

# PATENT INFLATION

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## ABSTRACT

In recent years, both the Patent and Trademark Office (PTO) and the Federal Circuit have received trenchant criticism for their handling (and mishandling) of patent applications and patent cases. Critics have leveled two particular charges: first, that the PTO grants too many invalid patents; and second, that the Federal Circuit has presided over a dramatic (and unwarranted) expansion of what can be patented. These failures have been chalked up to a number of potential causes: funding shortfalls at the PTO; internal management problems at the PTO; a lack of expertise at the PTO or the Federal Circuit; capture by private interests; and, perhaps most importantly, a simple ideological preference for greater numbers of patents over a broader range of technologies.

It is entirely possible that these various factors, singly and in combination, have contributed to the granting of significant numbers of invalid patents granted and the expansion in patentability. Yet this Article intends to suggest another possibility. These two phenomena—an overly permissive PTO, and an overly expansive Federal Circuit—may simply be the results of the contorted institutional relationship between the two organizations. Because of the manner in which patent cases make their way from the PTO to the Federal Circuit, the PTO may have a decided institutional interest in granting more patents than it should. And because of this same interaction, the Federal Circuit may be engaged in an unwitting expansion of the boundaries of patent law.

The key lies with the asymmetric nature of appeals from the PTO to the Federal Circuit. When the PTO denies a patent application, the aggrieved private party may appeal immediately to the Federal Circuit. When the PTO grants a patent, however, there is no losing party to appeal—the victorious applicant merely walks away with its patent. That patent is unlikely ever to see the inside of a courtroom, given how few infringement

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lawsuits are litigated, and at minimum it will be many years before it does. If the PTO wishes to avoid lawsuits, it need only err on the side of allowing more patents. And if the Federal Circuit is fed a steady diet of boundary-stretching patent cases, it will tend to inflate the boundaries of patentability purely through error and happenstance. The patent law will thus be subject to a natural inflationary pressure.

## INTRODUCTION

The shape of patent law is defined in large degree by the interaction between two institutions: the Court of Appeals for the Federal Circuit and the Patent and Trademark Office (PTO). Intervention from Congress or the Supreme Court comes rarely—Congress has not significantly modified the Patent Act in nearly sixty years, and the Supreme Court has generally been reluctant to weigh in on many of the most important patent questions. In their absence, the Federal Circuit and the PTO have arrived at a convenient institutional *détente*. The Federal Circuit dictates the rules of substantive patent law to the patent office via interpretations of the Patent Act.<sup>1</sup> The PTO then grants or denies patents according to those rules.<sup>2</sup>

Yet this structural accord has not well served the patent system or the private parties who rely on it. In recent years both the PTO and the Federal Circuit have received trenchant criticism for their handling (and mishandling) of patent applications and patent cases. Critics have leveled two particular charges: first, that the PTO grants too many invalid patents;<sup>3</sup> and second, that the Federal Circuit has steadily loosened the legal rules governing patentability, allowing applicants to obtain patents on an ever wider variety of inventions.<sup>4</sup> The first criticism is all the more remarkable in light of the second. Despite the fact that the Federal Circuit has noticeably expanded the boundaries of what may be patented over the past decades, the

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<sup>1</sup> See 28 U.S.C. § 1295(a) (2006) (granting the Federal Circuit exclusive jurisdiction over appeals from district courts and the PTO arising under the Patent Act); *cf.* Act of July 19, 1952, Pub. L. No. 593, 66 Stat. 792 (codified as amended at 35 U.S.C. §§ 1-293) (“the Patent Act”).

<sup>2</sup> See Craig Allen Nard, *Deference, Defiance, and the Useful Arts*, 56 OHIO ST. L.J. 1415 (1995) (explaining the legal relationship between the PTO and Federal Circuit).

<sup>3</sup> See *infra* note 26 and accompanying text.

<sup>4</sup> See *infra* note **Error! Bookmark not defined.**<sup>25</sup> and accompanying text. Here and throughout the text I use the word “patentability” to describe all of the doctrines governing whether an invention is patentable. That includes whether the invention recites patentable subject matter, 35 U.S.C. § 101, whether the invention is novel, 35 U.S.C. § 102, and whether it is non-obvious, 35 U.S.C. § 103, among other requirements.

PTO continues to grant significant numbers of patents that are invalid under governing Federal Circuit law.

Scholars have attributed the patent system's joint dysfunctions—an excess of invalid patents and overly permissive rules of patentability—to a number of potential causes. These include funding shortfalls at the PTO; internal management problems at the PTO; a lack of expertise at the PTO or the Federal Circuit; capture by private interests; and, perhaps most importantly, a simple ideological preference for greater numbers of patents across a broader range of technologies.<sup>5</sup> Nonetheless, there remains sharp disagreement regarding the likely causes of these systemic problems and their proper solutions. Indeed, a variety of correctives have been proposed and implemented, to little avail.<sup>6</sup>

This Article intends to offer a different explanation for the problems plaguing the patent system. The permissive nature of the PTO and the inflationary tendencies of the Federal Circuit might instead be due to the contorted institutional relationship that exists between the two organizations. Because of the manner in which patent cases make their way from the PTO to the Federal Circuit, the PTO has a decided institutional interest in granting more patents than it should. And because of this same interaction, the Federal Circuit is engaged in an unwitting expansion of the patentability rules.

The key lies with the asymmetric nature of appeals from the PTO to the Federal Circuit. When the PTO denies a patent application, the aggrieved applicant may appeal to the Federal Circuit.<sup>7</sup> When the PTO grants a patent, however, there is no losing party to appeal—the victorious applicant merely walks away with its patent.<sup>8</sup> That patent is unlikely ever to see the inside of a courtroom, given how few infringement lawsuits are litigated.<sup>9</sup> Like most administrative agencies, the PTO wishes to avoid appeals and especially reversals.<sup>10</sup> In order for the agency to accomplish this, it need only err on the side of granting excessive numbers of patents—even invalid patents—for which there is no appeal. This desire to avoid litigation is a source of the invalid patents now being issued by the PTO in vast numbers—the patent system's first problem.

The second problem, the ongoing expansion of the rules governing what types of inventions may be patented, stems from the PTO's proclivity

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<sup>5</sup> See *infra* notes 28-33 and accompanying text.

<sup>6</sup> See *infra* Part I..

<sup>7</sup> 35 U.S.C. § 141.

<sup>8</sup> See *id.*

<sup>9</sup> In addition, those patents that are eventually litigated in the context of a suit for infringement will likely have neutral effects on the patent law trends described here. I discuss the issue of infringed patents in detail *infra* in Subsection II.D.5.

<sup>10</sup> See *infra* Subsection II.D.1.

to grant any plausible patent. Because of the PTO's efforts, the patent applications that the agency does deny will predominantly concern inventions that are unpatentable under current law.<sup>11</sup> When a disappointed patent applicant appeals such an application to the Federal Circuit, that court has two options. It can reject the patent under existing law, preserving the law as it stands, or it can grant the patent under a new, more expansive understanding of what is patentable. The circuit denies most of these applications.<sup>12</sup> But when the Federal Circuit eventually decides a case in favor of an applicant, it creates a new precedent that enlarges the scope of what may be patented. The process then repeats itself, with the PTO denying more boundary-pushing patent applications and the Federal Circuit presented with further opportunities to expand the limits of patentability. The result is a natural inflationary pressure on the law, generated entirely by the types of cases that the PTO sends to the Federal Circuit.

These effects rely on only three innocuous factors. First, the PTO—through its administrators—pursues its own organizational interests. Second, the Federal Circuit is composed of heterogeneous judges who do not always agree on the proper content of patent law. This means that a patent applicant could draw a favorable Federal Circuit panel and be granted a patent that the median Federal Circuit judge would find invalid. And third, appeal from a PTO decision may be taken only by an aggrieved applicant whose patent has been denied. Using only these three institutional features of the patent system, this Article builds a model of the interaction between the PTO, Federal Circuit, and patent applicants that generates a prediction of improperly granted patents and an inexorable expansion of the legal boundaries defining what inventions may be patented.<sup>13</sup>

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<sup>11</sup> Although the PTO could avoid appeals entirely simply by granting every patent, there are countervailing forces that prevent it from doing so. *See infra* note 143 and accompanying text.

<sup>12</sup> Since its creation in 1982, the Federal Circuit has reversed the PTO on direct appeal approximately 15% of the time. This figure was calculated based on data taken from Donald R. Dunner, J. Michael Jakes & Jeffrey D. Karceski, *A Statistical Look at the Federal Circuit's Patent Decisions: 1982-1994*, 5 Fed. Cir. B.J. 151, 155 (1995) (finding that the Federal Circuit "has affirmed the PTO's determination of unpatentability about 80% of the time") and the Federal Circuit's own website, <http://www.cafc.uscourts.gov/the-court/statistics.html>, which provides data for the years 1997-2010. Those data reveal that the Federal Circuit has reversed PTO decisions approximately 11.8% of the time in the past fourteen years. Data for 1995 and 1996 is unavailable.

<sup>13</sup> This Article is in the tradition of other works that have posited asymmetric development of the law through selection effects and other mechanisms. *See generally* Gillian K. Hadfield, *Bias in the Evolution of Legal Rules*, 80 Geo. L.J. 583 (1992); Marc Galanter, *Why the Haves Come Out Ahead?: Speculations on the Limits of Legal Change*, 9 Law & Soc'y Rev. 95 (1974).

The Article thus identifies a novel institutional source for the patent system's problems. The goal is not to demonstrate that the other possible causes of patent inflation—ideology, lack of expertise, and so forth—are incorrect. It is possible that some of these causes are at work alongside the institutional pressures described here. But it is crucial to note that *even if all of these other potential causes were eliminated*, the systemic problems of bad patents and expanding patent law would remain, driven by the institutional relationship between the PTO and Federal Circuit. Accordingly, the Article suggests the legal solution that would most directly address these institutional issues at their source.

Finally, the interaction between the PTO and the Federal Circuit is uncommon but by no means unique. Nearly every type of civil litigation or administrative proceeding produces winning and losing parties, either of whom can appeal to the federal courts. This is of course true for standard civil trials, and it is true as well for essentially every federal administrative action, from the promulgation of major regulations<sup>14</sup> to individual funding<sup>15</sup> or permitting decisions.<sup>16</sup> Yet asymmetric systems of review exist in several important areas of federal benefits law (such as Social Security Disability benefits),<sup>17</sup> immigration law,<sup>18</sup> tax law,<sup>19</sup> and—most importantly—jury verdicts in criminal law.<sup>20</sup> Indeed, even systematically different rates of appeal by civil litigants—for instance, if tort defendants appeal adverse judgments more frequently than tort plaintiffs—can give rise to meaningful (though more muted) asymmetries in appellate review.<sup>21</sup> It is worth noting,

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<sup>14</sup> *E.g.*, *Chevron U.S.A. Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837 (1984) (challenging an EPA regulation creating a “bubble rule” for new sources of pollution).

<sup>15</sup> *E.g.*, *Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402 (1971) (blocking the Secretary of Transportation from releasing highway construction funds).

<sup>16</sup> *E.g.*, *Carolina Env'tl. Study Grp. v. United States*, 510 F.2d 796 (D.C. Cir. 1975) (challenging an Atomic Energy Commission order granting permission to construct two new nuclear reactors).

<sup>17</sup> *See* 42 U.S.C. § 405 (procedural rules for Supplemental Security Income/Social Security Disability Income claims). Other governmental benefits programs such as tax adjudications also involve asymmetric appeal rights.

<sup>18</sup> *See* 8 U.S.C. §1252(a)(1); 28 U.S.C. § 2344; John W. Guendelsberger, *Judicial Deference to Agency Decisions in Removal Proceedings in Light of INS v. Ventura*, 18 GEO. IMMIGR. L.J. 605, 616 (12005).

<sup>19</sup> *See* Leandra Lederman & Stephen W. Mazza, *Tax Controversies: Practice and Procedure* 8 (3<sup>rd</sup> ed. 2009).

<sup>20</sup> *See* *Sanabria v. United States*, 437 U.S. 54, 75 (1978) (“The short answer to this question is that there is no exception permitting retrial once the defendant has been acquitted . . . .”); Kate Stith, *The Risk of Legal Error in Criminal Cases: Some Consequences of the Asymmetry in the Right to Appeal*, 57 U. CHI. L. REV. 1, 26-27 (1990) (arguing that asymmetry in criminal appeals will deceive judges as to the characteristics of a “typical” case).

<sup>21</sup> I thank Omri Ben-Shahar for suggesting this point.

however, that most of these other areas of law involve only the adjudication of private rights against the government. A Social Security claimant (or a criminal defendant) acquires no rights against other private actors. By contrast, the PTO and the Federal Circuit are in the business of granting patents that may then be asserted against third parties who were never involved in the proceedings. Patent law thus offers applicants a nearly unique opportunity to capitalize on institutional asymmetries to the detriment of third parties.

The Article proceeds in three parts. Part I briefly describes the complaints that scholars and stakeholders have registered against the Patent and Trademark Office, the Federal Circuit, and the patents (and patent law) that they have jointly produced. Part II explains and analyzes the interaction between the PTO and the Federal Circuit, beginning with a simple model and building toward a more nuanced description that incorporates the characteristics and motivations of the individuals in charge of those institutions. It also describes the roles of other actors within the patent system, offers an important testable prediction, and proposes a remedy to patent law's institutional maladies. Part III presents a case study of the relationship between the PTO and the Federal Circuit concerning the evolving rules that undergird the patentability of intangible processes; this evolution culminated in the Supreme Court's recent decision in *Bilski v. Kappos*.<sup>22</sup> Part III shows how the forces described in Part II have effectively broadened the rules governing the patenting of software, business methods, and related inventions.

## I. PATENT PROBLEMS

There is by now a broad consensus that the United States patent system is rife with flaws and inadequacies.<sup>23</sup> The "patent crisis," as more than one commentator has termed it,<sup>24</sup> has become so severe that in many cases patents are now believed to retard innovation more than they promote

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<sup>22</sup> 130 S. Ct. 3218 (2010).

<sup>23</sup> See, e.g., BESSEN & MEURER, *supra* note 5; DAN L. BURK & MARK A. LEMLEY, *THE PATENT CRISIS AND HOW THE COURTS CAN SOLVE IT* (2009); JAFFE & LERNER, *supra* note 5.

<sup>24</sup> See, e.g., BURK & LEMLEY, *supra* note 5 (starting from the premise that a crisis exists within the patent system); NAT'L ACAD. OF SCI., *A PATENT SYSTEM FOR THE 21ST CENTURY* (2004) (same); Peter S. Menell, *The Property Rights Movement's Embrace of Intellectual Property: True Love or Doomed Relationship?*, 34 *ECOLOGY L.Q.* 713, 737 (2007) (describing "a growing patent crisis"); Beth Simone Noveck, "*Peer to Patent*": *Collective Intelligence, Open Review, and Patent Reform*, 20 *HARV. J.L. & TECH.* 123 (2006) (describing a patent crisis in high-technology fields.).

it.<sup>25</sup> Critics of the patent system have pointed to two particular problems. First, the PTO does a poor job of examining patents, allowing significant numbers of invalid patents to issue.<sup>26</sup> Second, the Federal Circuit has pushed the law in an excessively pro-patent direction, broadening the scope of patentable subject matter and endowing patentees with unwarranted power.<sup>27</sup>

Critics have ascribed these failures to a wide range of causes. Some have pointed to the PTO's lack of funding, which forces the agency to spend relatively little time scrutinizing each patent.<sup>28</sup> Others have argued that the PTO is hamstrung by poor management.<sup>29</sup> These management problems include the fact that the PTO's salary and bonus system was

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<sup>25</sup> See BESSEN & MEURER, *supra* note **Error! Bookmark not defined.**5, at 124 (arguing that biotechnology is the *only* field in which patents increase innovation).

<sup>26</sup> E.g., JAFFE & LERNER, *supra* note **Error! Bookmark not defined.**5, at 34-35 (2004); Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 SCI. 698 (1998) (analyzing the negative effects of a crowded patent field on innovation and market entrance); Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1495 n.1 (2001); Mark Lemley, Doug Lichtman & Bhaven Sampat, *What To Do About Bad Patents?*, 28 REG., Winter 2005-2006, at 10, 10-13 (noting that "countless patents that seem reasonable to a lay audience overreach in technical fields" and describing in particular the problems generated by economically significant invalid patents); Doug Lichtman & Mark A. Lemley, *Rethinking Patent Law's Presumption of Validity*, 60 STAN. L. REV. 45, 47 n.5 (2007); Robert P. Merges, *As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform*, 14 BERKELEY TECH. L.J. 577 (1999); Michael J. Meurer, *Patent Examination Priorities*, 51 WM. & MARY L. REV. 675, 676 ("[T]he PTO struggles to improve examination quality") (2009).

<sup>27</sup> See, e.g., FTC, TO PROMOTE INNOVATION, *supra* note 24, at 20-21; JAFFE & LERNER, *supra* note 5, at 115-19; Jay Dratler, Jr., *Alice in Wonderland Meets the U.S. Patent System*, 38 AKRON L. REV. 299 (2005).

<sup>28</sup> See, e.g., JAFFE & LERNER, *supra* note **Error! Bookmark not defined.**5, at 130-33; Lemley, *supra* note 26, at 1508-11 (noting the negative effects of funding shortages); Arti K. Rai, *Growing Pains in the Administrative State: The Patent Office's Troubled Quest for Managerial Control*, 157 U. PA. L. REV. 2051, 2062-63 (2009); Rochelle Dreyfuss, *Pathological Patenting: The PTO as Cause or Cure*, 104 MICH. L. REV. 1559, 1567 (2006) (reviewing JAFFE & LERNER, *supra* note **Error! Bookmark not defined.**5, at 130-33); Lichtman & Lemley, *supra* note 24, at 53 (noting the short amount of time the PTO spends scrutinizing each patent).

<sup>29</sup> E.g., JAFFE & LERNER, *supra* note 5, at 133-38; Michael Abramowicz & John F. Duffy, *Ending The Patenting Monopoly*, 157 U. PA. L. REV. 1541, 1554 (2009) (noting the well-known tensions between patent examiners and USPTO management); Rai, *supra* note 26, at 2063-64.

structured in such a way as to incentivize examiners to grant, rather than deny patents.<sup>30</sup> Some scholars have placed blame on the fact that both the PTO and the Federal Circuit appear to lack genuine expertise in the technologies involved in modern patents.<sup>31</sup> Others allege that the PTO and the Federal Circuit have been captured by private, pro-patent interests.<sup>32</sup> Finally, and perhaps most importantly, some observers believe that the Federal Circuit simply holds an ever-increasing ideological preference for greater numbers of patents over a broader range of technologies.<sup>33</sup>

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<sup>30</sup> Examiners receive bonuses based on how many applications they can process fully. The quickest and easiest way for them to finish processing an application is to allow the patent. JAFFE & LERNER, *supra* note Error! Bookmark not defined.Error! Bookmark not defined.5, at 136; cf. John Bronsteen, *Against Summary Judgment*, 75 GEO. WASH. L. REV. 522, 540-41 (2007) (noting that judges' preferences for leisure time will incline them to grant more motions for summary judgment than would otherwise be appropriate). One suggestive study found that patent approval rates spike in September—the month in which the PTO's accounting year closes and examiners are awarded bonuses for processed applications. Gajan Retnasaba, *Why It Is Easier To Get a Patent in September?* (2008) (unpublished manuscript), available at [http://www.ssrn.com/abstract\\_id=1121132](http://www.ssrn.com/abstract_id=1121132).

