Patent Asymmetries

Sean B. Seymore[*]

Everyone knows that it is far too easy to get a (bad) patent. Fingers often point to the U.S. Patent and Trademark Office ("PTO"), which is often criticized for making awful patenting decisions. Legal scholars have offered several reasons for the quality problem, including low substantive standards for patentability and problems with the Patent Office's inner workings, decision-making, and policy choices.

This Article offers a very different explanation for the patent quality problem. Drawing attention to what happens inside the PTO is clearly the correct locus; however, any serious headway toward improving patent quality must focus more directly on patent examination. My basic claim is that the PTO issues low-quality patents primarily because of a confluence of three asymmetries — proof, information, and legal — that exist in the current patent examination paradigm. I explain how these asymmetries tip the scales of patentability so far in the applicant's favor that anyone who seeks a patent on anything usually gets one. I propose a new patent examination regime, which would eliminate the three asymmetries, derail frivolous filings, and make a patent grant far from guaranteed. Rebalancing the scales of patentability would improve patent quality and promote broader goals of patent policy.

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 FedEx Research Professor of Law, Professor of Chemistry, and Chancellor Faculty Fellow, Vanderbilt University. J.D., University of Notre Dame, 2006; Ph.D. (Chemistry), University of Notre Dame, 2001; M.S.Chem., Georgia Institute of Technology, 1996; B.S., University of Tennessee, 1993. I thank Edward Cheng, Daniel Gervais, Timothy Holbrook, Dmitry Karshtedt, Mark McKenna, Lee Petherbridge, and Kevin Stack for helpful insights, valuable comments on earlier drafts of this Article, or both. I also thank Mark Foley for his capable research assistance and Vanderbilt University Law School for providing a research grant to support this project.

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INTRODUCTION

The U.S. Patent and Trademark Office ("PTO") is often criticized for making awful patenting decisions.[1] Noteworthy examples of what are considered absurd, bad, or needless patents include an umbrella to protect beer cans from sunlight,[2] a method of exercising a cat with a laser pointer,[3] a method for sending signals *faster* than the speed of light,[4] and a studio arrangement for taking photos against a white background.[5] Because these patents are likely invalid or worthless,[6] their issuance strains the resources and frustrates the basic goals of the patent system.[7]

Legal scholars have offered several reasons why the PTO issues low-quality patents. Some point to the substantive standards for patentability.[8] They contend that in a well-functioning patent system, patents like those described above would have been screened out as lacking novelty, nonobviousness, or utility.[9] Their cries for reform have been heard by the Supreme Court. Recent decisions have either narrowed the scope and strength of patent rights or made it easier to challenge questionable patents.[10]

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[1] *See generally* JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE (2008); DAN L. BURK & MARK A. LEMLEY, THE PATENT CRISIS AND HOW THE COURTS CAN SOLVE IT (2009); ADAM B. JAFFE & JOSH LERNER, INNOVATION AND ITS DISCONTENTS (2004).

[2] *See* Beerbrella, U.S. Patent No. 6,637,447 (filed Oct. 19, 2001).

[3] *See* Method of Exercising a Cat, U.S. Patent No. 5,443,036 (filed Nov. 2, 1993).

[4] *See* Hyper-Light-Speed Antenna, U.S. Patent No. 6,025,810 (filed Oct. 2, 1997). It is well accepted in science that a signal cannot travel faster than the speed of light. *See generally* RAMAMURTI SHANKAR, FUNDAMENTALS OF PHYSICS 229 (2014); Albert Einstein, *On the Electrodynamics of Moving Bodies*, 17 ANNALEN DER PHYSIK 891 (1905) (defining the basis for special relativity).

[5] *See* Studio Arrangement, U.S. Patent No. 8,676,045 (filed Nov. 9, 2011).

[6] JAFFE & LERNER, *supra* note 1, at 173.

[7] *See* sources cited *supra* note 1 (discussing how the issuance of invalid or worthless patents contributes to the patent quality problem); *infra* notes 14 and 165 and accompanying text.

[8] *See, e.g.*, BESSEN & MEURER, *supra* note 1, at 162-63 (attributing the weakening of patentability standards to the Federal Circuit); JAFFE & LERNER, *supra* note 1, at 11 (noting that weak novelty and nonobviousness standards have led to patents of dubious quality).

[9] *See, e.g.*, sources cited *supra* note 1. Patentability requirements are discussed *infra* Part I.A.

[10] *See, e.g.*, Alice Corp. v. CLS Bank Int'l, 134 S. Ct. 2347, 2360 (2014) (holding that a computer-implemented method for mitigating settlement risk was patent-ineligible subject matter); Nautilus, Inc. v. Biosig Instruments, Inc., 134 S. Ct. 2120, 2124 (2014) (rejecting the Federal Circuit's lenient "insolubly ambiguous" test for definiteness); KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 415 (2007) (rejecting the Federal Circuit's rigid test for nonobviousness). *But see* Microsoft Corp. v. i4i Ltd.

But adjusting the substantive standards of patentability alone does not solve the problem since questionable patents continue to emerge from the PTO. Some scholars attribute this to the agency's inner workings and policy choices. For example, there was a point in time when the agency's self-declared mission was to "help [its] customers get patents."[11] Even if that is no longer explicitly stated, scholars argue that the agency's administrative structure, personnel policies, and incentive system for examiners compromise patent quality.[12] Recent scholarship suggests that the PTO has an incentive to grant numerous patents for its own interests[13] and to reduce its well-publicized backlog of applications.[14]

Drawing attention to what happens inside the PTO is clearly the correct locus. However, any serious headway toward improving patent quality must focus more directly on patent examination. It is the key facet of patent prosecution — the process by which an inventor, usually through the help of an attorney, files an application with the PTO for review.[15] Upon filing, a patent examiner evaluates it for compliance with statutory patentability criteria and negotiates with the applicant over the scope of the exclusionary right that will be

P'ship, 131 S. Ct. 2238, 2243 (2011) (reaffirming that once the PTO issues a patent, it is presumed valid and will only be invalidated upon a showing of clear and convincing evidence).

[11] U.S. PATENT & TRADEMARK OFFICE, A PATENT AND TRADEMARK OFFICE REVIEW: CREATING A PATENT AND TRADEMARK SYSTEM FOR THE 21ST CENTURY 8 (1997) (internal quotation marks omitted). Patent scholars have criticized this self-declared mission. *See* Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1496 n.3 (2001) [hereinafter *Rational Ignorance*] ("While the job of the PTO is certainly to issue good patents, it is also to reject bad ones."); Jonathan S. Masur, *Costly Screens and Patent Examination*, 2 J. LEGAL ANALYSIS 687, 692-93 (2010) (arguing that this mission sets the stage for inadequate screening).

[12] *See, e.g.*, BURK & LEMLEY, *supra* note 1, at 23 ("[A]n examiner has no incentive to spend more time on harder cases."); Lemley, *Rational Ignorance*, *supra* note 11, at 1496 n.3 ("[E]xaminers must write up reasons for rejection, but not reasons for allowance, giving them more incentives to allow rather than reject an application."). For a deeper discussion on examiner incentives, see *infra* note 173 and accompanying text.

[13] Jonathan Masur, *Patent Inflation*, 121 YALE L.J. 470, 474 (2011) [hereinafter *Patent Inflation*].

[14] Michael D. Frakes & Melissa F. Wasserman, *Does the U.S. Patent & Trademark Office Grant Too Many Bad Patents?: Evidence from a Quasi-Experiment*, 67 STAN. L. REV. 613, 616 (2015). The agency has reduced its backlog of unexamined applications from a high of 750,596 in January 2009 to 605,646 by the end of FY 2014. U.S. PATENT & TRADEMARK OFFICE, PERFORMANCE AND ACCOUNTABILITY REPORT FISCAL YEAR 2014, at 2 (2014) [hereinafter FY 2014 PERFORMANCE REPORT].

[15] *See generally* ALAN L. DURHAM, PATENT LAW ESSENTIALS § 5.1 (4th ed. 2013) (explaining the process).

granted.[16] Although the applicant usually exits patent examination with a narrower patent than initially sought, *the applicant will still probably get a patent*.[17] In sum, it is too easy to get a (bad) patent.[18]

Patent scholars have offered a variety of proposals for improving patent examination. Beth Simone Noveck advocates a paradigm in which external reviewers with relevant knowledge about the subject matter participate in patent examination by submitting information and comments on patentability.[19] John Thomas also advocates for a regime that would engage private citizens to provide information pertinent to patentability but would offer them a cash prize for doing so.[20] Doug Lichtman and Mark Lemley argue that applicants should "earn" the presumption of patent validity[21] only if they submit their patent applications to a rigorous review.[22] John Golden suggests that the examiner's burden could be reduced by work sharing with foreign patent offices[23] or privatizing or automating application review.[24] Michael Meurer argues that the PTO should set examination priorities so that applications claiming inventions in certain technologies receive more scrutiny than others,[25] and tailor examination so that examiners spend more time focusing on patentability standards that are easy to

[16] The process is discussed *infra* Part I.A.

