high, and the incentives to patent could be diminished. Again, Professors Duffy and Abramowicz offer a possible path.<sup>92</sup> Assuming the level of fines could be set appropriately, this would be a straightforward penalty to assess.

A second possible option is what I call “infectious invalidity”: the invalidity of a patent can spread to related patents held by the same assignee, thereby rendering them invalid. A similar doctrine—*infectious unenforceability*—is well established in the patent law, holding that inequitable conduct will “infect” related patents, also holding them unenforceable.<sup>93</sup> This penalty would—like the direct cash fines—greatly outstrip the loss of the invalid patent. How much of an incentive effect it would have is hard to predict. On the one hand, the loss of multiple patents could work a devastating blow on a patentee’s strategic goals. On the other, a patentee engaging in a widespread practice of filing low-quality patents might be only minimally deterred, because even a group of patents would have relatively

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<sup>91</sup> Abramowicz & Duffy, *supra* note 68, at 1587-93. Their focus is on measures to police poor quality prosecution providers rather than patentees themselves, but there is of course no reason that the basic structure of their approach could not be applied here.

<sup>92</sup> *See id.* at 1576-1601 (discussing fines based on multiples of patenting fees and other possible approaches).

<sup>93</sup> *See, e.g.,* *Consol. Aluminum Corp. v. Foseco Int’l Ltd.*, 910 F.2d 804, 809 (Fed. Cir. 1990) (noting that “inequitable conduct in procuring one patent-in-suit requires a holding that the other patents-in-suit are unenforceable”).

limited value. On balance, the cash-fine approach seems to be a safer bet, albeit one with difficulties surrounding the level of the fine.

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As I noted at the outset of this Section, my analysis has demonstrated that the mechanisms supporting low patent quality are widespread and powerful and in many ways inherent in the modern patent system. It should come as little surprise, then, that I doubt that any one reform is likely to change patenting behavior much. There are certainly more radical approaches—we could limit patenting to 100,000 filings per year, for example, and raise direct costs ten-fold—that would plainly have some impact. But they would also have serious (and probably negative) effects on the basic incentive structure of the patent system—effects large enough to swamp any losses from low-quality patents. Under these circumstances, the best option seems to be trying to muddle through, using relatively modest reforms to try to adjust some of the incentives that lead to poor patent quality, while recognizing the limits of what can be accomplished. In particular, I think that the proposals addressing the incentives to defer clarity (fixing patent scope early) are the most directly targeted, and seem likely to have the best probability of success without serious side effects.<sup>94</sup>

#### CONCLUSION

There is perhaps no patent issue with a higher profile than patent quality—nor one with more widespread agreement that improvement is needed. Yet little attention has been paid to carefully teasing out the mechanisms that have led us to the point where there is near-universal agreement about the problem of poor patent quality.

This Article has attempted to begin filling this gap by explaining that the problem of low patent quality is not one of poor administrative performance on the part of the USPTO and its colleagues worldwide, but rather one of incentives. That is, the reason that we have low patent quality is because the incentives to file low-quality patents are too high, and the incentives to file high-quality patents are too low. Patent quality is low primarily because of decisions made by patentees choosing to trade volume for quality in patenting, seeking to maximize return from their patents, or simply aiming to save costs. By

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<sup>94</sup> See *supra* Section IV.A.

outlining the various incentive structures at work, a much more complete picture of the problem of low patent quality comes into focus.

Unfortunately, the picture that emerges suggests rather strongly that patent quality is far from an easy problem to fix, and in many cases the cures may be worse than the problem itself. In particular, we should not expect reforms that focus on enhancing the quality of the patent-prosecution process to bear much fruit—patent quality is a matter in the hands of patentees, and as long as the incentives operate to encourage low quality, we should not expect anything different, no matter how much more effective the USPTO becomes. Although I suggest that modest reforms might serve to alter patenting behavior, I ultimately conclude that there is no easy answer or simple fix. But at least if we understand the problem fully—here, the mechanisms that underlie low-quality patents—we can begin to address it, and, more importantly, avoid making changes that will only make matters worse.