<sup>31</sup> See, e.g., ROBERT PATRICK MERGES & JOHN FITZGERALD DUFFY, *PATENT LAW AND POLICY: CASES AND MATERIALS* 299-327 (4th ed. 2007) (describing the Federal Circuit's struggles with the written description requirement); Dreyfuss, *supra* note 28, at 1577 (noting that the PTO does not have economists and other experts on staff); Mark D. Janis, *On Courts Herding Cats: Contending with the "Written Description" Requirement (and Other Unruly Patent Disclosure Doctrines)*, 2 WASH. U. J.L. & POL'Y 55, 62-69 (2000) (describing the Federal Circuit's struggles with the written description requirement); R. Polk Wagner & Lee Petherbridge, *Is the Federal Circuit Succeeding? An Empirical Assessment of Judicial Performance*, 152 U. PA. L. REV. 1105 (2004) (finding that the Federal Circuit has been only mildly successful in promulgating a coherent and predictable doctrine of claim construction).

<sup>32</sup> See e.g., DAN L. BURK & MARK A. LEMLEY, *THE PATENT CRISIS AND HOW THE COURTS CAN SOLVE IT* 106-07 (2009) (arguing that the PTO is subject to capture); Dreyfuss, *supra* note Error! Bookmark not defined.Error! Bookmark not defined.26; Clarissa Long, *The PTO and the Market for Influence in Patent Law*, 157 U. PA. L. REV. 1965 (2009) (suggesting that the PTO has invited capture in order to increase its own stature); Meurer, *supra* note 26, at 699 (suggesting the influence that repeat players can have on PTO behavior); John R. Thomas, *Formalism at the Federal Circuit*, 52 AM. U. L. REV. 771, 792-94 (2003) (suggesting that the Federal Circuit has been captured); R. Polk Wagner, *Understanding Patent-Quality Mechanisms*, 157 U. PA. L. REV. 2135-2153 (2009). *But see* John M. Golden, *The Supreme Court as "Prime Percolator": A Prescription for Appellate Review of Questions in Patent Law*, 56 UCLA L. REV. 657, 685-86 (2009) (dismissing arguments that the Federal Circuit has been captured).

<sup>33</sup> E.g., BESSEN & MEURER, *supra* note Error! Bookmark not defined.Error! Bookmark not defined.5, at 69 (suggesting that the Federal Circuit has been "pro-patent"); JAFFE & LERNER, *supra* note Error! Bookmark not defined.Error! Bookmark not defined.5, at 115-19; WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW* 335 (2003) (arguing that "[t]he Federal Circuit has indeed turned out to be a pro-patent court").

Regardless of the exact cause, invalid patents and permissive, pro-patent rules have imposed undeniable costs on inventors and consumers alike. Invalid, improperly granted patents can dissuade potential competitors from entering a market and stunt investment in further research.<sup>34</sup> They raise search costs for market entrants, who must scrutinize the intellectual property that exists in a given field and investigate those patents' validity, lest a competitor later force them out of the market.<sup>35</sup> Invalid patents can also hamper a firm's ability to raise capital<sup>36</sup> or write contracts with potential customers.<sup>37</sup> Financial markets will be wary of firms that may not be sustainable because they traffic in infringing products. Customers will hesitate before forming business relationships that may expose them to suits for contributory infringement and resist relying upon suppliers who may be shut down or driven out of the market by a lawsuit.<sup>38</sup> They raise licensing and litigation costs.<sup>39</sup> And once granted, they are difficult to eliminate: granted patents are presumed valid and can only be invalidated in court upon a showing of clear and convincing evidence.<sup>40</sup>

More broadly speaking, patents "involve[] a fundamental tradeoff between dynamic and static efficiency: patents spur innovation but only at the cost" of higher prices for current consumers.<sup>41</sup> If too many patents are

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<sup>34</sup> See Ian Ayres & Paul Klemperer, *Limiting Patentees' Market Power Without Reducing Innovation Incentives: The Perverse Benefits of Uncertainty and Non-Injunctive Remedies*, 97 MICH. L. REV. 985, 1019–20 (1999); Heller & Eisenberg, *supra* note 26; Christopher R. Leslie, *The Anticompetitive Effects of Unenforced Invalid Patents*, 91 MINN. L. REV. 101 (2006).

<sup>35</sup> See *Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.*, 383 F.3d 1337, 1345 (Fed. Cir. 2004); MERGES & DUFFY, *supra* note 31, at 615-16 (describing the economics of search costs); Ian Ayres & Gideon Parchomovsky, *Tradable Patent Rights*, 60 STAN. L. REV. 863, 869-76 (2007); Leslie, *supra* note 32, at 132–37.

<sup>36</sup> See FTC, TO PROMOTE INNOVATION, *supra* note 24, at 8 ("The threat of being sued for infringement by an incumbent [patent holder]—even on a meritless claim—may 'scare . . . away' venture capital financing.") (quoting Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, Fed. Trade Comm'n/Dep't of Justice (2002) (statement of Josh Lerner, Professor, Harvard University), [available at http://www.ftc.gov/opp/intellect/lernerjosh.pdf](http://www.ftc.gov/opp/intellect/lernerjosh.pdf)).

<sup>37</sup> Leslie, *supra* note 34, at 125–27.

<sup>38</sup> See Joseph Borkin, *The Patent Infringement Suit—Ordeal by Trial*, 17 U. CHI. L. REV. 634, 641 (1950) ("Contributory infringement . . . can serve as an effective side-attack to cut off the economic support of a small producer.").

<sup>39</sup> See *Bresnick v. U.S. Vitamin Corp.*, 139 F.2d 239, 242 (2d Cir. 1943) (describing a patent as a "scarecrow" that can deter competition by its very existence); Michael J. Meurer, *Controlling Opportunistic and Anti-Competitive Intellectual Property Litigation*, 44 B.C. L. REV. 509, 515 (2003).

<sup>40</sup> *Spanson, Inc. v. International Trade Com'n*, 629 F.3d 1331, 1344 (Fed. Cir. 2010).

<sup>41</sup> Ayres & Parchomovsky, *supra* note 35, at 867; see also DONALD S. CHISUM ET AL., *PRINCIPLES OF PATENT LAW* 6 (1998); ROBERT PATRICK MERGES & JOHN FITZGERALD DUFFY, *PATENT LAW AND POLICY: CASES AND MATERIALS* 253-56 (2007) (describing the

granted on too many inventions, or if the courts allow patents to become too powerful, the balance could tilt against patents as socially useful devices. If patents no longer provided a significant incentive for innovation, they might not be worth the costs that they impose upon consumers.<sup>42</sup>

In response to the inadequacies of the Patent Office and the Federal Circuit, as well as the costs of bad patents, scholars have advanced a number of proposals for reform. Some have argued that the PTO should receive additional funding, enabling it to hire more and better examiners.<sup>43</sup> Others have suggested that patent examinations should be eliminated altogether, with patent examination reverting to a simple system of registration akin to the copyright regime.<sup>44</sup> Still others have argued that the problems should be left to the federal courts to sort out.<sup>45</sup>

Many of these proposals have been coupled with suggestions for meaningful inter partes post-grant administrative review, a mechanism by which potential infringers can challenge a patent's validity without undertaking expensive litigation in federal courts.<sup>46</sup> A system of inter partes

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incentive systems meant to drive the patent law); Michael Abramowicz, *The Uneasy Case for Patent Races over Auctions*, 60 STAN. L. REV. 803, 809-10 (2007) ("This trade-off between static and dynamic efficiency is familiar to patent scholarship . . ."); Note, *Limiting the Anticompetitive Prerogative of Patent Owners: Predatory Standards in Patent Licensing*, 92 YALE L.J. 831, 836 (1983) ("The patent system that Congress created reflects a tradeoff between dynamic and static efficiency.").

<sup>42</sup> Gideon Parchomovsky & Peter Siegelman, *Towards an Integrated Theory of Intellectual Property*, 88 VA. L. REV. 1455, 1504-08 (2002) (suggesting the limits at which the losses due to static inefficiency outweigh the gains in dynamic efficiency).

<sup>43</sup> See, e.g., America Invents Act, H.R. 1249, 112th Cong., § 22 (2011) (ending fee diversion for the PTO); America Invents Act, S. 23, 112th Cong., § 20(c) (2011) (same); Statement of Senator Kyl, Debate on S. 23, 112th Cong., 154 Cong Rec S 9982, 9993 ("Fee diversion unquestionably has a negative impact on the patent system. In recent years, it has hampered PTO's ability to hire an adequate number of examiners."); JAFFE & LERNER, *supra* note **Error! Bookmark not defined.**, at 179-191 (proposing that the PTO expend greater funds on more rigorous examination); John R. Allison & Starling D. Hunter, *On the Feasibility of Improving Patent Quality One Technology at a Time: The Case of Business Methods*, 21 BERKELEY TECH. L.J. 729 (2006); Shubha Ghosh & Jay Kesan, *What do Patents Purchase? In Search of Optimal Ignorance in the Patent Office*, 40 HOUS. L. REV. 1219 (2004); Lemley et al., *supra* note 26, at 12--13).

<sup>44</sup> F. Scott Kieff, *The Case for Registering Patents and the Law and Economics of Present Patent-Obtaining Rules*, 45 B.C. L. REV. 55 (2003); Adam Mossoff, *Who Cares What Thomas Jefferson Thought About Patents? Reevaluating the Patent Privilege in Historical Context*, 92 CORNELL L. REV. 953 (2007).

<sup>45</sup> BURK & LEMLEY, *supra* note **Error! Bookmark not defined.**, at 112-15; Lemley, *supra* note 26, at 1511 (arguing that further investment in patent scrutiny, because it must be spread across hundreds of thousands of patents per year, would result in little gain in the quality of issued patents).

<sup>46</sup> See, e.g., JAFFE & LERNER, *supra* note **Error! Bookmark not defined.**, at 184-86; Joseph Farrell & Robert P.

review already exists, but it imposes such disadvantages on third-party challengers that it is almost never used.<sup>47</sup> Some scholars recommend a multi-tiered system of patent review in which applicants can opt for one of several levels of PTO scrutiny with correspondingly strong ex post presumptions of validity.<sup>48</sup> And even more exotic proposals abound, including suggestions for tradable patent rights that would limit the number of patents in force at any given time,<sup>49</sup> or even private competition in the market for patent examination.<sup>50</sup> Finally, some commentators have begun to suggest abolishing the Federal Circuit entirely and returning to the prior system of jurisdictional competition between the generalist courts of appeal.<sup>51</sup>

Finding the correct solution depends, of course, on correctly diagnosing the problem. It is possible that some or all of the factors described above—funding, management, lack of expertise, capture, and ideology<sup>52</sup>—have contributed to the proliferation of invalid patents and the

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Merges, *Incentives To Challenge and Defend Patents: Why Litigation Won't Reliably Fix Patent Office Errors and Why Administrative Patent Review Might Help*, 19 BERKELEY TECH. L.J. 943 (2004).

<sup>47</sup> In 2010 there were 224 actions for inter partes review, an all-time high. However, 196 of them were related to already pending litigation, meaning that there were only 28 distinct inter partes review cases. U.S. PATENT AND TRADEMARK OFFICE, PERFORMANCE AND ACCOUNTABILITY REPORT, FISCAL YEAR 2010, at 137 tbl.13B (2010), available at <http://www.uspto.gov/about/stratplan/ar/2010/USPTOFY2010PAR.pdf>. This was during a year in which the PTO issued 233,127 patents. *Id.* at 129 tbl.6. The principal reason that so few parties use inter partes review is that any third party to an inter partes proceeding is estopped from further litigation of any issue that it raised *or could have raised* during the inter partes action. 35 U.S.C. § 315(c) (2006). This is too great a sacrifice for parties that might later want to litigate in federal court. Pending legislation contains the same estoppel provision and thus is unlikely to be used any more widely. *See* America Invents Act, S. 23, 112d Cong. (1st Sess. 2011), § 315(e)(1).

<sup>48</sup> *See, e.g.,* Lemley et al., *supra* note 26, at 12–13; Kristen Osenga, *Entrance Ramps, Tolls, and Express Lanes—Proposals for Decreasing Congestion in the Patent Office*, 33 FLA. ST. U. L. REV. 119 (2005).

<sup>49</sup> Ayres & Parchomovsky, *supra* note 35, at 870. *But see* Abramowicz, *supra* note 41, at 815 (arguing that the government is ill-suited to the task of determining when patent auctions should be held).

<sup>50</sup> Michael Abramowicz & John F. Duffy, *Ending the Patenting Monopoly*, 157 U. PA. L. REV. 1541 (2009) (suggesting that private patent examination firms be allowed to compete with the PTO).

<sup>51</sup> *E.g.,* Rochelle Cooper Dreyfuss, *In Search of Institutional Identity: The Federal Circuit Comes of Age*, 23 BERKELEY TECH. L.J. 787, 804 (2008) (“Another idea would be to abolish the Federal Circuit and reconstitute it as a trial court.”); Arti K. Rai, *Engaging Facts and Policy: A Multi-Institutional Approach to Patent System Reform*, 103 COLUM. L. REV. 1035, 1102 (2003) (“I discuss whether the best solution would involve abolishing the Federal Circuit, and having a system of specialized trial courts reviewed by generalist appellate courts.”).

<sup>52</sup> *See supra* notes 28- and accompanying text.

unflagging expansion of patent rights. Nonetheless, this Article aims to demonstrate that the patent system's failings can be explained instead as a consequence of the contorted institutional relationship between the PTO and the Federal Circuit.

## II. PATENT EXPANSION

This Part presents a model of the interaction between three principal actors: the Federal Circuit, the PTO, and a patent applicant. The basic model proceeds in four stages. First, the patent applicant applies to the PTO for a patent. Second, the PTO decides whether to grant the patent. Officially, the PTO is an agent of the Federal Circuit; its role is to grant only those patents that the Federal Circuit would allow under governing law.<sup>53</sup> Third, if the PTO denies the patent, the applicant decides whether to appeal that denial to the Federal Circuit.<sup>54</sup> And fourth, the Federal Circuit decides the appeal (if there is one).

Following attitudinal models of judging, which describe judges as having an “ideal point”<sup>55</sup>—the point along a continuum of possible outcomes where they would prefer the law to land—the model describes Federal Circuit judges as having an “ideal point” regarding patentability.<sup>56</sup>

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<sup>53</sup> Nard, *supra* note 2 (describing the legal relationship between the PTO and Federal Circuit).

<sup>54</sup> To be precise, inventors whose patents were rejected by the PTO examiner may appeal to the Board of Patent Appeals and Interferences (BPAI), an administrative court located within the PTO. *See* 35 U.S.C. § 6(b) (2006) (“The Board of Patent Appeals and Interferences shall, on written appeal of an applicant, review adverse decisions of examiners upon applications for patents . . . .”); John F. Duffy, *Are Administrative Patent Judges Unconstitutional* 2-3 (2008) (unpublished manuscript), *available at* [http://www.ssrn.com/abstract\\_id=1128311](http://www.ssrn.com/abstract_id=1128311). Applicants who do not like the result before the BPAI can then appeal to the Federal Circuit. As later sections will explain, however, the BPAI is under the control of the top PTO administrators and functions as an arm of the agency. *See infra* note 102. Because these administrators control all significant decisionmakers within the agency, and in the interest of simplicity, I will refer to the PTO as if it were a unitary actor, rather than distinguishing between examiners and the BPAI.

<sup>55</sup> *E.g.*, GLENDON SCHUBERT, *THE JUDICIAL MIND: THE ATTITUDES AND IDEOLOGIES OF SUPREME COURT JUSTICES 1946-1963* (1965); Jeffrey A. Segal & Albert D. Cover, *Ideological Values and the Votes of U.S. Supreme Court Justices*, 83 AM. POL. SCI. REV. 557 (1989).

<sup>56</sup> Nicola Gennaioli & Andrei Shleifer, *Judicial Fact Discretion*, 37 J. LEGAL STUD. 1, 18-20 (2008) (employing an ideal point-based model); Pauline T. Kim, *Deliberation and Strategy on the United States Courts of Appeals: An Empirical Exploration of Panel Effects*, 157 U. PA. L. REV. 1319, 1347 (2009) (employing an ideal point model of judging); Alexander Volokh, *Choosing Interpretive Methods: A Positive Theory of Judges and Everyone Else*, 83 N.Y.U. L. REV. 769, 780-82 (2008) (explaining the use of ideal

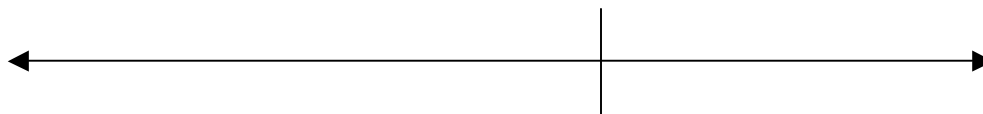
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## PATENT INFLATION

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That is, along any given dimension of patentability (novelty, enablement, etc.), each judge, were she left to her own devices, would draw a line at a given point and allow patents up to that point and no further. This ideal point is better described as a “cutpoint,” in the sense that it represents the cutoff between patentability and nonpatentability.<sup>57</sup> This notion of cutpoints is not limited to the Federal Circuit; the PTO has cutpoints along any given dimension as well. These cutpoints can be represented graphically. For instance, Figure 1 displays a hypothetical PTO cutpoint on the issue of utility:

Figure 1: The PTO Cutpoint on Utility



One can imagine the universe of possible inventions arrayed on the line from left to right in order of decreasing utility: on the far left are inventions that are obviously and incontrovertibly useful; on the far right are inventions with no demonstrated utility. The PTO will grant patents on inventions that fall to the *left* of its cutpoint and deny patents on inventions that fall to the *right* of its cutpoint. The further to the right an actor’s cutpoint is located, the more patents that actor would grant—and thus the more lenient are that actor’s standards for patentability.

There are, of course, many different dimensions to patentability. A patent must recite valid subject matter,<sup>58</sup> it must be novel,<sup>59</sup> nonobvious,<sup>60</sup> and useful,<sup>61</sup> and so forth. Each actor—the Patent and Trademark Office, and each judge of the Federal Circuit—has a cutpoint for each of these issues. In addition, the Federal Circuit more generally has a cutpoint that represents the patents it would grant under its own governing precedent. For

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points in decision models).

<sup>57</sup> See Lee Epstein et al., *Ideological Drift Among Supreme Court Justices: Who, When, and How Important?*, 101 NW. U. L. REV. 1483, 1529-30 (2007) (describing the lines demarcating decisions between voting one way or the other on a case as cutpoints); Keith Krehbiel, *Committee Power, Leadership, and the Median Voter: Evidence from the Smoking Ban*, 12 J.L. ECON. & ORG. 234, 252 (1996) (employing a cutpoint-based model).

<sup>58</sup> *E.g.*, *Diamond v. Chakrabarty*, 447 U.S. 303 (1980) (patentability of living organism).

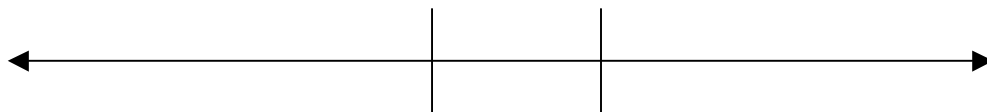
<sup>59</sup> *E.g.*, *In re Robertson*, 169 F.3d 743 (Fed. Cir. 1999) (novelty).