[17] *See* Michael Carley et al., *What Is the Probability of Receiving a U.S. Patent?*, 17 YALE J.L. & TECH. 203, 209-10 (2015) (exploring allowance rates for applications filed from 1996–2005 and finding an allowance rate of 71.2% if continuation procedures were used and 55.8% otherwise); Christopher A. Cotropia et al., *Patent Applications and the Performance of the U.S. Patent and Trademark Office*, 23 FED. CIR. B.J. 179, 185-86 (2013) (exploring application allowance rates from 1996–2012 and finding that allowance rates "peaked in 2000, declined until 2009, and then turned up sharply, reaching 89% in 2012 when corrected for all [refilled continuation applications]").

[18] Adam B. Jaffe, *Patent Reform: No Time Like the Present*, 4 I/S: J.L. & POL'Y FOR INFO. SOC'Y 59, 59 (2008); *see also infra* note 81 and accompanying text.

[19] Beth Simone Noveck, *"Peer to Patent": Collective Intelligence, Open Review, and Patent Reform*, 20 HARV. J.L. & TECH. 123, 143-51 (2006). The PTO has conducted two peer-to-patent pilot programs. *See id.* at 145-51; *Peer Review Pilot FY2011*, USPTO, http://www.uspto.gov/patent/initiatives/peer-review-pilot-fy2011 (last visited July 20, 2015).

[20] John R. Thomas, *Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties*, 2001 U. ILL. L. REV. 305, 342-43 (2001).

[21] An issued patent is presumed valid. *See infra* note 72 and accompanying text.

[22] Doug Lichtman & Mark A. Lemley, *Rethinking Patent Law's Presumption of Validity*, 60 STAN. L. REV. 45, 49-51 (2007).

[23] John M. Golden, *Proliferating Patents and Patent Law's "Cost Disease,"* 51 HOUS. L. REV. 455, 490-92 (2013).

[24] *Id.* at 492-98.

[25] Michael J. Meurer, *Patent Examination Priorities*, 51 WM. & MARY L. REV. 675, 706-07 (2009).

evaluate.[26] While these proposals might ease the examiner's burden in a subset of cases, they do not provide a comprehensive solution to the patent quality problem. And it is not clear that any of these proposals would discourage frivolous filings.

This Article takes a very different approach to improving patent examination. My basic claim is that low-quality patents issue not simply because of poor decision-making or policy choices by the PTO but because of a confluence of three asymmetries that exist in the current patent examination paradigm. First, the presumption that anyone who files a patent application is entitled to a patent gives rise to a *proof asymmetry* in patent examination because an examiner who challenges patentability faces the dual burdens of building a prima facie case of unpatentability and carrying the ultimate burden of proof.[27] This asymmetry causes considerable mischief because the combined effect of the presumption of patentability and the presumption that the PTO only issues valid patents raises serious quality concerns.[28] Second, an information deficit exists in patent examination because it is hard to believe that everything that the applicant knows about the invention ends up before the examiner. This *information asymmetry* inevitably allows bad patents to slip through the cracks and further contributes to the patent quality problem.[29] Third, that most examiners lack formal legal training gives rise to a *legal asymmetry* in patent examination. Given the proof asymmetry and the examiner's incentives and time pressures,[30] I contend that the legal asymmetry allows savvy applicants to craft legal arguments, which lead the examiner to acquiesce and, consequently, issue a patent.[31] The interplay between these asymmetries and the concomitant negative effect on patent quality have not been recognized or explored in the scholarly literature.

This Article proceeds in three parts. Part I briefly explores the theory of patent examination and describes how patent examination affects patent quality. Part II analyzes the three asymmetries and explains how individually and together they tip the scales of patentability in favor of the applicant. Finally, Part III offers a new patent examination paradigm, which remediates the asymmetries and rebalances the scales of patentability.

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[26] *Id.* at 707-08.

[27] *See infra* Part II.A.

[28] *See infra* Part I.A.

[29] *See infra* Part II.B.

[30] *See supra* note 12; *infra* note 173.

[31] *See infra* Part II.C.

I. UNDERSTANDING PATENT EXAMINATION

A. Theoretical Framework

The Intellectual Property Clause of the U.S. Constitution empowered Congress to create a patent system, which would promote technological progress.[32] Pursuant to that authority, Congress enacted the Patent Act of 1790,[33] which gave examining duties to three presidential cabinet members known as the "patent board."[34] Three years later, Congress replaced examination with a registration-only system, which essentially awarded a patent to anyone who filed an application on anything.[35] Validity issues were left to the courts.[36] The flaws of this regime led Congress to enact the Patent Act of 1836,[37] which reverted back to a substantive pre-issuance examination system but with professional examiners within an agency now known as the PTO.[38]

The agency is charged "with the task of examining patent applications . . . and issuing patents if 'it appears that the applicant is entitled to a patent under the law.'"[39] Patent examination is an ex parte proceeding between the applicant and the examiner.[40] The former is often represented by an attorney.[41] The examiner is a quasi-judicial

[32] The Clause's stated goal is "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to . . . Inventors the exclusive Right to their . . . Discoveries." U.S. CONST. art. I, § 8, cl. 8; *see also* Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502, 511 (1917) ("[T]he primary purpose of our patent laws . . . is 'to promote the progress of science and useful arts.'" (citation omitted)).

[33] *See* Patent Act of 1790, ch. 7, 1 Stat. 109, 110–12 (repealed 1793).

[34] The board consisted of the Secretary of State (then Thomas Jefferson), Secretary of War (then Henry Knox), and Attorney General (then Edmund Randolph). *See id.* § 1; P.J. Federico, *Operation of the Patent Act of 1790*, 18 J. PAT. OFF. SOC'Y 237, 238 (1936).

[35] *See* Grant v. Raymond, 31 U.S. 218, 241 (1832) (explaining that patent issuance was a ministerial duty which afforded the Secretary of State "no judgment on the question [of] whether the patent shall be issued"); Edward C. Walterscheid, *The Winged Gudgeon — An Early Patent Controversy*, 79 J. PAT. & TRADEMARK OFF. SOC'Y 533, 533 (1997) (explaining that under the Patent Act of 1793, obtaining a patent was a matter of right).

[36] Patent Act of 1793, ch. 11, § 10, 1 Stat. 318, 319–23 (repealed 1836).

[37] Patent Act of 1836, ch. 357, 5 Stat. 117 (repealed 1870).

[38] *Id.* § 1; *see also* William I. Wyman, *The Patent Act of 1836*, 1 J. PAT. OFF. SOC'Y 203, 207-08 (1919) (describing the benefits of the improved examination system).

[39] Microsoft Corp. v. i4i Ltd. P'ship, 131 S. Ct. 2238, 2242 (2011) (quoting 35 U.S.C. § 131 (2006)).

[40] *See* DURHAM, *supra* note 15, § 5.1 (explaining the process).

[41] *See id.*

official[42] (typically a non-lawyer)[43] with expertise in a specific technological field. The examiner's principal task is to evaluate the patent application for compliance with the patentability requirements found in Title 35 of the United States Code. In short, the invention must be useful,[44] novel,[45] nonobvious,[46] and fall into one of the categories of patentable subject matter.[47] In addition, the application must adequately describe, enable, and set forth the best mode of carrying out the invention;[48] and conclude with claims[49] that delineate the (scope of the) invention with particularity.[50] Gauging patentability requires the examiner to search the so-called "prior art" — preexisting knowledge and technology already available to the public.[51]

Examination proceeds through multiple stages of communication between the examiner and the applicant.[52] Upon initial review on the merits, the examiner typically issues one or more rejections articulating why one or more claims are unpatentable.[53] The applicant can respond by amending the claims or offering proof or persuasive argument challenging the examiner's rejection.[54] Upon the examiner's reconsideration, the claim is either allowed, further amended,

[42] Western Elec. Co. v. Piezo Tech., Inc., 860 F.2d 428, 431 (Fed. Cir. 1988) ("[I]t was intended that the Commissioner of Patents, in issuing or withholding patents . . . should exercise quasi-judicial functions, is apparent from the nature of the examinations and decision he is required to make." (quoting Butterworth v. United States *ex rel.* Hoe, 112 U.S. 50, 67 (1884))); United States v. Am. Bell Tel. Co., 128 U.S. 315, 363 (1888) (explaining that patent examination is "*quasi* judicial in its character").

[43] The PTO provides examiners with rudimentary legal training on topics relevant to patent examination. *See infra* note 238 and accompanying text.

[44] 35 U.S.C. § 101 (2012).

[45] *Id.* § 102.

[46] *Id.* § 103.

[47] *Id.* § 101.

[48] *Id.* § 112(a).

[49] A claim defines the patentee's property right. *See* Corning Glass Works v. Sumitomo Elec. U.S.A., Inc., 868 F.2d 1251, 1257 (Fed. Cir. 1989) ("A claim in a patent provides the metes and bounds of the right which the patent confers on the patentee to exclude others from making, using, or selling the protected invention.").

[50] 35 U.S.C. § 112(b) (2012). Patent claim language describes the invention's boundaries like a deed to real property. *See supra* note 49.

[51] *See* 35 U.S.C. § 102 (2012) (defining the documents and activities that can serve as prior art). The invention is compared to the prior art in assessing novelty and nonobviousness.

[52] 4 DONALD S. CHISUM, CHISUM ON PATENTS § 11.03 (2009).

[53] *See* 35 U.S.C. § 132(a) (2012).

[54] *In re* Packard, 751 F.3d 1307, 1312 (Fed. Cir. 2014); *In re* Oetiker, 977 F.2d 1443, 1445 (Fed. Cir. 1992).

cancelled, or remains rejected.[55] The response-reconsideration process typically proceeds through several iterations and concludes with the allowed claims issuing as a patent.[56] As for the rejected claims, the applicant can cancel them (and perhaps pursue them in a continuation application),[57] request continued examination,[58] or appeal.[59]

Viewing the examiner as a government employee who grants patents purely for the sake of granting patents reveals an incorrect understanding of the process. Irrespective of the examiner, the current examination regime itself strongly favors patent issuance.[60] At the outset, an applicant enjoys a presumption of patentability,[61] which means that at the time of filing the application is rebuttably presumed to comply with the utility, novelty, nonobviousness, and disclosure requirements of the patent statute.[62] Thus, the PTO *must* issue a patent

[55] 37 C.F.R. §§ 1.111–.113 (2015). An applicant may choose to pursue the cancelled claims in a second application. *See infra* note 57.

[56] 37 C.F.R. § 1.311 (2015) (instructing examiners to issue a notice of allowance for claims entitled to a patent).

[57] An applicant may cancel claims without prejudice and pursue them in a new application called a "continuation" application as long as the latter is filed before the original application issues as a patent. 35 U.S.C. § 120 (2012); 37 C.F.R. § 1.53(b) (2015). For commentary on the use of continuation practice to delay patent prosecution, see Mark A. Lemley & Kimberly A. Moore, *Ending Abuse of Patent Continuations*, 84 B.U. L. REV. 63, 71-83 (2004).

[58] After prosecution closes, the applicant can pay for additional examination when the examiner would otherwise not provide it; meaning that prosecution of a previously pending application reopens. 35 U.S.C. § 132(b) (2012). A request for continued examination ("RCE") requires payment of a fee as well as "an amendment to the written description, claims, or drawings, new arguments, or new evidence in support of patentability." 37 C.F.R. § 1.114 (2015).

[59] An applicant whose claims have been twice rejected by the examiner can appeal to the Patent Trial and Appeal Board ("PTAB") which, among other things, reviews adverse decisions of examiners. 35 U.S.C. §§ 6(b), 134(a) (2012). The PTAB can affirm a rejection or reverse and remand to the examining corps. 37 C.F.R. § 41.50 (2015). A dissatisfied applicant can appeal to the Federal Circuit or file a civil action in the U.S District Court for the Eastern District of Virginia. 35 U.S.C. §§ 141, 145 (2012). In the latter, the applicant can submit evidence not considered by the PTO during prosecution. Kappos v. Hyatt, 132 S. Ct. 1690, 1700-01 (2012). *See infra* notes 222–24 and accompanying text (discussing appellate procedures).

[60] *See* Sean B. Seymore, *The Presumption of Patentability*, 97 MINN. L. REV. 990, 997-1003 (2013); *infra* Part II.A.1.

[61] A presumption is an assumption that the decision-maker must draw in the absence of rebuttal evidence. 9 JOHN HENRY WIGMORE, EVIDENCE IN TRIALS AT COMMON LAW § 2491, at 305 (James H. Chadbourn ed., rev. ed. 1981).

[62] *See supra* text accompanying notes 44–50 (discussing patentability requirements).

unless it can affirmatively prove that the invention is unpatentable.[63] When combined with the ex parte, non-adversarial nature of patent examination,[64] the presumption of patentability and other factors result in an unbalanced pressure in the direction of issuance with essentially no pressure in the other direction.[65] Since only the examiner stands in the way of an applicant's quest for a patent,[66] it is only the examiner's sense of public duty and conscientiousness that prevent the issuance of a large number of invalid patents.[67]

Indeed, the public has an interest in patent examination.[68] The Supreme Court has referred to the public's interest as "paramount" given the potential strength and scope of the exclusory rights at stake.[69] The public relies on examiners to serve as gatekeepers charged with the task of protecting it from the burden of invalid patents.[70] Examiners carry out this task by ensuring that claims are "examined, scrutinized, limited, and made to conform to what [the applicant] is entitled to."[71]

Finally, patent issuance gives rise to a statutory presumption that the patent is valid.[72] The rationale is that "a government agency such

[63] *See infra* Part II.A.

[64] Lichtman & Lemley, *supra* note 22, at 54-56; *see also* Aptix Corp. v. Quickturn Design Sys., Inc., 269 F.3d 1369, 1379 (Fed. Cir. 2001) (comparing the ex parte nature of patent prosecution with the adversarial nature of a judicial proceeding).

[65] SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF THE COMM. ON THE JUDICIARY, 86TH CONG., THE EXAMINATION SYSTEM IN THE U.S. PATENT OFFICE 20 (Comm. Print. 1961) [hereinafter EXAMINATION STUDY]; John C. Stedman, *The U.S. Patent System and Its Current Problems*, 42 TEX. L. REV. 450, 464, 476 (1964) (explaining that the ex parte nature of the proceeding allows the examiner to only hear one side of the story since no one can present reasons why a patent should not issue).

[66] Stedman, *supra* note 65, at 464.

[67] EXAMINATION STUDY, *supra* note 65, at 20; Stedman, *supra* note 65, at 476.

[68] 1 LESTER HORWITZ & ETHAN HORWITZ, PATENT OFFICE RULES AND PRACTICE RULE 2 § 2[B] (2015) (referring to the public as "an interested third party" in patent examination).

[69] Precision Instrument Mfg. Co. v. Auto. Maint. Mach. Co., 324 U.S. 806, 816 (1945).

[70] EXAMINATION STUDY, *supra* note 65, at 26; Jeffrey M. Kuhn, *Information Overload at the U.S. Patent and Trademark Office: Reframing the Duty of Disclosure in Patent Law as a Search and Filter Problem*, 13 YALE J.L. & TECH. 90, 92-93 (2011); Kelly C. Mullally, *Patent Hermeneutics: Form and Substance in Claim Construction*, 59 FLA. L. REV. 333, 346 (2007) ("The patent examiner ostensibly represents the public in ensuring that the patent applicant does not obtain rights to information that properly belongs in the public domain under the patentability standards.").

[71] Keystone Bridge Co. v. Phoenix Iron Co., 95 U.S. 274, 278 (1877).

[72] 35 U.S.C. § 282 (2012). A challenger must prove invalidity with clear and

as the [PTO is] presumed to do its job."[73] Doug Lichtman and Mark Lemley posit a theoretical justification that "patent examiners have expertise when it comes to questions of patent validity, and if patent examiners have decided that a given invention qualifies for protection, judges and juries should not second-guess the experts."[74] But the presumption of patent validity only adds to the proliferation of questionable patents because it allows the applicant to benefit from *double deference* — that the patent application as filed presumptively complies with the statutory patentability requirements (the presumption of patentability)[75] *and* that the PTO did its job to only issue valid patents (the presumption of patent validity).[76] Although post-issuance, non-litigation-based mechanisms exist to deal with questionable patents,[77] many would agree that as long as it is efficient to do so,[78] "we want a patent examination system that 'gets it right' the first time."[79]

convincing evidence. Microsoft Corp. v. i4i Ltd. P'ship, 131 S. Ct. 2238, 2242 (2011).

[73] Am. Hoist & Derrick Co. v. Sowa & Sons, Inc., 725 F.2d 1350, 1359 (Fed. Cir. 1984), *quoted in i4i*, 131 S. Ct. at 2242.

[74] Lichtman & Lemley, *supra* note 22, at 47.

[75] *See supra* text accompanying notes 61–63.