<sup>60</sup> *E.g.*, *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007) (obviousness).

<sup>61</sup> *E.g.*, *Brenner v. Manson*, 383 U.S. 519 (1966) (doctrine of specific utility); *In re Brana*, 51 F.3d 1560 (Fed. Cir. 1995) (same).

instance, the Federal Circuit and the PTO might have the following cutpoints on the issue of patentable subject matter:

Figure 2: PTO and Federal Circuit Cutpoints on Patentable Subject Matter



In this example, the PTO is more permissive than the Federal Circuit, as represented by the fact that its cutpoint is to the right of the Federal Circuit's.

Two final notes are in order. First, the analysis that follows begins with the simplest case: a completely error-free PTO and a completely error-free Federal Circuit, both of which grant all patents to the left of their cutpoints and deny all patents to the right of their cutpoints. This is obviously unrealistic; no court or agency can be perfectly accurate in all circumstances. Any actor will occasionally grant patents that are to the right of its cutpoint or deny patents that are to the left of its cutpoint, purely as a matter of error or internal institutional disagreements.<sup>62</sup> The simple case is used merely to establish the basic building blocks of the model. Later sections drop the assumption of perfect accuracy and present a realistic picture of the interaction between the PTO and the Federal Circuit.

Second, the analysis proceeds as if there were only one dimension to patentability, and it often speaks of “patentability” as a placeholder for any of the various doctrines—patentable subject matter,<sup>63</sup> novelty,<sup>64</sup> enablement,<sup>65</sup> utility,<sup>66</sup> etc.—that determine whether an application is patentable. Nonetheless, it is entirely generalizable to any number of dimensions—what is true for one dimension should be true for all of them. The theory that follows is indeed meant to apply to all doctrines related to whether an invention is patentable.

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<sup>62</sup> For instance, some judges on the Federal Circuit may be more lenient than others, and an appeal may turn on which panel of three judges is selected to hear it. I discuss this at greater length below. *See infra* Section II.C.

<sup>63</sup> *See* 35 U.S.C. § 101 (2006).

<sup>64</sup> *See id.* § 102.

<sup>65</sup> *See id.* § 112.

<sup>66</sup> *See id.* § 101.

*A. Error-Free PTO and Federal Circuit*

Consider first an error-free PTO, an error-free and entirely homogenous Federal Circuit, and a strategic patent applicant. The Federal Circuit will set the appropriate limits of patentability, and the PTO will follow those limits to the letter. Under these circumstances, the PTO will grant only those patents that are genuinely patentable under governing Federal Circuit law, and because the PTO makes no errors the Federal Circuit will uphold its decision if any aggrieved patentee appeals. Accordingly, strategic patentees will only apply for patents on inventions that they know to be patentable. The system will function ideally.

*B. Error-Prone or Noisy PTO, Error-Free Federal Circuit*

Now imagine that the PTO is not perfect but instead will make random errors when examining patent applications, sometimes granting patents that it should not,<sup>67</sup> and sometimes denying patents that should be granted.<sup>68</sup> The errors will cluster around the PTO's cutpoint: the closer an application is to the cutpoint, the more likely the PTO is to err in examining it.<sup>69</sup> In other words, the PTO will be less likely to incorrectly decide patent applications that are *obviously* patentable or obviously unpatentable. Figure 3 represents this phenomenon graphically. The shaded area represents the set of patent applications that the PTO might decide incorrectly; the darker the shading, the more likely the PTO is to err.

Figure 3: The PTO's Cutpoint in General



The PTO thus produces four types of decisions: false negatives (patents it should grant but instead denies); false positives (patents it should deny but instead grants); true negatives (patents it should deny and does);

<sup>67</sup> Again, "should" is meant in reference to governing Federal Circuit law. The PTO should grant all patents that are allowable according to the Federal Circuit and should deny all patents that are not.

<sup>68</sup> The precise source of the error is not important. One possibility is that these errors could be due to simple mistakes by examiners and the difficulties inherent to accurately examining a patent.

<sup>69</sup> This is the standard, intuitive assumption that drives all spatial models. *See supra* notes **Error! Bookmark not defined.**52-57 and sources cited therein.

and true positives (patents it should grant and does). The following figure represents these categories graphically:

Figure 4: True and False Positives and Negatives at the PTO

	PTO should grant patent	PTO should deny patent
PTO grants patent	True positive	False positive
PTO denies patent	False negative	True negative

Imagine further that the Federal Circuit is again error-free. When the PTO erroneously denies a patent (a false negative), the aggrieved party can appeal to the Federal Circuit.<sup>70</sup> The Federal Circuit will then reverse the PTO. But when the Patent Office grants a patent, there is no opposing private party positioned to challenge that patent in court, and thus no opportunity for the Federal Circuit to correct the PTO's error.<sup>71</sup> Only PTO actions on one side of the ledger are appealed directly to the federal courts.<sup>72</sup> Strategic patent applicants will thus understand that there is some chance that the PTO will grant them a patent on an unpatentable invention. Accordingly, patent applicants will file some number of patent applications that they believe to be unpatentable, hoping to get lucky at the PTO. The number of these attempts will depend on the PTO's rate of error and the cost of filing for a patent.<sup>73</sup>

Under these circumstances, if the costs of appealing to the Federal Circuit are low enough, few patents will be improperly denied: any applicant whose patent is wrongly denied can simply appeal, and the Federal Circuit will grant the patent. However, some number of invalid

<sup>70</sup> This is relatively rare, of course. The far more common course of action is for the private party to file a series of continuation patents with the patent office until the examiner finally agrees to grant the patent. Mark A. Lemley & Kimberly A. Moore, *Ending Abuse of Patent Continuations*, 84 B.U. L. REV. 63, 74-75 (2003).

<sup>71</sup> The PTO does provide for limited inter partes review of patents, but this procedure is very rarely used because it is costly for the challenging party.

<sup>72</sup> That is not to say that improperly granted patents never wind up in federal court. They do, in the context suits for infringement. Yet they arrive there in smaller numbers, and after greater delay, than patents based on applications denied. I explore this in greater detail *infra* Subsection II.D.5.

<sup>73</sup> See Jonathan S. Masur, *Costly Screens, Value Asymmetries, and Patent Examination*, 2 J. LEGAL ANALYSIS 687, 700 (2010) (cataloguing the costs involved in obtaining a patent).

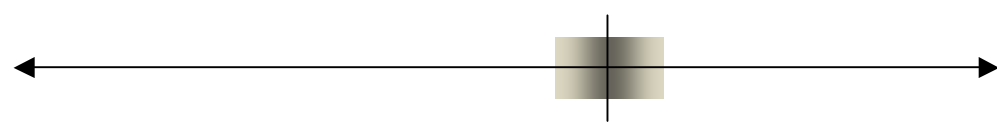
patents will be improperly granted by the PTO and never appealed. In that respect, this arrangement bears some resemblance to reality—most observers agree that the patent system is rife with improperly granted patents.<sup>74</sup>

*C. A Perfect PTO, An Error-Prone or Noisy Federal Circuit*

1. Issued Patents

Now imagine that the PTO is error-free—it grants or denies every application precisely in accordance with governing Federal Circuit law. But suppose that the Federal Circuit is error-prone, or that its behavior is “noisy” with respect to its cutpoint. The Federal Circuit will usually deny applications that are to the right of the cutpoint (meaning that the patent would normally be invalid under existing precedent) and approve applications that are to the left of the cutpoint (meaning that the patent would be valid under existing precedent). However, it will occasionally grant invalid patents or deny valid ones. Like the error-prone PTO from the prior section, the Federal Circuit’s errors are clustered around its cutpoint. The more obviously patentable or unpatentable an invention is, the less likely the circuit is to decide the case improperly. Figure 5 represents this graphically:

Figure 5: The Federal Circuit’s Cutpoint, With Error Ranges



This error or noise could derive from a variety of sources. It might be the result of the technological difficulties inherent to ascertaining the patentability of an invention; even experienced judges will frequently make legal errors.<sup>75</sup> Alternatively, what appear to be errors in Federal Circuit patent grants or denials might instead be the result of random panel assignments within the circuit. The cutpoint for the Federal Circuit as a

<sup>74</sup> See *supra* note Error! Bookmark not defined.Error! Bookmark not defined.24 and sources cited therein.

<sup>75</sup>See David L. Schwartz, *Practice Makes Perfect? An Empirical Study of Claim Construction Reversal Rates in Patent Cases*, 107 MICH. L. REV. 223 (2008). In addition, Federal Circuit judges may be experienced, but they are not particularly expert. See *supra* note 31 and sources cited therein.

whole is determined by its median judge—the judge who holds the deciding vote in en banc cases.<sup>76</sup> But other judges may have more or less expansive views of the scope of patentability than the median judge.<sup>77</sup> If two judges with more expansive or less expansive views of patentability find themselves on the same panel, they may decide to issue a decision that deviates in one direction or another from the cutpoint of the Federal Circuit as a whole.<sup>78</sup>

There is, however, the matter of existing precedent. Judges who disagree with the Federal Circuit’s position on patentability will nonetheless feel bound to some degree by existing precedent and unable to simply decide cases as they might wish.<sup>79</sup> On the other hand, circuit precedent is not entirely binding; judges do deviate from precedent on regular occasions, especially in the Federal Circuit, where inconsistent, competing legal approaches often persist for years.<sup>80</sup> In keeping with standard legal and political science models of judicial behavior, I assume that a judge’s likelihood of voting to grant a patent is a function of the judge’s own view of patent law (that is, the judge’s cutpoint); existing circuit precedent (that is, the Federal Circuit’s cutpoint); and where the patent itself falls relative to those cutpoints.<sup>81</sup> The farther the patent is to the left (right) of the judge’s

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<sup>76</sup> See WILLIAM H. RIKER, *THE THEORY OF POLITICAL COALITIONS* (1962); Frank B. Cross, Review Essay, *Collegial Ideology in the Courts*, 103 NW. U. L. REV. 1399, 1418-19 (2009) (“The median voter theorem states that outcomes and opinions are dictated exclusively by the ideologically median member of the panel.”); Lee Epstein & Tonja Jacobi, *Super Medians*, 61 STAN. L. REV. 37, 44-49 (2008).

<sup>77</sup> See Lee Petherbridge, *Patent Law Uniformity?*, 22 HARV. J.L. & TECH. 421, 446-48 (2009) (finding substantial differences in outcomes among judges).

<sup>78</sup> See Jaya Ramji-Nogales, Andrew I. Schoenholtz & Philip G. Schrag, *Refugee Roulette: Disparities in Asylum Adjudication*, 60 STAN. L. REV. 295 (2007) (finding large disparities in the treatment of immigrant asylum applicants by different asylum officers and immigration judges); Joshua B. Fischman, *Estimating Preferences of Circuit Judges: A Model of “Consensus Voting”*, 54 J.L. & ECON (forthcoming 2011).

<sup>79</sup> W. Mark C. Weidemaier, *Toward a Theory of Precedent in Arbitration*, 51 WM. & MARY L. REV. 1895, 1925 (2010) (“[P]recedent constrains the discretion of future decision makers to some meaningful degree.”).

<sup>80</sup> See *infra* notes 93-95 and accompanying text (describing the intra-circuit conflict over the proper methodology of patent claim construction).

<sup>81</sup> This approach is drawn from spatial voting models and has gained wide acceptance. See, e.g., Jonathan Bendor & Adam Meirowitz, *Spatial Models of Delegation*, 98 AM. POL. SCI. REV. 293 (2004) (employing a spatial model to explain delegation decisions); Kim, *supra* note 563, at 1347 (using a spatial model to analyze judicial voting); Keith T. Poole & Howard Rosenthal, *A Spatial Model for Legislative Roll Call Analysis*, 29 AM. J. POL. SCI. 357 (1985) (using a spatial model to explain congressional voting); Erik Voeten, *Legislator Preferences, Ideal Points, and the Spatial Model in the European Parliament* (Ctr. On Insts. & Governance, Working Paper No. 2005-12, 2005) (analyzing European voting with a spatial model).

cutpoint, the more likely the judge is to grant (deny) the patent.<sup>82</sup> And the farther a judge would have to deviate from existing precedent in order to grant or deny a patent, the less likely she is to do so.<sup>83</sup>

Under these circumstances, patentees with patentable inventions will continue to apply for patents. Their patents will always be granted by the PTO, and there will be no need to appeal to the Federal Circuit. There will be no false negatives—patents that should be granted but are not. However, some inventors with unpatentable inventions will *also* file for patents. They will understand that after the PTO denies their applications they can appeal to the Federal Circuit, and there is a chance that they will draw favorable (or errant) panels that will overturn the PTO's decisions and grant their patents. The number of such patentees who file for patents on unpatentable inventions will depend on the costs and benefits involved: the cost of applying for a patent and appealing to the Federal Circuit, and the value of the patent if it issues, discounted by the likelihood that the Federal Circuit will uphold the PTO's decision. There may be few of these patentees (depending on these parameters), but there will not be zero. In other words, this institutional arrangement will generate some false positives—patents granted by the Federal Circuit that should not exist.

## 2. The Contours of Patent Law

The effects of such a system do not end with the fact that some bad patents will issue. In addition, this arrangement will have important, perhaps pernicious, consequences for the shape of patent law itself. In any appeal from a denial by the PTO, the Federal Circuit has essentially two options: a) affirm the Patent Office's denial, or b) reverse the PTO and grant the patent. If the Federal Circuit affirms the PTO, it will likely do so based on governing circuit precedent, which the PTO followed.<sup>84</sup> Patent law will remain unchanged. But if it reverses the PTO and grants the patent, it will necessarily have created a new precedent, one that supports a broader

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<sup>82</sup> Daniel B. Rodriguez & Barry R. Weingast, *The Paradox of Expansionist Statutory Interpretations*, 101 NW. U. L. REV. 1207, 1223-30 (2007) (using a spatial model to explain judges' statutory interpretation decisions).

<sup>83</sup> Kim, *supra* note 56, at 1347-50.

<sup>84</sup> Cf. William A. Klein, *Tailor to the Emperor with No Clothes: The Supreme Court's Tax Rules for Deposits and Advance Payments*, 41 UCLA L. REV. 1685, 1725 (1994) (describing the manner in which lawyers offer, and courts generally follow, arguments based on existing precedent). It is possible that repeated affirmations of existing law will effectively entrench those legal rules, making them more difficult to overturn. At the same time, it is possible that these seriatim affirmances will have zero or little effect. Yet even if the circuit's many affirmances exert some sort of inertial pull on patent law, this will only slow the rate of change, not eliminate it entirely.

scope of patentability, and one that will exert an influence on Federal Circuit judges going forward.

The strength of these new precedents—and thus the extent to which the boundaries of patentability expand—will depend on the reason for the Federal Circuit’s departure from settled law.<sup>85</sup> If the Federal Circuit has simply misjudged the invention’s technology or misapplied the law, the precedent will likely have little value.<sup>86</sup> But where the Federal Circuit offers a new statement of law, the new precedent will exert force.<sup>87</sup> This is the case regardless of whether the court states this new legal rule intentionally—as a consequence of the panel composition—or unintentionally—as a result of error. These decisions will inflate the patent law, expanding the range of what is patentable.

Moreover, these legal expansions by the Federal Circuit will generate positive feedback effects. As the Federal Circuit’s cutpoint moves with the creation of new precedent, so too will the PTO’s. (Again, the PTO is bound to enforce the Patent Act, as interpreted by the Federal Circuit.<sup>88</sup>) Every time the Federal Circuit moves the law, the PTO will respond accordingly and become slightly more permissive in granting patents. And because the only appeals that the Federal Circuit will see relate to applications that exceed this new cutpoint, it will continuously be presented with new opportunities to move the law *even further*. The inflationary cycle will repeat itself.

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<sup>85</sup> It is well beyond the scope of this paper to elucidate an entire theory of precedent. Instead, I rely upon standard existing theories of how precedent impacts judicial behavior. See, e.g., Yeon-Koo Che & Jong Goo Yi, *The Role of Precedents in Repeated Litigation*, 9 J.L. ECON. & ORG. 399, 404-06 (1993) (developing a model of precedent regarding commonly litigated questions); Nicola Gennaioli & Andrei Shleifer, *The Evolution of Common Law*, 115 J. POL. ECON. 43, 53-57 (2007) (setting forth a theory of precedent and common law development); Nicola Gennaioli & Andrei Shleifer, *Overruling and the Instability of Law*, 35 J. COMP. ECON. 309, 323-24 (2007) (arguing that overruling precedent leads to instability and prevents the common law from evolving toward efficiency); Stefanie A. Lindquist & Frank B. Cross, *Empirically Testing Dworkin’s Chain Novel Theory: Studying the Path of the Law*, 80 N.Y.U. L. REV. 1156, 1203-06 (2005) (providing empirical data on how judges behave with respect to precedent); Paul H. Rubin, *Why Is the Common Law Efficient?*, 6 J. LEGAL STUD. 51, 61-63 (1977) (arguing that the common law evolves toward efficiency because of rational decisions by litigants and judicial responses to those decisions); Frederick Schauer, *Precedent*, 39 STAN. L. REV. 571, 581-98 (1987) (offering a complete theory of precedent).

<sup>86</sup> See Schauer, *supra* note 85, at 591-96 (explaining that precedent will be of little value when it covers only a very narrow category of cases).

<sup>87</sup> See *id.* at 592-95 (categorizing the strength of legal precedents).

<sup>88</sup> Nard, *supra* note Error! Bookmark not defined.Error! Bookmark not defined., at 1431-32 (describing the PTO’s obligation to enforce the Federal Circuit’s version of the law).

This process is not wholly unconstrained, however. In the Federal Circuit, one panel cannot overrule an opinion issued by another.<sup>89</sup> Only the court sitting en banc may do so.<sup>90</sup> Accordingly, no three-judge panel has the power to enact genuinely wholesale change. Nonetheless, newer panel opinions can chip away at old doctrines by creating exceptions or reaching opposite conclusions in analogous situations, even when they do not directly overrule existing precedent.<sup>91</sup> These new panel opinions then exert precedential force of their own in future cases, even cases that the Federal Circuit hears en banc.<sup>92</sup> In addition, the Federal Circuit is infamous for allowing apparently contradictory panel opinions to coexist for extended periods of time. For instance, for several years the circuit had two separate doctrines of claim interpretation.<sup>93</sup> Both stemmed from panel opinions,<sup>94</sup> and both claimed some number of adherents until the court, sitting en banc, discarded one in favor of the other.<sup>95</sup> The Federal Circuit is also famously reluctant to take cases en banc, hearing only 44 cases en banc during the 29-year existence of the court.<sup>96</sup> Accordingly, the fact that this effect is limited to panel opinions may curb its impact but will not eliminate it.

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<sup>89</sup> This is in contrast to other Courts of Appeals that do allow one three-judge panel to overrule another. For instance, Seventh Circuit Local Rule 40(e) states:

A proposed opinion approved by a panel of this court adopting a position which would overrule a prior decision of this court or create a conflict between or among circuits shall not be published unless it is first circulated among the active members of this court and a majority of them do not vote to rehear en banc the issue of whether the position should be adopted.

FEDERAL RULES OF APPELLATE PROCEDURE: CIRCUIT RULES OF THE UNITED STATES COURT OF APPEALS FOR THE SEVENTH CIRCUIT, Local R. 40(e) at 74 (2011), *available at* <http://www.ca7.uscourts.gov/Rules/rules.pdf>.

<sup>90</sup> U.S. COURTS OF APPEALS FOR THE FED. CIRCUIT, RULES OF PRACTICE, Fed. Cir. Local R. 35 at 73 (2010), *available at* <http://www.cafc.uscourts.gov/images/stories/rules-of-practice/rules.pdf>, (“Although only the court en banc may overrule a binding precedent . . .”).

<sup>91</sup> Schauer, *supra* note 85, at 589.

<sup>92</sup> *Id.*

<sup>93</sup> See Phillips v. AWH Corp., 415 F.3d 1303 (Fed. Cir. 2005) (explaining the history of the circuit’s rules on claim construction).

<sup>94</sup> One approach focused on the literal meaning of claim terms as interpreted using dictionaries, *see* Texas Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193 (Fed. Cir. 2002); the other employed a more holistic approach; *see* Vitronics Corp. v. Conception, Inc., 90 F.3d 1576 (Fed. Cir. 1996).

<sup>95</sup> Phillips, 415 F.3d at 1312 (adopting the *Vitronics* approach).

<sup>96</sup> See Ryan G. Vacca, *Acting Like an Administrative Agency: The Federal Circuit En Banc*, Missouri L. Rev. (forthcoming 2011), at 19-20, *available at* [http://www.ssrn.com/abstract\\_id=1781277](http://www.ssrn.com/abstract_id=1781277); Christopher A. Cotropia, *Determining Uniformity Within the Federal Circuit By Measuring Dissent and En Banc Review*, 43 Loy.

Still, the Federal Circuit will not function entirely as a one-way ratchet. The court could always seize upon a patent that the PTO has denied as a vehicle for retrenchment. The circuit could use the case to move the boundaries of patentability backwards, rather than merely affirming the PTO based on settled law. These cases will be rare, however, in part because they require the judges of the Federal Circuit to deviate from settled precedent in order to decide a case that they could decide (correctly) simply by adhering to that precedent. This is something that courts have counseled against, and that judges are famously reluctant to do.<sup>97</sup>

In addition, any patent that the PTO has granted—from the most mundane and uncontroversial to those at the vanguard of current law—could be the subject of an infringement action, and thus the full panoply of allowed patents could still find their way to the Federal Circuit at one point or another. Infringement lawsuits involving patents well within the scope of existing law could provide the Federal Circuit with opportunities to dial back the reach of patentability.

On the whole, will the scope of patentability expand or contract? This will depend on how many true positives and true negatives come before the Federal Circuit. The true negatives will be patent applications that are denied by the PTO and appealed directly to the Federal Circuit; the true positives will be patents that the PTO properly grants that eventually find their way to the Federal Circuit in the course of infringement lawsuits. (There will be no false positives or false negatives because by hypothesis the PTO is unerring.) True positives (along with false negatives) allow the Federal Circuit opportunities to contract the scope of patentability, because reversing the PTO would involve narrowing the boundaries of what is patentable. True negatives (and false positives) provide opportunities for expansion because reversing the PTO involves broadening the boundaries of what is patentable.

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L.A. L. Rev. 801, 817 (2010) (observing that the Federal Circuit goes en banc in a smaller proportion of cases than most other circuits).

<sup>97</sup> See, e.g., *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 384 n.10 (1996) (expressing a reluctance to decide cases on any broader or more difficult ground than absolutely necessary); Cass R. Sunstein, *Beyond Judicial Minimalism*, 43 *Tulsa L. Rev.* 825, 836 (2008) (pointing out that institutional realities and implications for future decisions both make narrow decisions the sensible choice); Michael J. Gerhardt, *Constitutional Humility*, 76 *U. Cin. L. Rev.* 23 (2007) (describing how influential judges have advocated for this type of narrow approach); Jonathan T. Molot, *Principled Minimalism: Restriking the Balance Between Judicial Minimalism and Neutral Principles*, 90 *Va. L.Rev.* 1753, 1788-90 (2004) (explaining that the need to muster a majority on panels and the desire for respect limit judges to the narrowest grounds necessary to reach a decision).

Legal change will thus occur stochastically: each case that reaches the Federal Circuit will present some probability that the court will inflate or contract the law by deciding the case in a manner that does not accord with existing doctrine.<sup>98</sup> A given case could lead to a larger or smaller change in the law depending on the patent being granted or denied: if the Federal Circuit grants a truly outlandish patent or invalidates a previously uncontroversial one, the law will move substantially. If the patent at issue was much closer to the court's existing cutpoint, the change in the law will be more minor. Different precedents might also carry different weights, depending on how they are written.<sup>99</sup> But because it is a matter of random chance whether a court departs from existing law in a given case, overall change in the law will be proportional to the number of opportunities that a court has to alter the law in expansionary and contractive directions.

There will of course be many more patents granted than denied by the PTO, but relatively few of those patents will ever be subject to suits for infringement, much less suits that reach the Federal Circuit. For instance, in 2010, the PTO granted more than 1100 patents for each patent infringement or inequitable conduct case that the Federal Circuit adjudicated on the merits.<sup>100</sup> As a result, the net effect on the scope of patentability is indeterminate—at least in this contrived scenario. Given a more realistic picture of the PTO and Federal Circuit, the results are not so indefinite.

#### D. *The Patent Office and Federal Circuit in Reality*

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<sup>98</sup> Cf. Anna M. Michalak, *Environmental Contamination with Multiple Potential Sources and the Common Law: Current Approaches and Emerging Opportunities*, 14 FORDHAM ENVTL. L.J. 147, 160 (2002) (“[C]ommon law is statistical or stochastic in nature, because it deals directly with the uncertainty associated with estimates.”); Charles Yablon, *The Meaning of Probability Judgments: An Essay on the Use and Misuse of Behavioral Economics*, 2004 U. ILL. L. REV. 899, 962-63 (2004) (“Although there are some stochastic elements involved in the litigation process (jurors and judges are randomly assigned to cases) . . .”).

<sup>99</sup> See *supra* notes 86-87 and accompanying text (observing that precedents based on errors or factual distinctions will carry less weight than those founded upon new statements of law).

<sup>100</sup> Compare Patent Tech. Monitoring Team, *U.S. Patent Statistics Chart: Calendar Years 1963-2010*, Patent & Trademark Office, [http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us\\_stat.htm](http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm) (last updated Apr. 1, 2011) (showing that the PTO granted 244,341 patents in 2010), with *Appeals Filed and Adjudicated, by Category, FY 2010*, U.S. Ct. of Appeals for the Fed. Circuit, [http://www.ca9.uscourts.gov/images/stories/the-court/statistics/Caseload\\_by\\_Category\\_Table\\_of\\_Data\\_2010.pdf](http://www.ca9.uscourts.gov/images/stories/the-court/statistics/Caseload_by_Category_Table_of_Data_2010.pdf) (last visited May 25, 2011) (showing that merits panels of the Federal Circuit adjudicated 220 patent cases arising from district courts in fiscal year 2010).

The previous sections demonstrated that on certain assumptions the interaction between the PTO and the Federal Circuit can generate both invalid patents and an inflationary (or deflationary) bias in patent law. However, those assumptions were not all realistic, and deliberately so. The preceding sections were meant only to lay the theoretical groundwork for an analysis of the interaction between the two actual institutional bodies. This Section takes up that task.

## 1. The PTO

This Section begins with an account of what the Patent Office attempts to achieve when it examines patents. As described above, the PTO's official objective is to allow those patents that would be valid under the best possible interpretation of governing law.<sup>101</sup> Officially, then, the PTO is expected to match its output to the Federal Circuit's. The patent system is designed such that the PTO is expected to grant only valid patents, per the legal definitions created by these other institutional actors, and to deny all other applications.

The PTO, as an institution, undoubtedly pursues this objective to at least some extent. But from the perspective of the individuals who actually manage the PTO (and those who examine patents), the PTO's institutional interest in enforcing the "correct" boundaries of patent law is actually quite weak.<sup>102</sup> The patent rules are not the PTO's own legal boundaries—they

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<sup>101</sup> Nard, *supra* note **Error! Bookmark not defined.****Error! Bookmark not defined.**2, at 1419-22.

<sup>102</sup> Again, to be precise, inventors whose applications have been denied may appeal to the BPAI, an administrative court within the PTO, before taking their cases before the Federal Circuit. *See* 35 U.S.C. § 6(b) (2006) (establishing the BPAI); *supra* note 51. However, the BPAI is not an independent body. To the contrary, it resides under the control of senior PTO officials. The membership of the BPAI includes the PTO Director, the Deputy Commissioner, the Commissioner for Patents, and the Commissioner for Trademarks, as well as administrative patent judges. 35 U.S.C. § 6(a). These administrative patent judges are appointed by the Secretary of Commerce, "in consultation with the Director" of the PTO. *Id.* In effect, this means that the PTO Director controls the appointments. The judges do not have Article III tenure and salary protection and can be removed at will. *Id.* In addition, the PTO Director has the authority "to designate BPAI panels that he 'hopes will render the decision he desires, even upon rehearing.'" Duffy, *supra* note 54, at 3 (*quoting In re Alappat*, 33 F.3d 1526, 1535 (Fed. Cir. 1994)). Moreover, before a decision of the BPAI acquires precedential force—before it can bind examiners or the BPAI itself in the future—that decision must be approved by the PTO Director. *Publication of Opinions of the Board of Patent Appeals and Interferences*, Off. Gaz. Pat. & Trademark Office (Jan. 23, 2007), available at <http://www.uspto.gov/web/offices/com/sol/og/2007/week04/patopin.htm>. As a purely legal matter, it is undoubtedly the case that BPAI judges are not "alter ego[s] or agent[s]" of the PTO Commissioner. *Alappat*, 33 F.3d at 1535-36. But senior PTO administrators exert effective control over the law that emanates from the BPAI (as well as the more quotidian

were created by the Federal Circuit.<sup>103</sup> Accordingly, PTO officials are likely to lack any significant personal investment in the contours of the rules, and it is unlikely that any high official will stand to reap psychic or reputational benefits if the PTO holds fast to the patentability boundaries.<sup>104</sup> More importantly, there is no indication that PTO administrators are chosen based on their views of patent law and how those views accord with governing Federal Circuit precedent.<sup>105</sup> Adhering to the Federal Circuit's conception of patent law would seem to hold very little inherent value for the Patent Office.

What else might the PTO and its top administrators wish to achieve when granting or denying patents? Like any administrative heads, officials at the PTO are interested in maximizing both their future career prospects and, to a lesser extent, their leisure time.<sup>106</sup> Consider first the issue of an administrator's career. The administrator's future career opportunities are

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activities of examiners). Accordingly, the analysis will treat the interests of the agency at large as mirroring those of its senior management.

<sup>103</sup> Again, Congress and the Supreme Court certainly play a role in the creation of patent law, albeit a small one. This role is discussed in greater detail *infra* in Section II.F...

<sup>104</sup> See RICHARD A. POSNER, HOW JUDGES THINK 40-41 (2008) (describing the set of theories positing that decisionmakers prefer to decide questions in accordance with views or ideas they have constructed).

<sup>105</sup> Presidential and congressional statements regarding nominees to head the PTO are noticeably devoid of so much as an allusion to the individual's substantive views on patent law, as opposed to his or her managerial experience. See, e.g., President Obama Announces More Key Administration Posts (June 18, 2009), available at [http://www.whitehouse.gov/the\\_press\\_office/President-Obama-Announces-More-Key-Administration-Posts-6-18-09](http://www.whitehouse.gov/the_press_office/President-Obama-Announces-More-Key-Administration-Posts-6-18-09) (Obama statement regarding PTO Director David Kappos); Comment on the Designation of David J. Kappos To Be Undersecretary of Commerce for Intellectual Property and Director of the U.S. Patent and Trademark Office (June 18, 2009), available at [http://leahy.senate.gov/press/press\\_releases/release/?id=40766b3c-7fa3-4c74-986e-d4378ae4665c](http://leahy.senate.gov/press/press_releases/release/?id=40766b3c-7fa3-4c74-986e-d4378ae4665c) (statement by Sen. Patrick Leahy, Chairman of the Senate Judiciary Comm., regarding Kappos).

<sup>106</sup> WILLIAM A. NISKANEN JR., BUREAUCRACY AND REPRESENTATIVE GOVERNMENT 38 (1971) ("Among the several variables that may enter the bureaucrat's utility function are the following: salary, perquisites of the office, public reputation, power, patronage, output of the bureau, ease of making changes, and ease of managing the bureau."); Michael A. Livermore, *Cause or Cure? Cost-Benefit Analysis and Regulatory Gridlock*, 17 N.Y.U. ENVTL. L.J. 107, 120 (2009) ("There is a wide variety of other goods that agency heads could pursue--such as prestige, nicer offices, intellectually stimulating work, leisure time, and future employment prospects . . ."); Darryl Levinson, *Empire-Building Government in Constitutional Law*, 118 Harv. L. Rev. 915, 932-34 (2005) (suggesting that agency bureaucrats are interested in maximizing discretionary budgets, ideological preferences, and the goals of their constituents); cf. Sidney A. Shapiro & Richard E. Levy, *Judicial Incentives and Indeterminacy in Substantive Review of Administrative Decisions*, 44 DUKE L.J. 1051, 1054 (1995) (arguing that "respect, ideological utility, and leisure" are judges' maximands).

driven in large degree by her reputation.<sup>107</sup> Enhancing her reputation involves increasing the size, prestige, and resources of her administration,<sup>108</sup> on the theory that successfully managing an important organization demonstrates the administrator's ability.<sup>109</sup>

In order to increase the size and importance of the PTO, the administrator must satisfy those parties that control the agency's budget—: Congress and the President, and by extension the community of private parties who interact with the PTO and may lobby political actors for or against the agency.<sup>110</sup> However, in the net these parties do not appear to have terribly strong preferences regarding the substantive content of patent law. Congress and the President have not passed major legislation altering substantive patent law since 1952, which indicates a willingness to cede the shaping of the law to the courts.<sup>111</sup> Scholars believe that this political apathy is due to the fact that private interests are arrayed approximately equally for and against expansion in the scope of patent rights.<sup>112</sup> Notwithstanding this apparent equality, the PTO has assumed a public posture of solicitude towards patent applicants, the class of private actors most likely to prefer expansive patent scope.<sup>113</sup> The PTO refers to them as its “customers” and states that its mission is to serve their interests in obtaining patents.<sup>114</sup> In the aggregate, it is unlikely that Congress, the President, and private interests exert a strong pull on PTO behavior.

By contrast, the Federal Circuit holds the power to significantly and directly affect the interests of the PTO's administrators. The mechanism is

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<sup>107</sup> See Mary K. Olson, *Managing Delegation in the FDA: Reducing Delay in New-Drug Review*, 29 J. HEALTH POL. POL'Y & L. 397, 401 (2004) (“FDA regulators care about their own professional reputations and the reputation of the agency because these reputations may influence their career prospects in and out of government.”).

<sup>108</sup> ANDRE BLAIS & STEPHANE DION, *THE BUDGET-MAXIMIZING BUREAUCRAT: APPRAISAL AND EVIDENCE* 6 (1991) (“strategies are mainly, but not exclusively, targeted at budgetary increases”); NISKANEN, *supra* note 100, at 38 (describing a bureaucrat's reputation as “a positive monotonic function of the total *budget* of the bureau during the bureaucrat's tenure in office”).

<sup>109</sup> NISKANEN, *supra* note 106, at 36-42 (1971).

<sup>110</sup> *Id.* at 24 (describing administrators' desire to satisfy their financial sponsors); Levinson, *supra* note 106, at 932-34 (same); Long, *supra* note 32, at 1984-88 (suggesting that the PTO will often enlist the assistance of private parties in lobbying Congress for additional funding).

<sup>111</sup> Long, *supra* note 32, at 1968 (“Since 1952, Congress has not taken much interest in amending the patent code, leaving the bulk of legal evolution to the courts.”).

<sup>112</sup> Clarisa Long, *Institutions and Interest Groups in Patent and Copyright Law* 10 (2007) (unpublished manuscript).

<sup>113</sup> See *supra* note 26.

<sup>114</sup> See, e.g., *WORKING FOR OUR CUSTOMERS: A PATENT AND TRADEMARK OFFICE REVIEW* (1994), available at <http://www.uspto.gov/web/offices/com/annual/1994/pg1-5.pdf>.

the possibility of appeal and reversal. Like any administrative actor (or judge), officials at the PTO presumably place a high value on avoiding being reversed.<sup>115</sup> Reversals by the Federal Circuit are costly in reputational terms and can threaten top officials' employment and public standing, not to mention their future employment prospects.<sup>116</sup> Moreover, even appeals that the PTO eventually wins are very costly to the agency. Because the PTO is entirely self-funded and operates on a fixed budget,<sup>117</sup> each dollar it spends litigating is one it cannot devote to hiring additional examiners, improving the quality of the PTO workspace, increasing the salaries of current employees, or otherwise providing material and non-material benefits to the PTO workforce.<sup>118</sup> Accordingly, even victorious appeals can reduce the

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<sup>115</sup> Cf. Albert A. Foer, *The Politics of Antitrust in the United States: Public Choice and Public Choices*, 62 U. PITT. L. REV. 475, 492 nn.42-43 (2001) (explaining that a concern for reputation may drive administrative heads to do a good job if for no other reason than to maintain superior private-practice exit options); George A. Krause & James W. Douglas, *Institutional Design Versus Reputational Effects on Bureaucratic Performance: Evidence from U.S. Government Macroeconomic and Fiscal Projections*, 15 J. PUB. ADMIN. RES. & THEORY 281, 282 (2005) (observing that bureaucrats will seek to preserve their own reputations, and thus will avoid actions that might allow them to be "distinguished as inferior agents."); James P. Timony, *Performance Evaluation of Federal Administrative Law Judges*, 7 ADMIN. L.J. 629, 656 (1994) (explaining, with respect to administrative law judges, that "[j]udges generally are extremely cautious about their professional reputation . . . They do not like to be reversed on appeal.").

<sup>116</sup> Cf. Timothy, *supra* note 109, at 656; RICHARD A. POSNER, *OVERCOMING LAW* 118-19 (1995) (describing judges' aversion to reversal); Justin Fox & Matthew C. Stephenson, *Judicial Review and Democratic Failure* 6-10 (2010) (unpublished manuscript), available at [http://www.ssrn.com/abstract\\_id=1458632](http://www.ssrn.com/abstract_id=1458632) (describing the reputational harm to bureaucrats and elected leaders from judicial reversals). Of course, it is possible that being affirmed by the Federal Circuit is beneficial to the PTO's reputation. But it is unlikely to be as beneficial as being reversed is harmful. Even if being affirmed was equally important as being reversed, a risk averse administrator would not likely choose to gamble the prospect of being reversed against an opportunity to be affirmed. And irrespective of this calculation, the PTO has an interest in avoiding appeals of any sort for financial reasons.

<sup>117</sup> JAFFE & LERNER, *supra* note **Error! Bookmark not defined.****Error! Bookmark not defined.**5, at 11; Tony Dutra, *Obama Signs Bill Increasing PTO Funding in FY 2010, But Experts Say Not Enough*, 80 PTCJ 497, 497 (2010) (noting that the PTO will be permitted to keep additional funds that it has collected and may spend the funds on "salaries and expenses"); Rai, *supra* note 28, at 2058 n.24 ("the PTO is an entirely fee-funded organization").