[76] *See supra* notes 72–73 and accompanying text.

[77] Under the America Invents Act, the available mechanisms include inter partes review ("IPR") (35 U.S.C. §§ 311–319 (2012)) and post-grant review ("PGR") (35 U.S.C. §§ 321–329 (2012)) — trials conducted by the Patent Trial and Appeal Board. In both proceedings the petitioner need only prove patent invalidity by a preponderance of evidence rather than the (higher) clear and convincing evidence standard applied in litigation. 35 U.S.C. §§ 316(e), 326(e) (2012). However, both mechanisms are quite limited. For example, for both IPR and PGR, the petition must be filed soon after patent issuance. *Id.* §§ 311(c), 321(c). For IPR, only novelty and nonobviousness may be challenged. *Id.* § 311(b). In addition, the filing fees for both mechanisms are relatively high (and can be prohibitively expensive for patents having a large number of claims). *See* 37 C.F.R. § 42.15 (2015) (describing the fee schedule). Finally, it is unlikely that either mechanism will invalidate a sufficient number of patents to make a substantial contribution to improving patent quality. *Cf.* R. Polk Wagner, *Understanding Patent-Quality Mechanisms*, 157 U. PA. L. REV. 2135, 2163-64 (2009) (expressing doubts that broadening public access and other alterations to the patenting process will significantly improve patent quality due to problems of scale).

[78] Several commentators argue that a soft-look examination regime might lead to lower net costs across the patent system. *See* F. Scott Kieff, *The Case for Registering Patents and the Law and Economics of Present Patent-Obtaining Rules*, 45 B.C. L. REV. 55, 70-74 (2003) (proposing a regime where patents are registered but not substantively examined ex ante; meaning that validity determinations are resolved ex post); Lemley, *Rational Ignorance*, *supra* note 11, at 1510-11 (arguing against investing more resources in substantive patent examination as a means of improving patent quality because most patents are never asserted, litigated, or licensed). *But see* Shubha Ghosh & Jay Kesan, *What Do Patents Purchase? In Search of Optimal Ignorance in the Patent*

B. Patent Examination and Patent Quality

As stated at the outset, the PTO has come under fire for issuing patents of questionable quality.[80] Patent quality can be defined as "the capacity of a granted patent to meet (or exceed) the statutory standards of patentability — most importantly, to [cover inventions which are] novel, nonobvious, and clearly and sufficiently described."[81] Aside from being technically invalid,[82] low-quality patents impose costs on the legal system, competitors, would-be inventors, and society.[83]

Office, 40 HOUS. L. REV. 1219, 1237-38 (2004) (emphasizing that granting valid patents ex ante has benefits, including positive effects on the market and innovation and a reduction in resources wasted inventing around bad patents); Paul J. Heald, *A Transaction Costs Theory of Patent Law*, 66 OHIO ST. L.J. 473, 509 (2005) (arguing that a soft-look approach would "invite more applications, some of them undoubtedly bogus"); Michael Meehan, *Increasing Certainty and Harnessing Private Information in the U.S. Patent System: A Proposal for Reform*, 2010 STAN. TECH. L. REV. 1, 105 n.245 (observing that delayed examination would create a problem with the lack of notice over the scope of the claimed invention, which could alter licensing negotiations and ultimately undermine the patent system's reputation).

[79] *The Patent System: Today and Tomorrow: Hearing Before the Subcomm. on Intellectual Prop. Comm. of the S. Comm. on the Judiciary*, 109th Cong. 10 (2005) (statement of Jon W. Dudas, Deputy Under Secretary of Commerce for Intellectual Property), *available at* http://www.uspto.gov/web/offices/com/speeches/2005apr21.pdf.

[80] *See* Jay P. Kesan & Andres A. Gallo, *Why "Bad" Patents Survive in the Market and How Should We Change? — The Private and Social Costs of Patents*, 55 EMORY L.J. 61, 63-76 (2006) (exploring criticisms); Mark A. Lemley & Bhaven Sampat, *Is the Patent Office a Rubber Stamp?*, 58 EMORY L.J. 181, 181-82 (2008) (same); sources cited *supra* note 1.

[81] Wagner, *supra* note 77, at 2138; *cf.* Christi J. Guerrini, *Defining Patent Quality*, 82 FORDHAM L. REV. 3091, 3092-93 (2014) (defining "low-quality" or "bad" patents as those which "carve out of the public domain and deter others from practicing inventions that are in some way undeserving of patent protection"). From an economic perspective, a high-quality patent is "one that covers an invention that would not otherwise be made [but for the incentive of a patent] or one that ensures that a good idea is commercialized." Bronwyn H. Hall & Dietmar Harhoff, *Post-Grant Reviews in the U.S. Patent System — Design Choices and Expected Impact*, 19 BERKELEY TECH. L.J. 989, 991 (2004). The statutory standards for patentability are discussed *supra* text accompanying notes 44–50.

[82] *Cf.* FED. TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY 5 (2003) [hereinafter FTC REPORT], *available at* https://www.ftc.gov/sites/default/files/documents/reports/promote-innovation-proper-balance-competition-and-patent-law-and-policy/innovationrpt.pdf ("A poor quality or questionable patent is one that is likely invalid or contains claims that are overly broad.").

[83] *See* Hall & Harhoff, *supra* note 81, at 992 (explaining that the costs of low quality patents "include entry deterrence of would-be innovators, a slower pace of innovation, and increases in patent application activity that are costly both to the

The quality of an issued patent depends on the quality of the underlying examination.[84] The link between the two came to light during the early years of the U.S. patent system. The three-member patent board created by the 1790 Act[85] examined each filing in great detail and rejected many more patent applications than it allowed.[86] But this cautious, conservative approach proved time-consuming and led to the 1793 Act's registration-only system.[87] That system, however, produced a lot of invalid or worthless patents[88] and set the stage for a patent quality disaster.[89] Poor patent quality was one reason why Congress reinstated a substantive examination system in the 1836 Act.[90]

firms and to society"); Lemley, *Rational Ignorance*, *supra* note 11, at 1515 (noting that bad patents impose costs on licensees, potential competitors, and society); Christopher R. Leslie, *The Anticompetitive Effects of Unenforced Invalid Patents*, 91 MINN. L. REV. 101, 113-39 (2006) (making similar arguments); John R. Thomas, *The Responsibility of the Rulemaker: Comparative Approaches to Patent Administration Reform*, 17 BERKELEY TECH. L.J. 727, 731 (2002) (explaining that legal actors often must revisit the PTO's work to assess patent validity).

84 FTC REPORT, *supra* note 82, at 19.

85 *See supra* note 34 and accompanying text.

86 EDWARD C. WALTERSCHEID, TO PROMOTE THE PROGRESS OF USEFUL ARTS: AMERICAN PATENT LAW AND ADMINISTRATION, 1798–1836, at 174 (1998). History reveals that three patents were granted in 1790, thirty-three in 1791, eleven in 1792, and ten in 1793 by the time of implementation of the 1793 Act. *Id.* at 173. At least 114 patent applications were filed during the first two years of the 1790 regime, although the actual number of filings was probably much higher since the clerk's report is incomplete and probably omits denials made prior to the date of the report. Federico, *supra* note 34, at 246.

87 *See* SILVIO A. BEDINI, THOMAS JEFFERSON: STATESMAN OF SCIENCE 209-10 (1990); WALTERSCHEID, *supra* note 86, at 174.

88 An 1836 Senate committee report explained that "[a] considerable portion of all the patents granted are worthless and void, as conflicting with, and infringing upon one another, or upon, public rights not subject to patent privileges" and that "frauds" by would-be patentees had "become extensive and serious." S. COMM. REP. NO. 24-338 (1836), *reprinted in* 18 J. PAT. OFF. SOC'Y 853, 857 (1936); *cf.* Wyman, *supra* note 38, at 209 (concluding that the regime produced a "mass of worthless and conflicting patents[,] . . . excessive litigation[,] and many cases of fraud and extortion").