<sup>118</sup> BNA, *PTO Announces Spending Cutbacks; Track One Prioritized Examination a Casualty*, 81 PTCJ 853 (April 29, 2011) (noting that the PTO will be forced to implement numerous cutbacks because Congress declined to release to it all of the fees it collected); Richard S. Markovits, *On the Economic Efficiency of Using Law To Increase Research and Development: A Critique of Various Tax, Antitrust, Intellectual Property, and Tort Law Rules and Policy Proposals*, 39 HARV. J. ON LEGIS. 63, 106 (2002) (explaining managers' tendency to spend money on perks such as "nicer offices" when they cannot keep the resources for themselves).

leisure time available to the PTO administrator and her subordinates.<sup>119</sup> Top officials at the PTO thus have strong incentives to avoid appeals, and in particular to avoid reversals.

These are certainly not the only motivations present among top officials at the PTO. PTO officials undoubtedly have a whole spectrum of typical goals and objectives. The point is not that they are single-mindedly focused on their careers or the maximization of their own leisure time, to the exclusion of all else. The point, rather, is a) that they are not strongly tied to any particular conception of patent law, and b) that they have something very tangible to gain from avoiding appeals and reversals, and essentially nothing to gain from being appealed or reversed. Accordingly, PTO officials will tend to take actions that stand to benefit them by limiting their exposure to appeals.

## 2. The Federal Circuit

With respect to the Federal Circuit, the story is much simpler. The Federal Circuit, as the primary expositor of patent law, has a substantive, policy-driven interest in the content of the law.<sup>120</sup> Judges have individual policy preferences that shape their legal decisions. In addition, they would prefer not to be overturned by the Supreme Court, a fact that limits their legal options to at least some extent.<sup>121</sup>

Other than substantive policy preferences, the objectives of Federal Circuit judges are fairly limited. They are paid in lockstep with other appellate judges<sup>122</sup> and have essentially no prospects for advancement.<sup>123</sup>

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<sup>119</sup> Rai notes that the PTO “has not always been able to keep all of the fees that it collects . . . . In the 1990s, for instance, Congress diverted hundreds of millions of dollars in fee revenues from PTO coffers.” Rai *supra* note 28, at 2058 n.24; *see also* Figueroa v. United States, 66 Fed. Cl. 139, 143 (2005) (providing data on the percentage of fees the PTO has been allowed to keep); Press Release, Am. Bar Ass'n, PTO Fee Diversion Costs Jobs: Bar, Industry United Against Diversion 1 (Apr. 2003), *available at* <http://www.abanet.org/intelprop/feediversion.pdf> (“[N]early \$750 million dollars have been withheld from the USPTO in the past decade . . . .”).

<sup>120</sup> *See supra* notes **Error! Bookmark not defined.**52-57 and accompanying text (describing the attitudinal model of judging, which is driven largely by judges’ preferences regarding the substantive content of the law).

<sup>121</sup> POSNER, *supra* note 104, at 140-41; *see also* Sara C. Benesh & Malia Reddick, *Overruled: An Event History Analysis of Lower Court Reaction to Supreme Court Alteration of Precedent*, 64 J. POL. 534, 547 (2002) (finding that lower court judges appear to adjust their behavior depending upon the perceived likelihood of reversal).

<sup>122</sup> *Judicial Salaries Since 1968*, U.S. COURTS, <http://www.uscourts.gov/Viewer.aspx?doc=/uscourts/JudgesJudgeships/docs/JudicialSalarieschart.pdf> (last visited May 7, 2011) (listing salaries for federal judges and members of Congress).

<sup>123</sup> No Federal Circuit judge has ever been appointed to the Supreme Court, or to any

For most Federal Circuit judges, their current jobs are the last they will ever hold. In addition, they undoubtedly have preferences for leisure time, and for good relations with their colleagues.<sup>124</sup> These factors will limit the number of dissents that they write, and they will also limit the frequency with which the judges are willing to hear cases en banc (a time-consuming, often rancorous process). But otherwise they should not much impact the judges' substantive decisionmaking.

As described above, the Federal Circuit as an institution has a cutpoint along any given legal dimension, with this cutpoint defined by existing law. As the previous sections explain, existing precedent will exert a constraining force: judges will be at least somewhat inclined in any given case to abide by the Circuit's preexisting cutpoint.<sup>125</sup> Precedent will thus limit the cases in which the judges deviate from existing law. Particular judges, however, may have individual cutpoints to the left or right of this median point.<sup>126</sup> These individual cutpoints will influence the judges' behavior.<sup>127</sup> Thus, if two judges with cutpoints to the right of the Circuit's cutpoint<sup>128</sup> sit together on the same panel, they may elect to grant a patent that would not be patentable under governing law. Conversely, if two judges with cutpoints to the left of the Circuit sit together, they may deny a patent that should be granted under current law.<sup>129</sup> If Federal Circuit judges

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other significant government post. Nor has any Federal Circuit judge ever taken a substantial corporate sector job upon retirement from the Circuit, though Howard Markey did become dean of John Marshall Law School after leaving the court. See History of the Federal Judiciary, at [http://www.fjc.gov/history/home.nsf/page/research\\_categories.html](http://www.fjc.gov/history/home.nsf/page/research_categories.html) (providing full biographies of all retired judges).

<sup>124</sup> POSNER, *supra* note 104, at 33 & 36 (describing judicial preferences for good relations with their colleagues and leisure time). There are actually more dissents in the Federal Circuit than on the average federal court of appeals, but dissents still occur in only 3.51% of cases. Cotropia, *supra* note 96, at 816.

<sup>125</sup> See *supra* Section II.A.

<sup>126</sup> See Petherbridge, *supra* note 77 (explaining this effect with respect to the Federal Circuit).

<sup>127</sup> See *supra* notes 56-57 and accompanying text (explaining the role of individual ideology in an attitudinal model of judging).

<sup>128</sup> These would be judges with a more permissive attitude towards what is patentable.

<sup>129</sup> This analysis assumes that Federal Circuit judges vote "honestly"—that is, they vote their actual policy preferences, modified only by respect for precedent, desire to avoid dissenting, and fear of reversal from the Supreme Court. This is the most realistic description of the actual behavior of Federal Circuit judges, and it comports with how their behavior is generally understood. See Christopher R. Drahozal, *Judicial Incentives and the Appeals Process*, 51 SMU L.Rev. 469, 474-77 (1998); POSNER, *supra* note 104, at 207 ("The judge is wont to ask himself in such a case what outcome would be the more reasonable, the more sensible, bearing in mind the range of admissible considerations in deciding a case, which include but are not exhausted by statutory language, precedents, and the other conventional materials of judicial decision making, but also include common sense, policy preferences, and often much else besides."). Nonetheless, a later section will

are largely homogenous—if their individual cutpoints are similarly located—then any given three-judge panel will likely resemble the Circuit as a whole, and there should not be a great deal of deviation from the full Circuit’s cutpoint. But if there is a great deal of variance among Federal Circuit judges, then the possibility exists that two judges on a panel will together form a majority with a viewpoint that diverges greatly from the Circuit’s cutpoint.<sup>130</sup>

Finally, the judges of the Federal Circuit will simply err some proportion of the time, voting to grant patents that should be denied and vice versa.

### 3. The Parties’ Interaction

How, then, will the parties in this institutional arrangement behave? Consider first the PTO.<sup>131</sup> In a typical administrative system, an agency like the PTO would have no choice but to adhere as strictly as possible to the governing law. If the agency deviated from the Federal Circuit’s caselaw, the losing party would appeal and the PTO would risk having its decision overturned.<sup>132</sup> The further the agency deviated from the governing legal rule, the greater would be its chances of reversal on appeal—and thus the more likely it would be that the losing party would appeal in the first instance.<sup>133</sup> The same is true for systems of civil litigation:; the further a lower-court judge deviates from appellate precedent, the more likely she is to be overturned by an appellate court, and thus the more probable it is that the losing party will bring an appeal.<sup>134</sup>

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abstract away from even this assumption. *See infra* Section II.E.

<sup>130</sup> Fischman, *supra* note 78, at 17, demonstrates this effect empirically for the Ninth Circuit.

<sup>131</sup> The solution to this three-party game is effectively arrived at by backwards induction: the PTO reacts to how the Federal Circuit will behave, and private parties react to how both the PTO and the Federal Circuit will behave. This approach should be clear from the analysis. The behavior of the relevant parties is described in this order merely for ease of exposition and understanding.

<sup>132</sup> 5 U.S.C. § 706 (2006) (Administrative Procedure Act provision setting forth the rules for judicial review of agency action).

<sup>133</sup> Christina L. Boyd & James F. Spriggs II, *An Examination of Strategic Anticipation of Appellate Court Preferences by Federal District Court Judges*, 29 WASH. U. J.L. & POL’Y 37, 58-62 (2009) (explaining the constraining force exerted by the threat of reversal by a higher court and the way in which this pull depends upon precedent).

<sup>134</sup> *See* Daniel B. Rodriguez, *The Positive Political Dimensions of Regulatory Reform*, 72 WASH. U. L.Q. 1, 98 (1994) (“The judge may also feel constrained by other factors, such as her belief that the intent of the framers of the statute must be implemented, or her belief in precedent.”); Schauer, *supra* note 85, at 596 (describing the pull exerted by precedent).

The essential component in such a system is formal symmetry in appellate review. Consider, for instance, an environmental regulation promulgated by the Environmental Protection Agency. If an industry group views the regulation as overly restrictive, it can bring a challenge in federal court; if an environmental group views the regulation as insufficiently protective, it too can challenge the agency's action.<sup>135</sup> This is not to say that industry and environmental challenges will always arise or succeed with equal frequency. But parties on each side have equal opportunity to challenge the regulation, and each must bear its own costs.<sup>136</sup> Symmetric review thus exerts a constraining force on agency behavior: the further the agency moves *in either direction* from governing appellate law, the likelier its decision will be appealed and reversed.

Yet this condition does not hold for the PTO. The administrative structure of patent law creates an asymmetry in appellate review, one that exists in few other places within the federal bureaucracy.<sup>137</sup> Only PTO denials will ever be appealed. Any applicant who receives a patent will simply depart the system, not to be heard from again until many years later (if ever).

Of course, this asymmetry is not absolute. Improvidently granted patents may eventually wind up in court if their owners file suit against alleged infringers. But this process is far slower and more haphazard. The typical case of patent litigation is decided only 8.6 years after the patent at suit was granted.<sup>138</sup> This figure includes cases that are resolved at both the district and appellate levels, and so it almost certainly understates the age of patents that reach the Federal Circuit.<sup>139</sup> By the time a patent reaches the federal courts on a suit for infringement, the individuals who were involved with the patent's grant—including the PTO Director—will likely have left the office.<sup>140</sup> In addition, the PTO is not a party to these lawsuits, and thus

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<sup>135</sup> See 5 U.S.C. § 706 (2006); *Lujan v. Defenders of Wildlife*, 504 U.S. 555 (1992) (establishing the rules of standing that govern challenges to administrative actions).

<sup>136</sup> See *Alyeska Pipeline Serv. Co. v. Wilderness Soc'y*, 421 U.S. 240, 247 (1975) (describing the "American Rule" in which each party typically bears its own costs).

<sup>137</sup> For a partial list, see *supra* notes 17-21.

<sup>138</sup> John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 *AIPLA Q.J.* 185, 234-40 (1998); see also John R. Allison et al., *Valuable Patents*, 92 *GEO. L.J.* 435, 477 (2004) (providing similar data).

<sup>139</sup> Allison & Lemley, *supra* note 138, at 236.

<sup>140</sup> There have been six PTO Commissioners since 1993, none of whom has held the job for more than five years. See *Under Secretary of Commerce for Intellectual Property*, WIKIPEDIA, [available at http://en.wikipedia.org/wiki/Under\\_Secretary\\_of\\_Commerce\\_for\\_Intellectual\\_Property](http://en.wikipedia.org/wiki/Under_Secretary_of_Commerce_for_Intellectual_Property). (last visited May 7, 2011 6:45 AM). Generally speaking, very few government employees remain in their jobs longer than eight years. However, precise information regarding lower-level employees at the PTO is difficult to acquire. See Mark Lemley & Bhaven Sampat,

does not have to expend resources in litigation. It also cannot be declared the “losing party” in formal terms. The prospect of having a patent declared invalid in the course of infringement litigation is not insignificant for the PTO. But it is far less salient than the threat of direct appeals from the agency’s patenting decisions.

How then, is the PTO likely to behave? If the Patent Office simply attempted to match the Federal Circuit’s cutpoint—tried to follow the law, that is—it would undoubtedly err in some cases. These errors would produce both false negatives and false positives: the PTO would grant some patents that the Federal Circuit would not hold valid, and it would deny some patents that the Federal Circuit believes should be granted. False positives are not particularly costly to the Patent Office; in those cases, the patentee is simply granted a questionable patent, and the PTO’s labors end. But false negatives give rise to appeals and likely reversals by the Federal Circuit, at significant expense to the PTO.<sup>141</sup> This problem is exacerbated by the fact that the Federal Circuit grants minimal (if any) deference to PTO denials of patent applications.<sup>142</sup>

Accordingly, one would expect the self-interested administrators of the Patent Office to minimize the number of appeals and reversals wherever possible. The PTO could avoid review and reversal simply by approving every patent—or at least every patent that the Federal Circuit might plausibly grant. Yet the Patent Office does face some constraints: if it were to grant literally every patent, or even every vaguely plausible patent, it would face harsh criticism or sanction from Congress, the President, and the patenting community.<sup>143</sup>

The PTO is thus forced to deny some patents, but it will err on the side of approving every application that the Federal Circuit is at all likely to grant. In other words, the Patent Office will treat the Federal Circuit’s

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*Examiner Characteristics and the Patent Office Outcomes* 122 (2009) (unpublished manuscript), available at <http://ssrn.com/abstract=1329091> (“A first problem is data: we lack direct information about whether examiners are tenured or untenured.”).

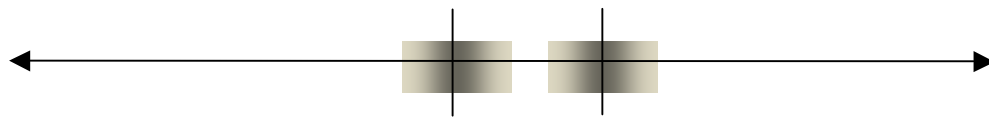
<sup>141</sup> See *supra* Subsection II.D.3.

<sup>142</sup> Arti K. Rai, *Allocating Power Over Fact-Finding in the Patent System*, 19 Berkeley Tech. L.J. 907, 913 (2004) (“[O]ne key problem has been the Federal Circuit’s failure to recognize that the USPTO can, and should, be allowed to insert its knowledge of the art into the patent examination process . . . .”); Arti Rai, *Addressing the Patent Gold Rush: The Role of Deference to PTO Patent Denials*, 2 Wash. U. J. L. & Pol’y 199, 206 n. 20, 213, 220 (2000) (listing cases in which the Federal Circuit has overturned a PTO patent denial without even purporting to afford it deference). This is despite the fact that the Supreme Court has held that the Federal Circuit should overturn PTO findings only if they are “arbitrary, capricious, an abuse of discretion or . . . unsupported by substantial evidence.” *Dickinson v. Zurko*, 527 U.S. 150, 152 (1999).

<sup>143</sup> The PTO is already bumping up against this constraint. See *supra* note **Error! Bookmark not defined.**25 and sources cited therein.

cutpoint as more of a floor than an optimal target. So long as the PTO is at least as lenient as the Federal Circuit, it has little reason to fear reversal. And the more lenient the PTO is (subject to constraints from Congress or the patenting community), the less likely it is to be reversed. The PTO loses little by this strategy. Although improperly granted patents can impose severe costs on other private parties (or the economy at large),<sup>144</sup> the individuals who govern the PTO do not internalize these costs.<sup>145</sup> The result is that the PTO will set its cutpoint far enough to the right of the Federal Circuit's to ensure that it will not errantly *deny* a patent application that the Federal Circuit will later errantly *grant*. In addition, by minimizing the chance of being overturned by the Federal Circuit, the PTO will hope to minimize the number of inventors who even bother to appeal. Figure 6 represents this strategy graphically, with the areas of potential error again shaded:

Figure 6: The Federal Circuit and PTO in Combination



The Federal Circuit's cutpoint is public information, though it may be costly to discover—inventors can simply read the Federal Circuit's published opinions. The PTO's cutpoint is also public information, though it may be even costlier to discover.<sup>146</sup> Inventors may understand that the PTO will be more permissive than the Federal Circuit, but they cannot know by how much. They will also be uncertain of the PTO and Federal Circuit's rates of error.

<sup>144</sup> See Heller & Eisenberg, *supra* note 26; Leslie, *supra* note Error! Bookmark not defined. Error! Bookmark not defined.32.

<sup>145</sup> PTO administrators might be forced to internalize these costs if private parties complained about excessive patenting to political leaders, who then took action or asserted pressure against the Patent Office. However, as noted above, private interests are arrayed roughly evenly in favor of and against broader patent rights. See Long, *supra* note 112, at 15. More to the point, in many industries a particular firm might both own *and* be accused of violating patents that would be invalid under a strict interpretation of Federal Circuit precedent. There is thus no natural constituency positioned to oppose excessive patent grants by the PTO.

<sup>146</sup> The BPAI decides several thousand appeals per year. See BPAI Receipts and Dispositions by Technology Center, <http://www.uspto.gov/web/offices/dcom/bpai/docs/receipts/>.

In anticipation of a lenient PTO, inventors have strong incentives to file even dubious patent applications.<sup>147</sup> Inventors will get two bites at the apple: the PTO might grant a patent that exceeds the Federal Circuit's cutpoint; and even if the PTO does not grant the patent, a favorable panel of Federal Circuit judges might do so. Consequently, inventors will file applications for patentable inventions in large numbers, and will file substantial quantities of applications on unpatentable inventions as well.<sup>148</sup>

The PTO will thus produce true positives (patents it should grant and does), false positives (patents it should not grant but does, out of an abundance of caution), and true negatives. This third category is made up of patents that exceed the Federal Circuit's cutpoint and may or may not exceed the PTO's cutpoint as well, and that the PTO denies, either as a matter of random error or because they are too outlandish even for that agency. However, the PTO will generate very few false negatives—patents that the Federal Circuit would normally approve, but that the PTO denies. It is precisely to avoid false negatives—and the likelihood of appeal and reversal—that the PTO sets its cutpoint to the right of the Federal Circuit's. Consistent with this prediction, the Federal Circuit has reversed the PTO in only 11.8% of cases since 1997, and approximately 15% of cases since it was created in 1982,<sup>149</sup> compared with a general rate of reversal across all civil cases of approximately 20%.<sup>150</sup>

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<sup>147</sup> Of course, they have even stronger incentives to file for valid patents, as there is every expectation that such patents will be granted.

<sup>148</sup> Cf. Gregory Mandel, *The Non-Obvious Problem: How the Indeterminate Nonobviousness Standard Produces Excessive Patent Grants*, 42 U.C. DAVIS L. REV. 57, 105-09 (2008) (arguing that indeterminacy in the nonobviousness standard will cause patentees to file applications on unpatentable inventions, leading to some obvious patents which then further muddy the legal standard and cause the cycle to repeat).

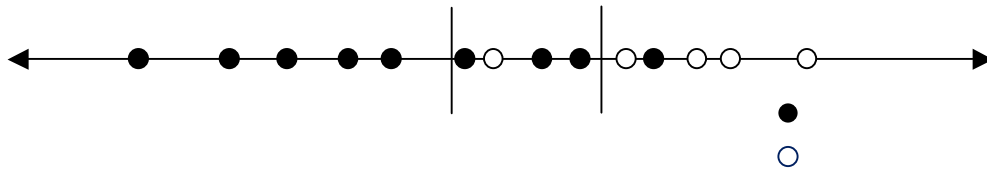
<sup>149</sup> See *supra* note 12. The PTO typically reports that its examiners are highly accurate, based on a random sample of reviewed examiner actions. See PTO, Patent Dashboard, Patent Examination Quality, available at [http://www.uspto.gov/dashboards/patents/main\\_dashxml](http://www.uspto.gov/dashboards/patents/main_dashxml). However, there is no way to know the standard by which the PTO is actually judging accuracy. The suggestion here is that the cutpoint against which these examiners are being measured is actually to the right of the Federal Circuit's cutpoint. The PTO is successful at adhering to its own standards of patentability, which are not necessarily the court's.

<sup>150</sup> Kevin M. Clermont, *Litigation Realities Redux*, 84 NOTRE DAME L. REV. 1919, 1970 (2009); see also Kevin M. Clermont & Theodore Eisenberg, *Plaintiphobia in the Appellate Courts: Civil Rights Really Do Differ from Negotiable Instruments*, 2002 U. ILL. L. REV. 947, 968-971 (2002); Kevin M. Clermont & Theodore Eisenberg, *Appeal from Jury or Judge Trial: Defendants' Advantage*, 3 AM. L. & ECON. REV. 125, 130-134 (2001).

#### 4. Granted Patents and Expansionary Doctrine

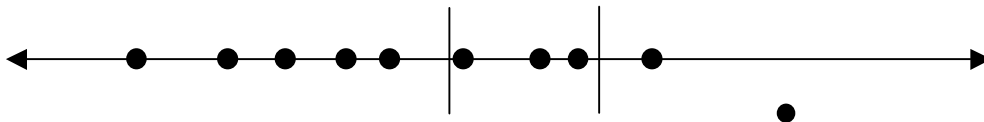
Consider now the results of the institutional interaction between the PTO and the Federal Circuit. Figure 7 (below) is a schematic representation of how the PTO will dispose of the variety of patent applications presented to it. The dots arrayed horizontally along the patentability spectrum represent patent applications. The further left the dot, the more obviously patentable it is; the further right, the more obviously unpatentable it is. Black dots represent hypothetical PTO patent grants; white dots represent hypothetical patent denials. As the preceding section explained, the PTO will grant nearly all applications that fall to the left of its cutpoint and deny nearly all applications that fall to the right of its cutpoint.<sup>151</sup> From time to time, random errors and heterogeneity among patent examiners will cause the PTO to grant a patent to the right of its cutpoint or deny a patent to the left of its cutpoint. (In Figure 7, the PTO has granted one application to the right of its cutpoint and denied one application to the left of its cutpoint.) However, because the PTO will deliberately set its cutpoint to the right of the Federal Circuit's cutpoint, it will not deny any applications that the Federal Circuit would typically grant.<sup>152</sup>

Figure 7: The PTO's Treatment of Patent Applications



As an initial matter, it is important to note that the PTO's actions will generate a substantial number of invalid patents, just as commentators have observed.<sup>153</sup> Consider just the granted patents from Figure 7.

Figure 8: Granted Patents



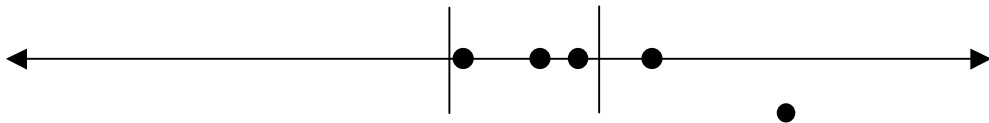
<sup>151</sup> See *supra* Subsection II.D.3.

<sup>152</sup> See *supra* Subsection II.D.3.

<sup>153</sup> See sources cited *supra* note 26.

Of these granted patents, some number of them will fall to the right of the Federal Circuit’s cutpoint, simply by virtue of the fact that the PTO has set its own cutpoint to the right of the Federal Circuit’s. Figure 9 displays just these patents.

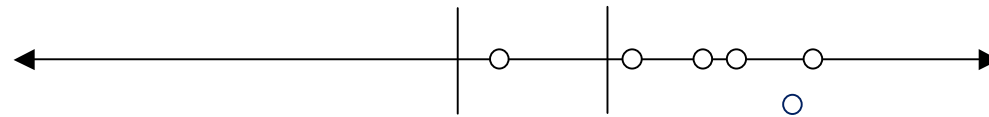
Figure 9: Improperly Granted Patents



These are the false negatives the PTO will grant in an effort to avoid reversal—the invalid patents that scholars have decried as a cost to the system and a drag upon innovation.<sup>154</sup>

What effect will the PTO’s strategy have upon the shape of patent law? As the preceding section explained, when the PTO grants a patent there can be no appeal to the Federal Circuit, and thus no opportunity for the Federal Circuit to shift the law. Only patent denials can lead to substantive legal changes.<sup>155</sup> Figure 10 displays the patent applications that have been denied by the PTO.

Figure 10: Denied Patents



<sup>154</sup> See sources cited *supra* notes 26 & 34-39 (describing the proliferation of invalid patents and their costs).

<sup>155</sup> Again, to be specific, there are two mechanisms by which the question of patent validity could present itself to the Federal Circuit. True and false negatives may be appealed directly to the court; true and false positives might find their way before the court if they are involved in suits for infringement. This second mode is discussed further below. See *infra* Subsection II.D.5.

16-Aug-11]

Federal  
Circuit grant  
*PATENT INFLATION*  
PTO denials

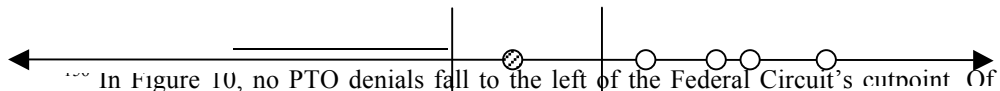
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Importantly, the vast majority of these patent denials will fall to the right of the Federal Circuit’s cutpoint. (That is, they will be true negatives—applications that the PTO should deny and does.) This is precisely the PTO’s intent in setting its own cutpoint to the right of the Federal Circuit’s: to minimize the number of applications it denies that the Federal Circuit might later grant. There is thus a pronounced asymmetry in patent appeals: nearly every case that the Federal Circuit hears on direct appeal from the PTO will concern a boundary-pushing patent, one that it would ordinarily deny under governing law.<sup>156</sup>

In some cases, a disappointed patent applicant will not bother to appeal to the Federal Circuit, figuring that it is unlikely to convince the circuit to grant the patent. And in many cases when the applicant does appeal, the Federal Circuit will affirm the PTO and deny the patent. After all, nearly all of these PTO denials will involve inventions that the Federal Circuit does not believe are patentable. Recall that when the Federal Circuit affirms the PTO’s refusal to issue a patent that is unpatentable under current law, it will most likely leave the law unchanged. Because the PTO’s denial was in accordance with governing law, the Federal Circuit can simply affirm based on that existing precedent.<sup>157</sup>

However, every once in a while, as a matter of random chance or because of a favorable panel draw, the Federal Circuit will grant one of these patents.<sup>158</sup> In Figure 11, this decision by the Federal Circuit is represented by a striped dot.

Figure 11: The Occasional Federal Circuit Patent Grant



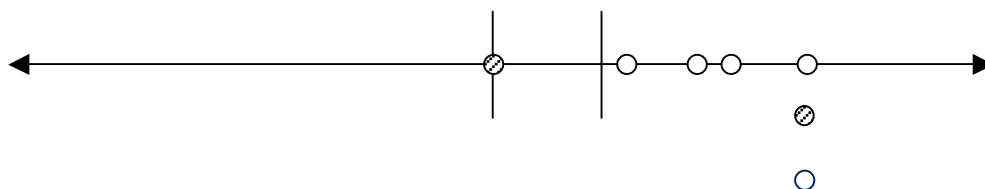
Of course, this is merely a graphical representation, and occasionally the PTO will grant a patent to the left of the circuit’s cutpoint. The point is simply that PTO denials are heavily biased to the right of the Federal Circuit’s cutpoint. Even if a few patents are granted to the left of the cutpoint, they will be well outweighed by the many denials on the other side.

<sup>157</sup> See *supra* notes 84-85 and accompanying text.

<sup>158</sup> See *infra* Section II.C. There is ample evidence that judges of the Federal Circuit are highly heterogeneous when it comes issues of patent validity. For instance, John Allison and Mark Lemley found that individual Federal Circuit judges’ rates of voting in favor of validity range from 38.7% (Judge Mayer) to 75.6% (Judge Newman) across substantial numbers of votes. John R. Allison & Mark A. Lemley, *How Federal Circuit Judges Vote in Patent Validity Cases*, 10 Fed. Cir. B.J. 435, 447 (2001). In other words, some judges may be as much as twice as likely to vote to hold a patent valid than other judges—and that is despite the moderating effects of serving on a panel with two other judges an effect that usually tempers judicial extremes. See, e.g., Thomas J. Miles & Cass R. Sunstein, *The New Legal Realism*, 75 U. Chi. L. Rev. 831, 835-36 (2008) (discussing “panel effects” in judging).

When the Federal Circuit overturns a PTO denial in this fashion, it creates a new precedent—one that expands the boundaries of patentability. The Federal Circuit’s cutpoint will shift rightward because of the force of this new precedent.<sup>159</sup> Figure 12 displays this effect:

Figure 12: Patent Inflation



The result is patent inflation: outward growth in the boundaries of what inventions may be patented. Even if each new precedent does not stretch the boundaries of patentability to their fullest extent (as indicated in Figure 12), it will exert some additional force. When the next case arises, Federal Circuit judges will be slightly more likely to rule in favor of patentability. And because the PTO will continue to move its own cutpoint to the right in order to provide itself with the necessary margin for error to avoid reversals, the cycle will repeat. Each time the Federal Circuit moves its cutpoint slightly, the PTO will do the same. The agency will continue to send primarily boundary-stretching cases to the circuit. And the boundaries of patentability will continue to expand outward—just as they have since the advent of the Federal Circuit.<sup>160</sup>

As I explain above, this analysis assumes that any given judge’s decision in a patent case is a function of her own personal preferences (over

<sup>159</sup> This should occur regardless of whether a given legal requirement for patentability involves “continuous” or “lumpy” variables—that is, whether there can be small incremental changes or only slightly larger, quantized ones. Cf. Lee Ann Fennell, *Revealing Options*, 118 Harv. L. Rev. 1399, 1420 n. 88 (2005) (discussing the difference between perfectly divisible and lumpy quantities). Even if a requirement is lumpy, movements between those nodes will be possible so long as the “lumps” are not spaced too far apart—and Part III provides evidence that they are not in at least one domain. I thank Lee Fennell for raising this point.

<sup>160</sup> See *supra* note 27 and accompanying text.

the substantive content of the law, her relations with her colleagues, etc.) and existing precedent. If new inflationary precedents affect a judge's own preferences over the law—for instance, by changing her view as to what “normal” patent law should look like—then inflation could in theory continue unabated. Each new inflationary precedent would alter both the existing state of the law and the judges' personal preferences. However, it is not necessary to the argument that new precedents affect judges' personal preferences. Even if they do not, inflation will still occur as a result of these new precedents and their influence on judicial decisionmaking.

However, if new precedents do not change judges' personal views, those views will act as a brake on limitless inflation. As the law expands, it will eventually reach a point at which no judge is willing to go further—no judge would favor granting a patent more outlandish than the last one granted by the Federal Circuit. To be precise, this point will come when the law matches the cutpoint of the *second-most* permissive, patent-friendly judge on the court. Once that judge is willing to go no further, there is no second judge with whom the *most* permissive judge on the court can form a majority. At this point the law could only expand further through judicial error, not through a favorable panel draw. Put another way, most legal analyses assume that the law of a circuit court will be defined by its median member.<sup>161</sup> This analysis shows that over time, patent law could come to be defined instead by the second-most outlying member of the court.<sup>162</sup>

Accordingly, the boundaries of patentability will not necessarily inflate indefinitely. There may come a point at which the next patent is simply a bridge too far for all (or all but one) of the judges of the Federal Circuit. And considering that patent law has continued to expand over the past three decades, if that point exists it is likely beyond the status quo.

## 5. Patent Inflation and Suits for Infringement

At the same time, the PTO will also generate true and false *positives*—the many patents (valid or not) that it grants. These patents could

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<sup>161</sup> See *supra* note 76 and accompanying text.

<sup>162</sup> It is worth noting that the composition of the court will change over time, and entering members may hold more (or less) permissive views than departing ones. For instance, members of the patent bar who were educated in the 1990s may have more expansive visions of the law than members who were educated in the 1970s, simply because the law had become more expansive by that point and they had been taught that such an expansive version of the law was appropriate. If this were the case, and older judges with more restrictive views were continually replaced by younger judges with more expansive views, the law could continue to inflate over time because of the court's changing membership. However, this is only speculative; it is difficult to determine whether these effects are occurring.

eventually arrive before the Federal Circuit in the course of a suit for infringement. False positives present additional opportunities for the Federal Circuit to expand the scope of what is patentable; true positives provide chances to contract it. At first glance, it might appear that the latter of these effects should dominate. There will be many more true positives than false positives, simply because such a large percentage of patent applications submitted to the PTO will be patentable under existing law. Accordingly, one might imagine that infringement lawsuits will mainly afford the Federal Circuit opportunities to contract patent scope, and that this will balance the effect of the true negatives appealed directly to the court.

Yet this is not the case. Consider again the types of patents that the PTO will grant, depicted in Figure 8. Not every patent involved in an infringement suit is equally likely to have its validity adjudicated by the Federal Circuit. The reason is that parties are more likely to settle obvious cases with certain outcomes, leaving only close cases for the circuit to decide.<sup>163</sup> In any type of civil litigation, settlement is driven by certainty: the more that the parties agree on the probable outcome at trial, the more likely they are to settle.<sup>164</sup> The cases that will reach trial—not to mention appeal—are those in which the outcome is uncertain.<sup>165</sup> If a patent is obviously valid or invalid—far to the left or right of the Federal Circuit’s cutpoint—the parties are very unlikely to disagree about the likely outcome at trial. Without disagreement, there is no reason to expend the resources necessary to have the court adjudicate it. Accordingly, the patents that reach the appellate court in infringement suits should be clustered around the Federal Circuit’s cutpoint—sometimes slightly to the left, sometimes slightly to the right, but always close enough to the cutpoint that the outcome of the case is uncertain.<sup>166</sup> Indeed, consistent with this expectation,

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<sup>163</sup> George L. Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. LEGAL STUD. 1, 4–5 (1984).

<sup>164</sup> See William M. Landes, *An Economic Analysis of the Courts*, 14 J.L. & ECON. 61, 99 (1971); Richard A. Posner, *An Economic Approach to Legal Procedure and Judicial Administration*, 2 J. LEGAL STUD. 399, 417-20 (1973). The reason is the transaction costs involved in litigation. If the parties can agree regarding what a judge and jury will do, there is no reason for them to incur the transaction costs of actually undergoing a trial just to reach that outcome. See Landes, *supra*, at 99; Posner, *supra*, at 417-20; see also John Bronsteen, Christopher Buccafusco & Jonathan S. Masur, *Hedonic Adaptation and the Settlement of Civil Lawsuits*, 108 COLUM. L. REV. 1516, 1520-22 (2008) (explaining this point).

<sup>165</sup> See John P. Gould, *The Economics of Legal Conflicts*, 2 J. LEGAL STUD. 279 (1973) (seeking to show why a larger percentage of lawsuits are settled out of court than in court and providing a hypothesis about what causes cases to go to trial).

<sup>166</sup> Cf. *id.* at 285 (describing the types of cases that should reach trial under the author’s model).

across the district and appellate courts, “[a]pproximately 54% of all litigated patents are held valid.”<sup>167</sup>

In fact, the selection effects that drive litigated cases towards the Federal Circuit’s cutpoint should be especially strong in the context of appellate cases—those cases that hold the potential to alter the law. The reason is that the parties have opportunities to settle the case both before and after the district court renders a decision. Cases that reach the Federal Circuit will have run two selection gauntlets, each of which weeds out cases at the extremes. The only cases that remain will be close ones.<sup>168</sup>

The patents that are eventually litigated should thus cluster in approximately equal numbers on either side of the Federal Circuit’s cutpoint. The reasons are twofold. First, the level of uncertainty in cases to the right and left of the cutpoint should be relatively equal.<sup>169</sup> And second, the number of patents granted by the PTO that are just to the left and right of the cutpoint should be approximately equal. This is because the PTO will endeavor to grant every application that is near the Federal Circuit’s cutpoint, even if slightly to the right of it.<sup>170</sup> Those patents are depicted in Figure 13 below.

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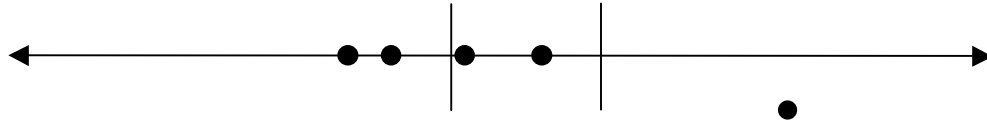
<sup>167</sup> Allison & Lemley, *supra* note 138, at 251. Patent law has never satisfied the strong form of the Priest-Klein hypothesis, which predicts that plaintiffs and defendants will each win approximately 50% of their lawsuits. Instead, patent plaintiffs win barely a quarter of the cases they file. Mark Lemley, *Fractioning in Patent Law*, MICH. L. REV., at 3 (forthcoming 2011, on file with author). This is a significant finding, but for the argument here the only important question is how the patents that reach the Federal Circuit in infringement lawsuits are distributed with respect to that circuit’s cutpoint. The 54% figure noted in the text suggests that those patents are approximately equivalently distributed around the circuit’s cutpoint, just as the theory presented above would predict. The fact that patent plaintiffs have such a low win rate overall is not to the contrary.

<sup>168</sup> Consistent with this prediction, Allison and Lemley have found that Federal Circuit judges vote in favor of a patent’s validity approximately 54% of the time. Allison & Lemley, *supra* note 158, at 447. This is no closer to 50% than the number that Allison and Lemley report for all district and appellate cases, and thus it may be that the appellate process is not winnowing the cases any further. Regardless, the 54% figure indicates that cases are quite evenly divided around the Federal Circuit’s cutpoint.

<sup>169</sup> *Cf.* Priest & Klein, *supra* note 163, at 4–5 (proposing that this symmetry in uncertainty will lead to symmetric results at trial, with plaintiffs and defendants each winning approximately 50% of cases). If anything, cases to the right of the cutpoint—involving patents that push the frontiers of the law—should be more uncertain.

<sup>170</sup> *See supra* Subsection I.A.1. It is of course possible that relatively well-established patentability questions will reach the Federal Circuit as companions to less certain infringement issues within a single lawsuit. Yet these will not likely provide a source of much movement in the law. Lawyers for the defendant will be unlikely to push the issue of validity, and courts will most commonly opt to decide the case on the easier (infringement) grounds. *Cf.* Adam B. Cox & Thomas J. Miles, *Judicial Ideology and the Transformation of Voting Rights Jurisprudence*, 75 U. CHI. L. REV. 1493, 1509 (2008) (demonstrating that judges will decide cases on easier grounds that involve less contravention of precedent and

Figure 13: Litigated Patents



As a result, patent law will be subject to an overall inflationary pressure. Cases that reach the Federal Circuit via suits for infringement will provide the circuit with approximately symmetric opportunities to expand and contract the boundaries of patentability.<sup>171</sup> Cases that reach the Federal Circuit on direct appeal from the PTO will predominantly provide opportunities to expand the boundaries of patentability. A symmetric effect in one type of case coupled with an asymmetric effect in another will lead to an overall asymmetry in the development of the law—here, in an inflationary direction.