89 This lax regime created three key problems. First, there was a surge in the number of unoriginal, duplicative, and frivolous patent applications. GUSTAVUS A. WEBER, THE PATENT OFFICE: ITS HISTORY, ACTIVITIES AND ORGANIZATION 6 (1924). Second, the burden of determining patent validity rested with the courts, which were soon overwhelmed. *See id.*; *see also* Craig Allen Nard, *Legal Forms and the Common Law of Patents*, 90 B.U. L. REV. 51, 65 (2010) ("The 1793 Act shifted patent protection analyses from an ex ante gatekeeper role performed by the examination to an ex post proceeding in the courts."). Third, rent-seeking behavior increased because owners of dubious patents quickly realized that the mere threat of litigation in a nuisance suit could compel royalty payments. *See* Robert P. Merges, *The Trouble with Trolls: Innovation, Rent-Seeking, and Patent Law Reform*, 24 BERKELEY TECH. L.J. 1583, 1592

Improving patent quality is one of the major challenges of patent law. Complaints have become louder in recent years because the proliferation of questionable patents creates uncertainty in the patent system.[91] There is uncertainty about patent scope, the validity of issued patents, and enforcement.[92] Uncertainty increases opportunistic behavior;[93] raises the overall amount, expense, and complexity of patent litigation;[94] and hinders competition, commercialization, and innovation.[95]

In theory, patent examination should reduce uncertainty.[96] I contend that three asymmetries in patent examination make this difficult.[97] After describing the asymmetries, I propose a new patent examination paradigm, which will reduce uncertainty, and thus, improve patent quality.[98]

II. THE THREE ASYMMETRIES OF PATENT EXAMINATION

A. The Proof Asymmetry

Recall that patent examination is an ex parte proceeding between the examiner and the applicant.[99] Driving it are evidentiary mechanisms which include presumptions and shifting burdens of

(2009).

[90] Wyman, *supra* note 38, at 204-09.

[91] *See* FTC REPORT, *supra* note 82, at 53-55; Hall & Harhoff, *supra* note 81, at 992-95.

[92] Wagner, *supra* note 77, at 2140; *see* Note, *Estopping the Madness at the PTO: Improving Patent Administration Through Prosecution History Estoppel*, 116 HARV. L. REV. 2164, 2165 (2003).

[93] As Professor Wagner has explained, the uncertainty brought about by a low-quality patent system allows the system "[to] be exploited — whether by filing low-probability, high-cost suits or by seeking large numbers of low-quality patents to use as leverage for settlement." Wagner, *supra* note 77, at 2144.

[94] *See* sources cited *supra* note 92. One of the stated purposes of passing the Leahy-Smith America Invents Act of 2011 was to "improve patent quality and limit unnecessary and counterproductive litigation costs." H.R. Rep. No. 112-98, at 40 (2011).

[95] FTC REPORT, *supra* note 82, at 20.

[96] *See, e.g.*, *In re* Zletz, 893 F.2d 319, 322 (Fed. Cir. 1989) ("An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process.").

[97] *See infra* Part II.

[98] *See infra* Part III.

[99] *See supra* Part I.A.

proof.[100] I contend that these procedural aspects of patent examination tip the scales toward issuance.[101]

1. The Current Paradigm

A basic tenet of patent examination is that an applicant is entitled to a patent unless the PTO can prove otherwise.[102] The corollary is that a patent application presumptively complies with the statutory patentability requirements when it is filed.[103] Thus, the burden of proving unpatentability rests with the PTO.[104]

If it appears that the invention does not satisfy a patentability requirement, the examiner has the initial burden of building and presenting a prima facie case of unpatentability.[105] It is established when

> "the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, . . . before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability."[106]

The type of proof required to make a prima facie case depends on the statutory provision at issue. But, as a general matter, the examiner satisfies the initial burden by "adequately explain[ing] the shortcomings [he or she] perceives so that the applicant is properly notified and able to respond."[107] If this burden is met,[108] the burden of

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100 *See supra* note 61.

101 FTC REPORT, *supra* note 82, at 8 ("A plethora of presumptions and procedures tip the scales in favor of the ultimate issuance of a patent, once an application is filed."); *cf.* Carl Shapiro, *Patent System Reform: Economic Analysis and Critique*, 19 BERKELEY TECH. L.J. 1017, 1019 (2004) (noting that patent examination is "tilted in favor of patent applicants").

102 *In re* Oetiker, 977 F.2d 1443, 1445 (Fed. Cir. 1992) ("If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent."); FTC REPORT, *supra* note 82, at 8-9 (explaining that the PTO must issue a patent unless it proves unpatentability, thereby effectively creating a presumption that every requested patent should issue).

103 FTC REPORT, *supra* note 82, at 9-10.

104 *Oetiker*, 977 F.2d at 1445 ("[T]he examiner bears the initial burden . . . of presenting a *prima facie* case of unpatentability."); *accord In re* Rijckaert, 9 F.3d 1531, 1532 (Fed. Cir. 1993) (explaining that an examiner must affirmatively prove unpatentability).

105 *Oetiker*, 977 F.2d at 1445; *see In re* King, 801 F.2d 1324, 1327 (Fed. Cir. 1986).

106 37 C.F.R. § 1.56(b) (2015).

107 Hyatt v. Dudas, 492 F.3d 1365, 1370 (Fed. Cir. 2007).

108 If the examiner fails to establish a prima facie obvious case, the applicant need not provide any rebuttal evidence and is entitled to a patent barring other grounds for

production shifts to the applicant to rebut the examiner's contention of unpatentability with persuasive argument or proof.[109] When the applicant submits rebuttal evidence, the examiner must "start over"[110] and "consider all of the evidence anew."[111] The burden of production may continue to shift as each side presents new evidence; however, the examiner carries the burden of persuasion.[112] And since the examiner has no way to test the applicant's assertions, "[those] that cannot be overcome by documentary evidence promptly identifiable by the examiner often must be accepted."[113] The examiner must determine patentability based on the entire record,[114] with a preponderance of the evidence as the standard of proof.[115] Absent any other grounds of unpatentability, the PTO must issue the patent.[116]

To illustrate the current framework, consider the following hypothetical. Suppose the inventor develops a wood cleaner made from a solution of lemon oil, mineral oil, and white vinegar in a 1:1:4 ratio. Testing reveals that the solution cleans all wood surfaces including antiques, furniture, and kitchen cabinets without drying the wood finish. Based on these results, the inventor files a patent application. Although the application's written description[117] only discloses experimental details for the lemon oil embodiment,[118] it states that the

unpatentability. *In re* Dillon, 919 F.2d 688, 710 (Fed. Cir. 1990) (en banc).

109 *Oetiker*, 977 F.2d at 1445.

110 *In re* Piasecki, 745 F.2d 1468, 1472 (Fed. Cir. 1984) (quoting *In re* Rinehart, 531 F.2d 1048, 1052 (C.C.P.A. 1976)).

111 *Id.*

112 *Oetiker*, 977 F.2d at 1449 (Plager, J., concurring); *In re* Epstein, 32 F.3d 1559, 1570 (Fed. Cir. 1994) (Plager, J., concurring) (articulating the rule that the PTO carries the burden of persuasion in showing why an applicant should not receive a patent).

113 FTC REPORT, *supra* note 82, at 9; *cf.* Beckman Instruments, Inc. v. Chemtronics, Inc., 439 F.2d 1369, 1378-79 (5th Cir. 1970) (noting that in the absence of its own testing facilities, the Patent Office must rely on information presented to it).

114 *See, e.g.*, U.S. PATENT & TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE § 2164.05 (9th ed. 2014) [hereinafter MPEP], *available at* http://mpep.uspto.gov/RDMS (instructing the examiner to evaluate enablement based on the weight of all the evidence, including any new rebuttal evidence); *id.* § 716.01(d) (giving a similar instruction for the nonobviousness analysis). The MPEP provides guidance to patent examiners and is regarded as the PTO's official interpretation of statutes and regulations. *See generally id.*

115 *Oetiker*, 977 F.2d at 1445 (majority opinion); *In re* Caveney, 761 F.2d 671, 674 (Fed. Cir. 1985).

116 *Oetiker*, 977 F.2d at 1445; *see also infra* note 187 and accompanying text.

117 The written description is the part of the patent (or patent application) that completely describes the invention. 35 U.S.C. § 112(a) (2012).

118 An "embodiment" is a concrete, physical form of an invention described in a

invention "is not limited to the example chosen; other citrus oils, including, but not limited to, orange, lime, citron, and tangerine may be used." The application concludes with the following claim:

> A wood cleaner comprising citrus oil, mineral oil, and white vinegar.

This is considered a "broad" claim because the language does not limit the invention to any specific citrus oil.[119]

An examiner reads the application to check it for compliance with the statutory patentability requirements.[120] Focusing on enablement, the question is whether, as of the filing date, a person having ordinary skill in the art ("PHOSITA")[121] could make and use the invention as broadly as it is claimed without undue experimentation.[122] Analyzing enablement is a fact-intensive inquiry which includes construing the claim to determine its scope,[123] evaluating the teaching provided in the written description, and determining the PHOSITA's knowledge and skill.[124]

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patent application or patent. ROBERT PATRICK MERGES & JOHN FITZGERALD DUFFY, PATENT LAW AND POLICY: CASES AND MATERIALS 27 (6th ed. 2013).