Importantly, the foregoing analysis gives rise to a set of testable predictions regarding changes in the law. When the Federal Circuit has

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possibility of reversal whenever such grounds are available to them).

<sup>171</sup> In fact, there might even be a slight bias toward expansion within infringement suits. When the PTO grants a patent, it is presumed valid and will only be invalidated by a court upon a showing of clear and convincing evidence. *Microsoft Corp. v. i4i Ltd. Partnership*, 131 S. Ct. 2238 (2011) *Spanson, Inc. v. International Trade Com’n*, 629 F.3d 1331, 1344 (Fed. Cir. 2010). *But see Microsoft Corp. v. i4i Ltd. Partnership*, 131 S. Ct. 647 (2010) (granting certiorari to decide whether the “clear and convincing evidence” standard should be maintained). Thus, all else being equal, the courts are more likely to affirm false positive patents than they are to overturn false negatives. Because affirmations of false positives lead to expansion in the law, the overall trend from these cases might be slightly inflationary.

On the other hand, it is conceivable that courts would not treat affirmances and reversals of the PTO in symmetric fashion. Perhaps the Federal Circuit is more likely to break new ground when it reverses the PTO than when it affirms it, simply due to the revisionary nature of reversals. If this were true, reversals of false positives (in the course of suits for infringement) might have a greater effect on the law than affirmances of false negatives (on direct appeal from the PTO). This is of course possible, but it seems unlikely. When the Federal Circuit creates law, it is creating that law with reference to existing precedent. The extent to which the court will rely upon or argue against that existing precedent depends upon how far its new decision deviates from that precedent, not whether the decision is styled as an affirmance or a reversal. After all, any court of appeals is concerned with how its latest decisions interact with its existing jurisprudence, not how they interact with decisions by an inferior body—much less a non-judicial agency. Accordingly, we should expect that the Federal Circuit will treat affirmances and reversals symmetrically, subject only to the caveat in the preceding paragraph regarding the presumption of validity.

occasion to consider a legal doctrine only (or primarily) in the context of a suit for infringement—for instance, the doctrine of equivalents—there is no reason to believe that the law will move in a particular direction; infringement suits offer symmetric opportunities for legal change. But when a legal question frequently reaches the Federal Circuit on direct appeal from the PTO—as do issues related to patentability such as obviousness, patentable subject matter, and the written description requirement—there will be a net inflationary pressure on the frontiers of the law. When it comes to the doctrines governing patentability, the Federal Circuit will be presented with more and better opportunities to enlarge the boundaries than to narrow them. The result will be an overall gravity in the direction of more permissive patenting rules.<sup>172</sup>

While a full empirical examination is beyond the scope of this Article, there is at least suggestive evidence to support these predictions. As noted above, scholars have observed a Federal Circuit-led expansion in the scope of patentability over the past several decades.<sup>173</sup> Conversely, there is much less evidence of patent-friendly trends in doctrines related exclusively to infringement.<sup>174</sup>

#### E. A Strategic Federal Circuit

Throughout the preceding discussion, patent applicants, officials at the PTO, and Federal Circuit judges have all behaved equivalently strategically. All three groups of actors care about the outcomes in particular cases: inventors make strategic decisions regarding which applications to file; the PTO makes strategic decisions regarding which patents to grant in order to avoid review and reversal; and Federal Circuit judges vote based on their cutpoints.

Of course, Federal Circuit could conceivably behave *even more* strategically. Federal Circuit judges might recognize the theory described here and understand that natural mechanisms of selection and appeal tend to expand the boundaries of patentability. In response, they might take a number of steps. They might make special efforts to create new, more constraining precedent in the course of rejecting an invention that is

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<sup>172</sup> This is of course not to say that the law will always move *exclusively* in the direction of more lenient standards of patentability. The effect is an overall one—in the net, the law will expand the boundaries outward. Along the way, however, it will presumably move in fits and starts.

<sup>173</sup> See sources cited *supra* note 27.

<sup>174</sup> See, e.g., *In re Seagate*, 497 F.3d 1360 (Fed. Cir. 2007) (making it more difficult for patent holders to collect heightened damages for willful infringement); Lee Petherbridge, *On the Decline of the Doctrine of Equivalents*, 31 CARDOZO L. REV. 1371 (2010) (observing a scaling back in the usefulness of suits for infringement by equivalents).

unpatentable under existing law, contrary to typical judicial practice.<sup>175</sup> They might also vote strategically against self-interest in certain cases. For instance, a judge could vote against granting a patent that she would prefer to see issued simply in order to forestall the law's outward momentum, figuring that without such action the law would eventually expand beyond her cutpoint.

It is possible that Federal Circuit judges are engaging in this type of strategic behavior, but it is quite unlikely. The judges would have to be aware of the expansion of patent law and understand that it is a natural consequence of the asymmetry in PTO appeals, rather than simply a reflection of the median circuit judge's preferences. (If it were the latter, this type of strategic action would be unproductive.) This would require a focus on issues with which circuit judges do not typically concern themselves, not to mention a surprising level of tactical shrewdness from a circuit that has not previously displayed any such inclination.<sup>176</sup>

Perhaps this issue is best understood from the opposite perspective. It is undeniable that the Federal Circuit has significantly expanded the boundaries of what is patentable over the past two decades.<sup>177</sup> Scholars have posited various reasons for this trend, including pro-patent ideology and the possibility that the Circuit has been captured by pro-patent interests.<sup>178</sup> Although these accounts may be correct, this Article has suggested that the expansion in patentability can be explained without any of them. It may be wholly or in part a natural consequence of the institutional relationship between the PTO and Federal Circuit. If judges of the Federal Circuit are acting strategically in order to frustrate this natural momentum, then the expansion of patentability over the past two decades must be due to some other factor, such as ideology or capture. This would mean that Federal Circuit judges were acting strategically in order to frustrate an expansion of the law that they themselves favored. Such a peculiar confluence of motives and actions seems highly unlikely.

In the end, it is impossible to know with certainty precisely how Federal Circuit judges will behave. There may be significant heterogeneity within the circuit as to the level of strategic behavior, just as there is significant heterogeneity on substantive patent issues. This highlights the importance of the testable prediction (described in section D) regarding inflation in some areas of law but not others. If further research validates

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<sup>175</sup> See Schauer, *supra* note 85, at 589.

<sup>176</sup> Cf. *A Conversation With Chief Judge Paul Michel*, THE IP COLLOQUIUM (Jan. 2009), available at <http://www.ipcolloquium.com/Programs/4.html>.

<sup>177</sup> See *supra* note 27 and accompanying text.

<sup>178</sup> See *supra* notes 32-33 and sources cited therein.

that prediction, then the judges of the Federal Circuit have not adopted the overly strategic posture described here.

#### *F. Outside Actors and Patent Remedies*

Despite the Federal Circuit and PTO's predominant role in shaping patent law, their interaction is not a closed system.<sup>179</sup> Congress, the Supreme Court, and even other federal agencies can also exert significant influence, though they intervene only rarely. More importantly, these outside actors not subject to the pressures and selection effects described above, which are endemic only to the relationship between the PTO and the Federal Circuit. Accordingly, Congress, the Supreme Court, and other federal agencies can in some circumstances act as checks on the PTO and Federal Circuit's inflationary tendencies.

For its part, Congress has largely been absent from this field; the last major substantive patent legislation was passed in 1952.<sup>180</sup> For many years after the creation of the Federal Circuit, the Supreme Court was similarly reticent and granted certiorari in very few patent cases.<sup>181</sup> This might have been due to the technical complexity of patent cases, the Court's belief that the Federal Circuit possessed greater patent expertise, or even the Court's satisfaction with the shape and direction of the law. Lately, however, the trend has relaxed, and the Supreme Court has decided nine patent cases since 2005.<sup>182</sup> Commentators have suggested that the Court has lately become dissatisfied with the Federal Circuit's stewardship of patent law and is acting to rein in the circuit's expansionary tendencies.<sup>183</sup>

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<sup>179</sup> I thank Peter Menell for suggesting this conceptual approach.

<sup>180</sup> See Long, *supra* note 32, at 1968.

<sup>181</sup> See Mark D. Janis, *Patent Law in the Age of the Invisible Supreme Court*, 2001 U. ILL. L. REV. 387, 387-89 (2001) (noting the Supreme Court's withdrawal from patent law since the creation of the Federal Circuit).

<sup>182</sup> See *Microsoft Corp. v. i4i Ltd. Partnership*, 131 S.Ct. 2238 (2011); *Global-Tech Appliances, Inc. v. SEB S.A., Bd. of Trustees of Leland Stanford Jr. Univ. v. Roche*, 131 S. Ct. 2188 (2011); *Bilski v. Kappos*, 130 S. Ct. 3218 (2010); *Quanta Computer, Inc. v. LG Elecs., Inc.*, 553 U.S. 617 (2008); *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007); *Microsoft Corp. v. AT&T Corp.* 550 U.S. 437 (2007); *MedImmune, Inc. v. Genentech, Inc.*, 549 U.S. 118 (2007); *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006); *Merck KGaA v. Integra Lifesciences I, Ltd.*, 545 U.S. 193 (2005); see also John M. Golden, *The Supreme Court as "Prime Percolator": A Prescription for Appellate Review of Questions in Patent Law*, 56 UCLA L. REV. 657, 658 (2009) ("[T]he Supreme Court has, in the past six years, asserted its dominion over patent law with frequency and force.").

<sup>183</sup> See, e.g., Peter Lee, *Patent Law and the Two Cultures*, 120 YALE L.J. 2, 44 (2010) (noting that "[f]or most observers, the Court's aggressiveness reflects an attempt to rein in patent rights that had become too expansive under Federal Circuit jurisprudence").

This could be a welcome corrective. But it is not complete. Even an aggressive Supreme Court cannot staunch the flow of improperly granted patents from the PTO. The PTO will still possess an incentive to grant every application that the Federal Circuit might conceivably allow, irrespective of where the courts set the legal cutpoint. Without external adjustment of the PTO's incentives, the PTO will continue to err in the direction of granting more patents than it should. It is also difficult to rely on continued activism on the part of the Supreme Court, given the recent nature of that trend.

Finally, either the president or other executive-branch agencies might intervene and push against the PTO's permissive tendencies.<sup>184</sup> There is some evidence that this has already taken place in limited fashion: the National Institutes of Health, fearful of an expansion in patenting, were able to compel the PTO to adopt stricter utility guidelines for biotechnology.<sup>185</sup> (In fact, this may be the only area of law in which the PTO takes a more restrictive view than the Federal Circuit.) There are also indications that actions by the Department of Justice and Federal Trade Commission may have exerted influence on the patent system.<sup>186</sup> These interventions have very sporadic, however, and highly confined. Nor is there any evidence that the president has ever intervened directly. Accordingly, while a useful corrective, these types of outside influence are not a full solution.

How, then, can the problems of bad patents and inflationary law best be remedied? One option would be for Congress or the President to recalibrate the PTO's incentives by providing additional funding for the agency to litigate appeals, removing the stigma of reversal, or evaluating the agency based on the quality of the patents it issues without regard to which patents are eventually litigated.<sup>187</sup> Yet these reforms might be politically difficult to implement, in part because they differ so dramatically from the panoply of proposals that have already been suggested and debated.<sup>188</sup>

Perhaps the most promising solution is a familiar one: a workable system of inter partes review that allowed outside parties to challenge substantial numbers of patents before they are issued.<sup>189</sup> However, a purely

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<sup>184</sup> I thank Arti Rai for suggesting this possibility.

<sup>185</sup> See Rai, *Engaging Facts and Policy*, *supra* note 51, at 1131-32

<sup>186</sup> See, e.g., Edward Lee, Introduction: The Future of Patent Reform, 4 I/S: J.L. & Pol'y for Info. Soc'y 1, 2 (2008) (stating that "[a]fter the [FTC] report, both Congress and the United States Supreme Court suddenly turned their attention to patent law reform.>").

<sup>187</sup> For instance, Congress could convene an advisory panel of patent experts to evaluate the quality of a random sample of issued patents.

<sup>188</sup> Another more radical solution would be to grant the PTO substantive rulemaking authority. See Jonathan S. Masur, *Regulating Patents*, 2010 SUP. CT. REV. (forthcoming 2011).

<sup>189</sup> See, e.g., Farrell & Merges, *supra* note 46, at 964948 (proposing a system of post-

administrative challenge system located entirely within the PTO—the reform typically suggested—would not be sufficient. Such a system would undoubtedly provide the PTO with better information regarding the validity of a putative patent and enable it to make a more accurate decision, but it would not cure the agency’s fundamental incentive to grant, rather than deny, borderline patents. Rather, the crucial ingredient is an opportunity for challengers who lose before the PTO to appeal to the Federal Circuit—in other words, a mechanism for *symmetric* review of PTO decisions. The possibility that aggrieved parties could appeal substantial numbers of both patent denials and patent grants would discipline the PTO. With little to gain from an overly permissive stance, the agency would be forced to evaluate patent applications as much in accordance with governing law as possible. The agency would be more likely to make symmetric errors around its own (and the Federal Circuit’s) cutpoint, and the cases that reached the Federal Circuit would be more equally divided between false negatives and false positives.<sup>190</sup> Accordingly, the Circuit would have approximately as many opportunities to expand the law as to contract it, muting the inflationary effect.

Existing law allows any participant in an inter partes action to appeal to the Federal Circuit.<sup>191</sup> The legislative proposals wending their way through Congress at the time of this writing would not change that.<sup>192</sup> What is necessary, then, is to amend the inter partes procedures such that they will come into wide use.<sup>193</sup> There are undoubtedly a variety of other reforms that would have salutary effects on PTO and Federal Circuit behavior. But if the patent system’s malfunctions are indeed attributable in part to the institutional relationship between the PTO and Federal Circuit, it seems appropriate to deploy an institutional corrective in response.

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grant inter partes review); JAFFE & LERNER, *supra* note **Error! Bookmark not defined.****Error! Bookmark not defined.**5, at 178 (same); Lichtman & Lemley, *supra* note 26, at 63-65 (favoring such a system). The defects of the current system that prevent parties from taking full advantage of it are described in *supra* note 44.

<sup>190</sup> This system would not likely result in perfect symmetry because outside parties might not appeal patent grants in the same numbers that disappointed applicants appealed patent denials. Nonetheless, the numbers of each type of appeal would be much closer than they are under the current administrative arrangement.

<sup>191</sup> 35 U.S.C. § 315 (2006).

<sup>192</sup> See America Invents Act, S. 23, 112th Cong. § 315(e)(1) (2011).

<sup>193</sup> See *supra* note 47 (describing the very low usage rates of inter partes review and suggesting reasons that it is rarely utilized).

### III. THE PATENTING OF SOFTWARE AND BUSINESS METHODS

In order to demonstrate the effects of patent inflation in practice, this Section presents a case study of the development of the rules on patentable subject matter governing software and business method patents, culminating in the Federal Circuit and Supreme Court decisions in *Bilski v. Kappos*.<sup>194</sup> Whether an invention recites patentable subject matter is of course only one of the many hurdles to patentability, but it is the subject perhaps most at the forefront of debates over the scope of patent law, due in large part to the *Bilski* decisions.<sup>195</sup>

The last two decades have seen a rapid expansion in the patenting of intangible processes such as software and business methods. The story of software and business method patents is not entirely clean and straightforward—not surprisingly, given the number of moving parts—but it is possible to draw some distinct conclusions. As *Bilski* demonstrates, both the PTO and the Federal Circuit have played significant roles in this expansion. In particular, the PTO has consistently operated at the vanguard of the law, granting patents that the Federal Circuit has not yet announced it would allow. As a result, the PTO and the Federal Circuit may have unwittingly conspired to inflate the boundaries of patentability, just as the theory described above would predict.

#### A. *Software Patents, Business Methods, and State Street Bank*

As recently as 1981, it was only by a five-to-four vote that the Supreme Court held that an inventor could patent a method for curing rubber.<sup>196</sup> By the mid 1990s, however, the PTO and the Federal Circuit were presiding over a rapid expansion of the boundaries of patentable subject matter, an expansion that encompassed a variety of processes and methods far more intangible than the rubber-curing method.<sup>197</sup> The groundwork for this expansion had been laid with patents on computer

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<sup>194</sup> *Bilski v. Kappos*, 130 S. Ct. 3218 (2010); *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc).

<sup>195</sup> See, e.g., ROBERT PATRICK MERGES & JOHN FITZGERALD DUFFY, PATENT LAW & POLICY: 2009-10 SUPPLEMENT 3.

<sup>196</sup> *Diamond v. Diehr*, 450 U.S. 175 (1981).

<sup>197</sup> ROBERT P. MERGES & JOHN F. DUFFY, PATENT LAW AND POLICY: CASES AND MATERIALS 154 (4th ed. 2007) (describing the “floodgates” of software patents starting in the mid-1990s); Justin M. Lee, *The Board Bites Back: Bilski and the B.P.A.I.*, 24 BERKELEY TECH. L.J. 49, 49 (2009) (describing the “period of considerable expansion in subject-matter eligibility”).

software, which first emerged in the late 1960s<sup>198</sup> and were well-accepted by the mid-1990s.<sup>199</sup> Yet in the early and mid-1990s, neither the Supreme Court nor the Federal Circuit had sanctioned patents on business or financial methods.<sup>200</sup>

The legal uncertainty surrounding business method patents did not chill the PTO. In the early 1990s, without any explicit signal from the court, the PTO began granting patents on a variety of business and financial methods. These patents covered subjects ranging from a system for assessing health care liabilities,<sup>201</sup> to client management software,<sup>202</sup> to a life insurance method,<sup>203</sup> to a retail store checkout process,<sup>204</sup> among many other inventions.<sup>205</sup> The fact that the Federal Circuit had sanctioned software patents should not have provided much impetus, given the number of commentators who believe that software should be patentable and business methods unpatentable.<sup>206</sup> On the contrary, the PTO was simply

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<sup>198</sup> In re Prater and Wei, 415 F.2d 1378 (C.C.P.A. 1968) (adjudicating the validity of software patents for the first time).

<sup>199</sup> See, e.g., In re Beauregard, 53 F.3d 1583 (Fed. Cir. 1995) (allowing software patent); In re Alappat, 33 F.3d 1526, 1544 (Fed. Cir. 1994) (en banc) (same).

<sup>200</sup> Scholars and courts have struggled to define a “business method” (as distinct from any other type of patentable process). Nonetheless, they have managed to coalesce around a general understanding: a business method is a means of doing business and turning a profit that is typically inchoate and unconnected from the production of any tangible good. See, e.g., Keith E. Maskus & Eina Vivian Wong, *Searching for Economic Balance in Business Method Patents*, 8 Wash. U. J.L. & Pol’y 289, 289 (2002) (“Business method patents (BMPs) award exclusive rights to inventors for novel techniques that perform commercial functions not embodied in specific physical inventions.”); John R. Allison & Starling D. Hunter, *On the Feasibility of Improving Patent Quality One Technology at a Time: The Case of Business Methods*, 21 Berkeley Tech. L.J. 729 (2006) (generally using a definition consistent with this idea). Included in this definition are methods for reducing the amount of taxes an individual must pay, methods for creating and selling financial products, methods for structuring transactions between a business and a customer, see, e.g., U.S. Patent 5,960,411 (filed Sept. 12, 1997); see also *Amazon One-Click Patent Slides Through Reexamination*, Patently-O (Mar. 10, 2010) <http://www.patentlyo.com/patent/2010/03/amazon-one-click-patent-slides-through-reexamination.html>, and methods for reducing risk or creating other advantageous business conditions. See, e.g., U.S. Patent App. No. 08/833,892 (filed Apr. 10, 1997), available at [http://www.uspto.gov/go/com/sol/2007-1130bilski\\_joint\\_appendix.pdf](http://www.uspto.gov/go/com/sol/2007-1130bilski_joint_appendix.pdf).