[119] *See* ANTHONY L. MIELE, PATENT STRATEGY: THE MANAGER'S GUIDE TO PROFITING FROM PATENT PORTFOLIOS 98 (2001) (explaining an applicant's incentive "to obtain very broad claims for which a colorable argument can be made for patentability").

[120] *See supra* notes 44–50 and accompanying text.

[121] The PHOSITA is a hypothetical construct of patent law akin to the reasonably prudent person in torts. *See* Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1566 (Fed. Cir. 1987). Factors relevant to constructing the PHOSITA in a particular technical field include the sophistication of the technology, the educational level of the inventor, the educational level of active workers in the field, the types of problems encountered in the art, prior art solutions to those problems, and the rapidity with which innovations are made. Envtl. Designs, Ltd. v. Union Oil Co. of Cal., 713 F.2d 693, 696 (Fed. Cir. 1983).

[122] *In re* Wright, 999 F.2d 1557, 1561 (Fed. Cir. 1993). Although the term "undue experimentation" does not appear in the statute, "it is well established that enablement requires that the specification teach those in the art to make and use the invention without undue experimentation." *In re* Wands, 858 F.2d 731, 737 (Fed. Cir. 1988).

[123] Claim construction includes defining ambiguous terms while simultaneously giving the claim language its broadest reasonable interpretation consistent with the written description. *In re* Bass, 314 F.3d 575, 577 (Fed. Cir. 2002).

[124] *See* Nat'l Recovery Techs., Inc. v. Magnetic Separation Sys., Inc., 166 F.3d 1190, 1196 (Fed. Cir. 1999) ("[W]ith respect to enablement[,] the relevant inquiry lies in the relationship between the [written description], the claims, and the knowledge of one of ordinary skill in the art."). The Federal Circuit has articulated a nonexhaustive list of factors — the so-called *Wands* factors — for determining undue experimentation, including (1) the amount of direction or guidance presented in the disclosure; (2) the existence of working examples; (3) the nature of the invention; (4)

The analysis leads the examiner to reject the claim as prima facie nonenabled.[125] Relying on a reference[126] which explains that citrus oils share many properties but often differ in others,[127] the examiner concludes that a PHOSITA could not read the applicant's description about the single embodiment actually made (lemon oil) and extrapolate from it how to make other embodiments encompassed by the claim (the universe of citrus oils) with a reasonable expectation of success.[128] Relatedly, the claim could cover a lot of embodiments that cannot be made or do not work,[129] and the examiner has no way of testing them.[130] So the examiner contends that a PHOSITA would have to engage in undue experimentation to figure out which citrus oils work as well as the proper ratios of citrus oil, mineral oil, and white vinegar to achieve the claimed result (wood cleaning).[131]

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the predictability or unpredictability of the art; (5) the PHOSITA's relative skill; (6) the state of the prior art; (7) the breadth of the claims; and (8) the quantity of experimentation necessary to practice the claimed invention. *Wands*, 858 F.2d at 737. Certain factors may be more relevant than others for a particular invention. Amgen, Inc. v. Chugai Pharm. Co., 927 F.2d 1200, 1213 (Fed. Cir. 1991) (noting that the *Wands* factors are illustrative and not mandatory).

125 To establish a prima facie case of nonenablement, the examiner must explain why the claim scope sought is not commensurate with the scope of the teaching provided in the written description. *Wright*, 999 F.2d at 1561-62.

126 The examiner must support rejections with references (such as printed publications). *In re* Marzocchi, 439 F.2d 220, 224 (C.C.P.A. 1971); *see also In re* Brebner, 455 F.2d 1402, 1405 (C.C.P.A. 1972) (holding that the PTO must provide a factual basis for a nonenablement rejection rather than conclusory statements).

127 *See generally* GIOVANNI DUGO & LUIGI MONDELLO, CITRUS OILS: COMPOSITION, ADVANCED ANALYTICAL TECHNIQUES, CONTAMINANTS, AND BIOLOGICAL ACTIVITY (2010).

128 *Cf. Wright*, 999 F.2d at 1564 (affirming the PTO's nonenablement rejection for a claim covering all live, non-pathogenic vaccines for ribonucleic acid ("RNA") viruses because the applicant failed to produce evidence that a PHOSITA would have believed that the disclosed success with one strain of an avian RNA virus "could be extrapolated with a reasonable expectation of success" to other RNA viruses encompassed by the broad claims). Whether a single working example is sufficient to enable a broad claim is a quintessential enablement issue. *Compare In re* Vickers, 141 F.2d 522, 525 (C.C.P.A. 1944) (explaining that an inventor "is generally allowed [broad] claims, when the art permits, which cover more than the specific embodiment shown"), *with* Liebel-Flarsheim Co. v. Medrad, Inc., 481 F.3d 1371, 1379-80 (Fed. Cir. 2007) (determining that a disclosure that enabled one embodiment was insufficient to support a claim that covered additional embodiments).

129 *See* Crown Operations Int'l, Ltd. v. Solutia Inc., 289 F.3d 1367, 1380-81 (Fed. Cir. 2002) (explaining that a claim may be invalid for a lack of enablement if it covers a significant number of inoperative embodiments).

130 *See supra* note 113.

131 *See supra* note 122 (describing "without undue experimentation").

But again, the applicant enjoys a presumption that the full scope of the claim is enabled and the examiner carries the burden of proving otherwise.[132] With this in mind, the applicant responds with two related rebuttal arguments. First, to satisfy enablement, the applicant can rely on what the PHOSITA already knows to provide information not explicitly set forth in the patent document.[133] Second, experimentation that is time-consuming or requires the manipulation of multiple variables is not necessarily undue — particularly if the nature of the art so demands,[134] the experimentation is "merely routine,"[135] or the written description "provides a reasonable amount of guidance with respect to the direction in which experimentation should proceed."[136]

Upon reconsideration, the examiner is unwilling or unable to challenge the applicant and withdraws the enablement rejection.[137] Absent other grounds for unpatentability, the application proceeds to patent issuance.[138]

2. Implications for Patent Quality, Innovation, and Patent Policy

As noted earlier, certain practices and procedures at the PTO have contributed to the issuance of low-quality patents.[139] The agency's

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[132] *See In re* Marzocchi, 439 F.2d 220, 223 (C.C.P.A. 1971).

[133] AK Steel Corp. v. Sollac, 344 F.3d 1234, 1244 (Fed. Cir. 2003) (explaining that the patent document "[need not] describe how to make and use every possible variant of the claimed invention, for the [PHOSITA's] knowledge of the prior art and routine experimentation can often fill gaps . . . and perhaps even extrapolate beyond the disclosed embodiments, depending upon the predictability of the art"). *But see* ALZA Corp. v. Andrx Pharms., LLC, 603 F.3d 935, 940-41 (Fed. Cir. 2010) (explaining that an applicant cannot simply rely on the PHOSITA's knowledge as a substitute for missing information).

[134] *In re* Wands, 858 F.2d 731, 737 (Fed. Cir. 1988); *see also In re* Angstadt, 537 F.2d 498, 502-03 (C.C.P.A. 1976) (explaining that since limiting claim scope to embodiments actually made is bad patent policy, the unfortunate consequence is that a PHOSITA may have to engage in time-consuming experimentation to figure out what works).

[135] Johns Hopkins Univ. v. CellPro, Inc., 152 F.3d 1342, 1360 (Fed. Cir. 1998) (citation omitted).

[136] *Id.*

[137] Once the applicant provides rebuttal evidence, the examiner "must then weigh all the evidence[,] including . . . any new evidence supplied by [the] applicant, and any evidence and scientific reasoning previously presented in the [initial] rejection and then decide whether the claimed invention is enabled." MPEP, *supra* note 114, § 2164.05.

[138] *See supra* note 116 and accompanying text.

[139] *See supra* notes 11–14 and accompanying text.

leadership recognizes the problem[140] and seeks to provide the examining corps with the time, tools, and incentives necessary to help ensure a more robust examination of patent applications.[141] The agency hopes that these measures will reduce the number of questionable patents that issue.[142]

But the presumption of patentability and current allocations of burdens of proof pose major obstacles to achieving this goal. Even if examiners are better equipped and motivated to do their jobs, compelling them to affirmatively prove unpatentability still gives applicants the upper hand.[143] As explained in the Federal Trade Commission's 2003 report on the patent system and how to improve it:

> The ex parte nature of the [examination] proceeding leaves the examiner on his or her own to evaluate and challenge applicants' assertions. Because the courts have placed the burden on the PTO to demonstrate grounds for rejecting a patent, rather than on the applicant to demonstrate that it meets the statutory criteria, difficulties in assembling responsive evidence work in favor of patent applicants.[144]

This predilection toward patent issuance impedes efforts to improve patent examination quality and reduce overall application volume (and hence, the application backlog)[145] by deterring filings for frivolous inventions.[146]

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[140] *See, e.g.*, U.S. PATENT & TRADEMARK OFFICE, 2014–2018 STRATEGIC PLAN 8 (2014), *available at* http://www.uspto.gov/about/stratplan/USPTO_2014-2018_Strategic_Plan.pdf; Michelle K. Lee, Dir., U.S. Patent & Trademark Office, Remarks at the Patent Quality Summit (Mar. 25, 2015) (transcript available at http://www.uspto.gov/about-us/news-updates/remarks-michelle-k-lee-patent-quality-summit).

[141] Press Release, U.S. Patent & Trademark Office, Recently Announced Changes to USPTO's Examiner Count System Go into Effect (Feb. 18, 2010), *available at* http://www.uspto.gov/news/pr/2010/10_08.jsp (announcing changes that will give examiners more time to review applications, rebalance incentives, and improve morale); *see also* sources cited *supra* note 140.

[142] *See* sources cited *supra* notes 140–41.

[143] *See* Leslie, *supra* note 83, at 108.

[144] FTC REPORT, *supra* note 82, at 8; *see also id.* at 8 ("A plethora of presumptions and procedures tip the scales in favor of the ultimate issuance of a patent, once an application is filed.").

[145] *See supra* note 14 and accompanying text.

[146] "To put it crudely, if the [P]atent [O]ffice allows bad patents to issue, this encourages people with bad applications to show up." JAFFE & LERNER, *supra* note 1, at 175. On the other hand, a robust regime does the opposite because inventors "would understand that [low-quality] applications are a waste of time and money." *Id.*

The patent system's overarching goal is to promote technological progress.[147] In theory, each of the individual statutory requirements for patentability seeks to further this objective.[148] But given that the presumption of patentability presupposes that every patent application fully complies with each requirement,[149] an important question is whether the presumption of patentability can *interfere* with the screening function of the statutory requirements and actually *impede* technological progress.

The presumption has a greater adverse effect on some statutory requirements than on others. For instance, certain judicially-created rules and standards pertaining to the law of novelty[150] and nonobviousness[151] can temper the presumption in certain situations

147 *See supra* note 32 and accompanying text.

148 *See, e.g.*, Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 148 (1989) (noting that an invention which lacks novelty not only adds nothing to the sum of human knowledge, but "would in fact injure the public by removing existing knowledge from public use"); Nat'l Recovery Techs., Inc. v. Magnetic Separation Sys., Inc., 166 F.3d 1190, 1195-96 (Fed. Cir. 1999) (noting that the purpose of the enablement requirement is to ensure enrichment of public knowledge).

149 *See supra* note 103 and accompanying text.

150 Novelty ensures that an invention is new by denying a patent if the claimed subject matter is identical to what is already known. 35 U.S.C. §§ 101–102 (2012). An invention enjoys a presumption of novelty, which means that the examiner must prove that the invention already exists in the prior art to defeat the novelty requirement. *In re* Wilder, 429 F.2d 447, 450 (C.C.P.A. 1970). To illustrate how the novelty doctrine can temper the presumption, suppose that the invention at issue is a device, and the examiner finds a prior art reference which discloses a picture of an identical device but does not explain how to make it. The courts have held that the examiner is allowed to presume that a PHOSITA could have made the device disclosed in the prior art. *See In re* Antor Media Corp., 689 F.3d 1282, 1287-88 (Fed. Cir. 2012). To move forward, the burden shifts to the applicant to prove that a PHOSITA could not have made the device without undue experimentation. *Id.* (citing *In re* Sasse, 629 F.2d 675, 681 (C.C.P.A. 1980)). If the applicant cannot do this, the device is unpatentable. *Wilder*, 429 F.2d at 450-52; *In re* Jacobs, 318 F.2d 743, 745 (C.C.P.A. 1963).

151 Nonobviousness ensures that an invention is "new enough," 1 CHISUM, *supra* note 52, § 3.01, meaning that it targets inventions which are sufficiently close to the prior art and thus, within the PHOSITA's technical grasp. *See* 35 U.S.C. § 103 (2012). An examiner must evaluate nonobviousness by considering the scope and content of the relevant prior art; the differences between the prior art and the claimed invention; the PHOSITA's level of skill; and secondary considerations which provide objective proof of nonobviousness, such as commercial success and a long felt but unmet need for the invention. Graham v. John Deere Co., 383 U.S. 1, 17-18 (1966). Importantly for present purposes, the nonobviousness hurdle is now higher than before. *See* KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 415 (2007) (rejecting the Federal Circuit's rigid test for nonobviousness because it was inconsistent with the "expansive and flexible" approach set forth in *Graham*).

by placing a heavier burden on the applicant.[152] Denying a patent in these situations fulfills a basic policy objective of the patent system: to thwart a patent that would impinge upon unfettered access to technology already in the public domain.[153]

However, the situation is quite different for enablement — the patentability requirement which "lies at the heart of the patent bargain . . . ."[154] By requiring an applicant to provide a disclosure sufficient to teach a PHOSITA how to make and use the invention,[155] enablement ensures that the applicant's disclosure sufficiently enriches public knowledge.[156] There is hope that the knowledge gained will reduce research and development ("R&D") waste,[157] spur creativity,[158] and ultimately extend the frontiers of science and technology.[159]

Importantly, and in contrast to novelty and nonobviousness, the presumption of patentability is not tempered in the enablement context because the substantive law of enablement has a strong pro-patent bias.[160] This becomes clear when one looks at the burden faced by an examiner who wants to mount an enablement challenge. The key factor in the enablement inquiry is the substantive teaching

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[152] *See, e.g.*, *Antor Media*, 689 F.3d at 1287-88; *see also* discussion *supra* note 150.

[153] *See* Pfaff v. Wells Elecs., Inc., 525 U.S. 55, 65 (1998); *see also* Aronson v. Quick Point Pencil Co., 440 U.S. 257, 262 (1979) ("[T]he stringent requirements for patent protection seek to assure that ideas in the public domain remain there for the free use of the public.").

[154] 3 CHISUM, *supra* note 52, § 7.01; *see also* LizardTech, Inc. v. Earth Res. Mapping, Inc., 424 F.3d 1336, 1344 (Fed. Cir. 2005) (describing enablement as the "essential part of the quid pro quo of the patent bargain").

[155] *See supra* note 122 (describing the "without undue experimentation" requirement).

[156] Nat'l Recovery Techs., Inc. v. Magnetic Separation Sys., Inc., 166 F.3d 1190, 1195-96 (Fed. Cir. 1999); FTC REPORT, *supra* note 82, at 3-4.

[157] Kenneth W. Dam, *The Economic Underpinnings of Patent Law*, 23 J. LEGAL STUD. 247, 267 n.79 (1994).

[158] *See* MICHAEL A. GOLLIN, DRIVING INNOVATION 15-19 (2008) (explaining that disclosure adds to the pool of accessible knowledge which other creative individuals can use and improve upon); Jeanne C. Fromer, *Patent Disclosure*, 94 IOWA L. REV. 539, 548-49 (2009) ("[D]isclosure can stimulate others to design around the invention or conceive of new inventions — either by improving upon the invention or by being inspired by it — even during the patent term." (citations omitted)); Timothy R. Holbrook, *Possession in Patent Law*, 59 SMU L. REV. 123, 132-33 (2006) (making a similar argument).

[159] ROGER E. SCHECHTER & JOHN R. THOMAS, PRINCIPLES OF PATENT LAW § 1.2.3, at 6 (2004) (noting that patents enrich the public domain and thus support further innovation).

[160] *See* Sean B. Seymore, *Heightened Enablement in the Unpredictable Arts*, 56 UCLA L. REV. 127, 143-54 (2008).

provided in the applicant's disclosure.[161] Gauging the sufficiency of this teaching is easiest when the examiner can evaluate actual experimental data or a description of embodiments actually made.[162] But unlike the rules of mainstream science, "which require actual performance of every experimental detail"[163] as a prerequisite for publication, an applicant can obtain a patent with no (or very little) actual proof of concept or pre-filing experimentation.[164] In fact, patent law "explicitly assumes the need for more experimentation after filing to actually implement the invention."[165] Thus, examiners must afford every application a presumption of enablement even if there is minimal teaching disclosed therein.[166]

While this presumption might not be a cause for concern for simple inventions like paper clips and broom rakes,[167] it raises questions for more complex inventions like chemical compounds and sophisticated devices.[168] The absence of a detailed teaching, combined with the information asymmetry,[169] provide dubious guidance to the PHOSITA and make it hard for examiners to adequately gauge enablement.[170]

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161 Sitrick v. DreamWorks, LLC, 516 F.3d 993, 1000 (Fed. Cir. 2008).