<sup>201</sup> U.S. Patent No. 5,136,502 (Aug. 4, 1992).

<sup>202</sup> U.S. Patent No. 5,001,630 (Mar. 19, 1991).

<sup>203</sup> U.S. Patent No. 5,752,236 (May 12, 1998).

<sup>204</sup> U.S. Patent No. 5,256,863 (Oct. 26, 1993).

<sup>205</sup> See, e.g., U.S. Patent No. 5,253,166 (Oct 12, 1993) (system for sharing airline itineraries with corporate clients); U.S. Patent No. 5,220,500 (June 15, 1993) (program to assist with investment strategies); U.S. Patent No. 5,568,541 (Oct. 22, 1996) (method for identifying and billing phone surcharges).

<sup>206</sup> Michael J. Meurer, *Business Method Patents and Patent Floods*, 8 Wash. U. J.L. & Pol’y 309, 334 (2002); Leo J. Raskind, *The Bad Business of Unlimited Patent Protection*

willing to push the law forward without waiting for an explicit signal of validity from the Federal Circuit—consistent with the theory presented here.

That signal finally came in 1998. In *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*,<sup>207</sup> the Federal Circuit held for the first time that business methods constituted patentable subject matter.<sup>208</sup> The court explained that an inventor could patent “a data processing system . . . for implementing an investment structure,” though it suggested that it was important that the process be tied to a machine of some sort.<sup>209</sup> Signature Financial Group’s patent claimed not only a very general “computer processor means,” but also some specific structures for storing and retrieving data and making various types of calculations.<sup>210</sup> However, the Federal Circuit held the invention patentable without reaching the question of whether the patent must necessarily involve a machine, or what requirements that machine must meet.<sup>211</sup> By any measure, the Signature patent qualified.

### B. *Bilski in the Courts*

*State Street* “opened the floodgates on business method patents.”<sup>212</sup> Over the next decade, the PTO issued patents on a wide variety of business methods with little impedance (or guidance) from the Federal Circuit. A decade later, the Federal Circuit again took up the issue in *In re Bilski*.<sup>213</sup>

Bernard Bilski filed an application on “[a] method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price.”<sup>214</sup> Bilski was effectively attempting to patent the idea of hedging risk: a consumer of a good (for instance, a power company that used coal as fuel) would purchase that commodity at a fixed price from a

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for Methods of Doing Business, 10 Fordham Intell. Prop. Media & Ent. L.J. 61 (1999); Alan L. Durham, “Useful Arts” in the Information Age, 1999 B.Y.U. L.Rev. 1419, 1515 (1999).

<sup>207</sup> 149 F.3d 1368 (1998).

<sup>208</sup> See 35 U.S.C. § 101 (2006) (enumerating the categories of inventions that may be patented).

<sup>209</sup> *Id.* at 1370-71.

<sup>210</sup> *Id.* at 1371-72 (citing U.S. Patent No. 5,193,056 (filed Mar. 11, 1991)).

<sup>211</sup> *Id.*

<sup>212</sup> Douglas L Price, *Assessing the Patentability of Financial Services and Products*, 3 J. HIGH TECH. L. 141, 153 (2004).

<sup>213</sup> 545 F.3d 943 (Fed. Cir. 2008) (en banc). It is worth noting that while *State Street* reached the Federal Circuit in the course of litigation, *Bilski* arrived on appeal from the PTO’s denial of Bilski’s patent.

<sup>214</sup> U.S. Patent App. No. 08/833,892., *supra* note **Error! Bookmark not defined.**186.

producer (namely the coal company).<sup>215</sup> The consumer would be protected against a rise in the price of the commodity; the producer would be protected against a fall in the price.<sup>216</sup> Bilski's application was denied by the PTO, and Bilski appealed to the Federal Circuit.

Importantly, this patent application was an outlandish one even by the standards of business method patents—and not just because people had been hedging risk for centuries.<sup>217</sup> Unlike the patent in *State Street*,<sup>218</sup> Bilski did not attach any sort of machine to his claims.<sup>219</sup> They were merely free-standing money-making ideas, unmoored from any connection to the physical world.<sup>220</sup> It is thus not surprising that Bilski's application, which pushed well beyond the boundaries set by *State Street*, was rejected by the PTO and appealed to the Federal Circuit. It is precisely this type of boundary-pushing application—and not any sort of standard invention—which theory predicts will find its way to the courts.

Bilski's invention was undoubtedly unpatentable on any number of grounds, not least of all the fact that it is obvious in light of centuries of prior practice.<sup>221</sup> But before the Federal Circuit reached that issue,<sup>222</sup> it held that the invention was merely an abstract idea and thus constituted unpatentable subject matter.<sup>223</sup> The court declared that a process can be patented only if: (1) it is “tied to a particular machine or apparatus,” or (2) it transforms a particular “article[] or material[] to a ‘different state or

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<sup>215</sup> *Id.*; see also *Bilski*, 545 F.3d at 949.

<sup>216</sup> *Bilski*, 545 F.3d at 949 (“In essence, the claim is for a method of hedging risk in the field of commodities trading.”).

<sup>217</sup> See, e.g., Mark D. West, *Private Ordering at the World's First Futures Exchange*, 98 MICH. L. REV. 2574 (2000) (describing a Seventeenth Century Japanese futures exchange used by traders to hedge against price fluctuations).

<sup>218</sup> *State Street Bank & Trust Co. v. Signature Fin. Grp., Inc.*, 149 F.3d 1368, 1371 (1998). Bilski's “invention” was also far more tenuous than the sorts of patents that have been approved in cases such as *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999) (upholding a patent on a system for recording telephone calls that involves telephone systems and routing networks).

<sup>219</sup> U.S. Patent App. No. 08/833,892, *supra* note **Error! Bookmark not defined.****Error! Bookmark not defined.**186.

<sup>220</sup> *Id.*

<sup>221</sup> David S. Olson, *Taking the Utilitarian Basis for Patent Law Seriously: The Case for Restricting Patentable Subject Matter*, 82 TEMP. L. REV. 181, 235 n. 242 (2009) (describing Bilski's business method as “obvious”); Dennis Crouch, *Bilski: Full CAFC to Reexamine the Scope of Subject Matter Patentability*, available at <http://www.patentlyo.com/patent/2008/02/bilski-full-caf.html> (“this case looks problematic because of serious obviousness problems”).

<sup>222</sup> *Cf. In re Comiskey*, 499 F.3d 1365 (Fed. Cir. 2007) (holding that the PTO must consider patentable subject matter questions under § 101 before turning to other issues).

<sup>223</sup> *Bilski*, 545 F.3d at 957-58.

thing.”<sup>224</sup> Because *Bilski*’s invention involved neither a machine nor the transformation of any matter, it failed the Federal Circuit’s test.<sup>225</sup>

At first glance it might appear that *Bilski* represented not an expansion in the law, but a retrenchment. Indeed, the Federal Circuit rejected Bernard *Bilski*’s invention as unpatentable. But on its face *Bilski* was no narrower than *State Street*. The *State Street* patent involved specialized machines<sup>226</sup> and would almost certainly have been allowable under any reading of *Bilski*.<sup>227</sup>

More importantly, *Bilski*’s eventual effect on the law—and whether it would eventually turn into an inflationary precedent—depended on one crucial question left open by the Federal Circuit’s opinion: could a general purpose computer satisfy the “machine” prong of the test, or must the machine be specially adapted to the claimed process in some fashion? For *Bilski*, the question was irrelevant—his patent claimed no computer whatsoever.<sup>228</sup> For the inventor in *State Street* the question would have been irrelevant as well—the *State Street* patent would have been allowable regardless.<sup>229</sup> But for many other inventors, this question was decisive. Every software invention requires a computer to run, and most modern business methods and tax patents cannot be practiced without a computer of some sort as well.<sup>230</sup> These computers are rarely specialized to the task at

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<sup>224</sup> *Id.* at 956 (internal citation omitted).

<sup>225</sup> *Id.*

<sup>226</sup> *State Street*, 149 F.3d at 1371-72 (citing U.S. Patent No. 5,193,056). It is in this sense that *Bilski* represents, at minimum, a continuation of the *State Street* regime.

<sup>227</sup> See *supra* note 218 and accompanying text. It is worth noting that when *Bilski* reached the Supreme Court, the government argued that upholding the Federal Circuit’s ruling would not call *State Street* into question. In the government’s view, there was no doubt that the *State Street* invention would be patentable under the Federal Circuit’s machine-or-transformation test. See Transcript of Proceedings Before the Supreme Court at 41-42, *Bilski v. Kappos*, 130 S. Ct. 2735 (2009), available at [http://www.supremecourt.gov/oral\\_arguments/argument\\_transcripts/08-964.pdf](http://www.supremecourt.gov/oral_arguments/argument_transcripts/08-964.pdf) (Nov. 9, 2009).

<sup>228</sup> See *Bilski*, 545 F.3d at 949; U.S. Patent App. No. 08/833,892., *supra* note Error! Bookmark not defined.Error! Bookmark not defined.186.

<sup>229</sup> See *supra* note 240. It is in this sense that *Bilski* represents, at minimum, a continuation of the *State Street* regime.

<sup>230</sup> See, e.g., Jason Pill, Note, *What’s So Great About Socrat?: An Analysis of the Ethical Issues Created by Tax Patents and a Patently Strict Dilemma*, 20 U. FLA. J.L. & PUB. POL’Y 147, 160 (2009) (“The complex permutations and calculations claimed in many tax patents relay [sic] on quick and accurate calculations that only modern computers can perform.”); Matthew Moore, \_\_\_\_\_, In re *Bilski and the “Machine-or-Transformation” Test: Receding Boundaries for Patent-Eligible Subject Matter*, 2010 DUKE L. & TECH. REV. 5, P30 (“After all, many business methods are inextricably intertwined with computers and software.”).

hand; by and large, a standard personal computer will suffice.<sup>231</sup> If *Bilski* were interpreted to require only a general computer, most of these patents would remain valid, and it would be easy for inventors to draft valid, enforceable claims going forward. If a more specialized type of machine were necessary, however, *Bilski* might allow a much narrower range of patents.

### C. *Bilski Before the PTO*

The issue of general purpose computers was thus left to the PTO. Initially, the PTO took the position that a process claim must include “a particular machine” to be valid.<sup>232</sup> The PTO rejected a number of patents on the ground that “[a]ny and all computing systems will suffice [under the terms of the claim], indicating that the claim is not directed to the function of any particular machine.”<sup>233</sup> Through the middle of 2009, approximately six months after the Federal Circuit handed down *Bilski*, the PTO held to the view that general purpose computers did not qualify as “machines” under governing Federal Circuit law.<sup>234</sup>

However, in July of 2009, the PTO shifted its stance. In *Ex parte Dickerson*, it granted a patent on a “computerized method” of optimizing business performance.<sup>235</sup> The agency argued that the invention “include[s] a step of outputting information from a computer . . . and therefore, [is] tied to a particular machine or apparatus.”<sup>236</sup> The machine in *Dickerson* was not at all particular: the claims called only for a general-purpose computer.<sup>237</sup> (The PTO’s reversal did not go unnoticed; even the chief judge of the

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<sup>231</sup> It is worth noting again that the patent in *State Street* would likely have been valid under either interpretation. That patent claimed a relatively specific sort of computer with structures oriented particularly toward the invention’s purpose. *State Street Bank & Trust Co. v. Signature Fin. Grp., Inc.*, 149 F.3d 1368, 1370-72 (1998) (describing the patent claims).

<sup>232</sup> *Ex parte Langemyr*, No. 2008-1495, 2008 WL 5206740, at \*19 (B.P.A.I. May 28, 2008), available at <http://www.uspto.gov/ip/boards/bpai/decisions/inform/fd081495.pdf>.

<sup>233</sup> *Id.* at \*22; see also *Ex parte Wasynczuk*, No. 2008-1496, 2008 WL 2262377, at \*25 (B.P.A.I. June 8, 2008), available at <http://www.uspto.gov/ip/boards/bpai/decisions/inform/fd081496.pdf>; *Merges & Duffy*, *supra* note 195, at 43.

<sup>234</sup> See sources cited *supra* note 233; see also *Ex parte Cornea-Hasegan*, No. 2008-4742, 2009 WL 86725 (B.P.A.I. Jan. 13, 2009), available at <http://des.uspto.gov/Foia/ReterivePdf?system=BPAI&fNm=fd20084742-01-13-2009-1> (refusing to grant a patent on similar grounds).

<sup>235</sup> No. 2009-001172, 2009 WL 2007184 (B.P.A.I. July 9, 2009), available at <http://des.uspto.gov/Foia/ReterivePdf?system=BPAI&fNm=fd2009001172-07-09-2009-1>.

<sup>236</sup> *Id.* at \*3; see also *Merges & Duffy*, *supra* note 195, at 44.

<sup>237</sup> *Ex parte Dickerson*, 2009 WL 2007184, at \*4.

Federal Circuit observed that the PTO had taken “inconsistent approaches” to the issue of general purpose computers since *Bilski*.<sup>238</sup>) The PTO has hewn to this permissive view of general-purpose computers ever since *Dickerson*.

The PTO’s behavior in the wake of *Bilski* was entirely predictable and consistent with the model developed above—just like its behavior before *State Street*. The initial rulings in which the PTO demanded “particular” machines, rather than merely general computers, may well have been the PTO’s best guess as to how the Federal Circuit would decide the issue. Yet the agency was not content to continue with that approach. The PTO had nothing to gain and quite a bit to lose if it attempted to hold the line against inventions that the Federal Circuit might eventually accept. Faced with uncertain law, it elected to err on the side of granting patents, rather than denying them.<sup>239</sup> The PTO again found itself pushing the legal frontier—out ahead of the Federal Circuit.

The result of the PTO’s actions will be a proliferation of software, tax, and business method patents involving only a general purpose computer. In most cases this is a trivial additional limitation to an invention, and one that should not greatly inhibit inventors from obtaining and enforcing valuable patents.

Had the Federal Circuit’s *Bilski* decision remained in force, and had the PTO continued to grant patents on processes attached to general computers, the cases finding their way to the Federal Circuit would likely have involved inventions that challenged the frontiers of patentability even more directly. The Federal Circuit would have seen few patents involving general computers, most of which the PTO would simply have granted. Rather, PTO denials might have involved even more general sorts of machines, or business methods that did not require machines but claimed to transform matter in some fashion. Over time, one might have expected to see the boundaries of patentability advance once again.

Of course, the Federal Circuit’s *Bilski* decision did not stand long. The Supreme Court granted certiorari<sup>240</sup> and announced that the Federal Circuit could not treat the machine-or-transformation test as entirely determinative of patentability.<sup>241</sup> While that test might be “a useful and important clue,”<sup>242</sup> the true test for patentability is whether an invention is

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<sup>238</sup> Tony Dutra, *Chief Judge Michel Says Commentary Reading Too Much into Bilski Opinion*, 78 PAT. TRADEMARK & COPYRIGHT J. 373 (2009); see also Merges & Duffy, *supra* note 195, at 44.

<sup>239</sup> See *Ex parte Dickerson*, at \*6.

<sup>240</sup> *Bilski v. Doll*, 129 S. Ct. 2735 (2009).

<sup>241</sup> *Bilski v. Kappos*, 130 S. Ct. 3218, 3226-28 (2010).

<sup>242</sup> *Id.* at 3227.

merely an “abstract idea” or something more.<sup>243</sup> The Supreme Court’s intervention was not surprising, given the theory presented here. The Supreme Court is not subject to the same inflationary pressures as the Federal Circuit, and it was likely reacting to the expansion in the law produced by the Federal Circuit and PTO.

The patentable subject matter rules have thus returned to a state of substantial uncertainty,<sup>244</sup> and it will remain for the Federal Circuit to sort out the law’s particularities in the years to come. As the PTO reacts to these new rules, it will likely send the Federal Circuit an ever-advancing wave of boundary-pushing patent denials, primed for conversion into new, inflationary law.

### CONCLUSION

In recent years the Patent and Trademark Office and the Federal Circuit have been widely criticized for their poor stewardship of the patent system. The PTO grants significant numbers of invalid patents, while the Federal Circuit has radically expanded the boundaries of what can be patented. These problems have been attributed to a variety of causes, including mismanagement and underfunding at the PTO, a lack of expertise, interest-group capture, and an ideological preference in favor of extensive patenting. Each of these factors may be responsible to some degree. But the problems that plague patent law can be explained without reference to any of these factors, and the problems could well persist even if all of these other potential causes are addressed. The PTO’s interest in avoiding appeals and reversals, coupled with the Federal Circuit’s asymmetric review of PTO decisions, are themselves enough to generate a surplus of invalid patents and an inflationary patent law. The patent system’s dysfunction is, at least in part, a consequence of the relationship between the PTO and Federal Circuit. Accordingly, policymakers should seek institutional remedies to what is fundamentally an institutional problem.

Finally, there is no reason to believe that these inflationary effects are necessarily confined to patents.<sup>245</sup> Asymmetric rights of appeal—or asymmetric rates of appeal—could be driving inflation across a range of

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<sup>243</sup> *Id.* at 3225 (quoting *Diamond v. Chakrabarty*, 447 U.S. at 303, 309 (1980)) (enumerating types of unpatentable subject matter).

<sup>244</sup> This is not even to speak of the jurisprudence on patenting isolated molecules and other products derived from nature. That is an entirely separate strand of law, and one beyond the scope of the short case study presented here. *See* *Association for Molecular Pathology v. PTO*, \_\_\_ F.3d \_\_\_ (Federal Circuit, July 29, 2011), *available at* <http://www.ca9.uscourts.gov/images/stories/opinions-orders/10-1406.pdf> (upholding a patent on a purified DNA sequence).

<sup>245</sup> *See supra* notes 14-20 and accompanying text.

other administrative fields,<sup>246</sup> or even in areas of civil litigation more generally.<sup>247</sup> These effects may be much more muted, or they may be dwarfed by broader technical or ideological shifts in the law. Inflation is highly contextual, and further work is necessary to determine its effects in other legal domains. But the possibility exists that asymmetries in appeal exert pressure on legal boundaries even in disciplines far removed from patent law.

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<sup>246</sup> For instance, there is evidence that the Administrative Law Judges charged with adjudicating Social Security disability claims have become more and more permissive over time. See generally Richard J. Pierce, Jr., *What Should We Do About Administrative Law Judge Disability Decisionmaking?* (unpublished manuscript 2011), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1890770](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1890770). This development could be attributable, at least in part, to the asymmetric nature of appeals from ALJs' Social Security decisions. See *supra* note 17. I take no position on whether it is a beneficial or harmful development.

<sup>247</sup> See Eduardo M. Peñalver & Lior Jacob Strahilevitz, *Judicial Takings or Due Process?*, 97 Cornell L. Rev. (forthcoming 2012) (describing such a mechanism in property law).