162 *See In re* Strahilevitz, 668 F.2d 1229, 1232 (C.C.P.A. 1982) (explaining "that working examples are desirable in complex technologies"); *cf.* Sean B. Seymore, *The Teaching Function of Patents*, 85 NOTRE DAME L. REV. 621, 652-53 (2010) [hereinafter *Teaching Function*] (advocating a working example requirement for complex technologies which would, among other things, simplify the enablement analysis).

163 Hoffmann-La Roche, Inc. v. Promega Corp., 323 F.3d 1354, 1377 (Fed. Cir. 2003) (Newman, J., dissenting).

164 *See In re* Chilowsky, 229 F.2d 457, 461 (C.C.P.A. 1956) ("The mere fact that something has not previously been done clearly is not, in itself, a sufficient basis for rejecting all applications purporting to disclose how to do it."). It is well settled in U.S. patent law that the concept itself — and not any physical act — is the key facet of the inventive process. Pfaff v. Wells Elecs., Inc., 525 U.S. 55, 60 (1998).

165 Christopher A. Cotropia, *The Folly of Early Filing in Patent Law*, 61 HASTINGS L.J. 65, 93 (2009) [hereinafter *Early Filing*] (citing Impax Labs., Inc. v. Aventis Pharm., Inc., 545 F.3d 1312, 1314-15 (Fed. Cir. 2008)).

166 *See supra* note 132 and accompanying text.

167 *See* Seymore, *Teaching Function*, *supra* note 162, at 644 (arguing that a PHOSITA can make simple inventions with a minimal amount of teaching from the inventor).

168 *See id.*

169 *See* discussion *infra* Part II.B.

170 In certain complex fields, "the technical scope and substance of the disclosure are very important because the PHOSITA must rely heavily, if not exclusively, on the instruction provided within the four corners of the patent document in order to practice the invention." Sean B. Seymore, *Patently Impossible*, 64 VAND. L. REV. 1491, 1528 (2011) [hereinafter *Patently Impossible*]. Thus, the lack of a detailed teaching means that a PHOSITA will probably need to engage in undue experimentation to practice the full scope of the invention. *See id.* at 1530.

Though it is true that the courts have started to police compliance with enablement more aggressively,[171] the fact still remains that an examiner who questions enablement bears the burdens of both building a prima facie case of nonenablement and carrying the ultimate burden of persuasion on the issue.[172] These burdens tip the scales toward patent issuance not only because of the examiner's time pressures and incentives,[173] but also because "[i]t is actually very difficult to offer rigorous proof that something *cannot* be done . . . ."[174] So it is easy to see how dubiously enabled patents (and thus, patents of dubious quality) can slip through the cracks. Of course, such patents add little or nothing to the public storehouse of technical knowledge,[175] supply little technical fodder for follow-on researchers to build upon,[176] and can create insurmountable roadblocks (intentionally or not)[177] for others with meritorious inventions.[178]

[171] *See infra* notes 245–46 and accompanying text.

[172] *See* discussion *supra* Part II.A.1.

[173] Examiner incentives are complicated; certain application-related activities "count" more for production goals, promotion, and bonus decisions than others. Mark A. Lemley & Bhaven Sampat, *Examiner Characteristics and Patent Office Outcomes*, 94 REV. ECON. & STAT. 817, 818 (2012). For example, prior art searching and issuing a final rejection do not count, but a case disposal (through allowance or abandonment), response to an RCE, or first action on a continuation application count. *Id.* This creates "[a] dissonance for examiners . . . some examiners choose an allowance strategy to maximize their counts, thereby increasing the number of patents issued" whereas "some examiners choose a rejection strategy to maximize counts, forcing applicants to file [continuation] applications or RCEs . . . ." Sean Tu, *Luck/Unluck of the Draw: An Empirical Study of Examiner Allowance Rates*, 2012 STAN. TECH. L. REV. 10, 27 (citing JAFFE & LERNER, *supra* note 1, at 135-36).

[174] *See* Arthur Kantrowitz, *Proposal for an Institution for Scientific Judgment*, 156 SCIENCE 763, 764 (1967) (emphasis added).

[175] *See infra* note 332 and accompanying text.

[176] In other words, the disclosure lacks sufficient technical detail to be helpful. It does little to advance technological progress, which the Constitution requires. Graham v. John Deere Co., 383 U.S. 1, 6 (1966).

[177] For instance, so-called "nuisance" prior art describing an unworkable invention "can . . . be generated as a result of a bona fide attempt at a constructive reduction to practice that for some unexpected reason fails to work as disclosed." David S. Wainwright, *Patenting Around Nuisance Prior Art*, 81 J. PAT. & TRADEMARK OFF. SOC'Y 221, 223-24 (1999). Innocuously disclosed information has the same effect. *See id.* at 222, 223 n.3.

[178] A good example is when an early filer strategically drafts claims which cover undeveloped technology. *See* BESSEN & MEURER, *supra* note 1, at 67 (arguing that the practice "penalizes real innovators who operate in the shadow of early, broad claims").

3. Is There a Statutory Basis for the Pro-Patent Bias?

The presumption of patentability and burden-shifting framework emerged from centuries-old agency practices,[179] later buttressed by decisional law from the U.S. Court of Customs and Patent Appeals ("C.C.P.A.")[180] and its successor court, the U.S. Court of Appeals for the Federal Circuit.[181] Those who defend this paradigm now point to the introductory clause of § 102 of Title 35 of the Patent Act for support, which states that "[a] person shall be entitled to a patent unless . . . ."[182]

Since § 102 deals with novelty, on its face the language seems to create a presumption of novelty. The C.C.P.A. recognized as much.[183] Yet the Federal Circuit has construed this language much more broadly to compel the PTO to demonstrate unpatentability for *any* of the patentability criteria.[184] One possible justification for this one-size-fits-all interpretation is that it would be unworkable for applicants, the PTO, and the courts to handle different and unique presumptions and proof burdens for each patentability requirement.[185]

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[179] *See, e.g.*, E.J. STODDARD, ANNOTATED RULES OF PRACTICE IN THE UNITED STATES PATENT OFFICE 226 (1920) (Rule 65, which explained that "[t]he reasons for the rejection will be fully and precisely stated" so as to aid the applicant in deciding whether to prosecute his application or alter the specification); *id.* at 231 (Rule 66, which required the examiner to explain the pertinence of an asserted reference); *see also* Leon Zitver, *The Resolution of Doubt*, 28 J. PAT. OFF. SOC'Y 389, 397-98 (1946) (exploring the history of placing the burden of proving unpatentability on the examiner).

[180] The C.C.P.A. was a five-judge Article III appellate court on the same level as the U.S. Courts of Appeals. *See* GILES S. RICH, A BRIEF HISTORY OF THE UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS 1-2 (1980).

[181] The Federal Courts Improvement Act of 1982 abolished the C.C.P.A. *See* Federal Courts Improvement Act of 1982, Pub. L. No. 97-164, 96 Stat. 36 (codified as amended in scattered sections of 28 U.S.C.). Soon after its creation, the Federal Circuit adopted C.C.P.A. decisional law as binding precedent. *See* South Corp. v. United States, 690 F.2d 1368, 1370 (Fed. Cir. 1982) (en banc).

[182] 35 U.S.C. § 102 (2012).

[183] *In re* Wilder, 429 F.2d 447, 450 (C.C.P.A. 1970) ("[T]he statute provides for what may be said to be a presumption of novelty in the language of section 102 'a person shall be entitled to a patent *unless* . . . .'" (emphasis added)).

[184] *See* FTC REPORT, *supra* note 82, at 8 n.56. So as far as the presumption is concerned, the courts make no distinction between novelty and the other substantive requirements for patentability.

[185] *But see* Aristocrat Techs. Austl. PTY Ltd. v. Int'l Game Tech., 543 F.3d 657, 662 (Fed. Cir. 2008) (noting that while utility, patent-eligible subject matter, novelty, and nonobviousness are "conditions for patentability," the disclosure requirements of § 112 are "merely requirements for obtaining a valid patent").

The Federal Circuit also points to the introductory clause of § 102 as support for the locution of the initial burden of producing evidence and the burden of persuasion.[186] As former Chief Judge Paul Michel once explained:

> If the claimed invention is patentable, the applicant is entitled to a patent (because the statute says so) — not eventually, but as soon as patentability can be determined. Moreover, the burden of proof is on the PTO to show unpatentability, not on the applicant to establish patentability, and it remains on the PTO even if [it] has made a prima facie case.[187]

This expansive interpretation of the clause not only places an applicant in a very good position but also impedes attempts "to weed out unwarranted patents."[188]

The details of the clause's drafting history also suggest that the Federal Circuit is reading too much into it. The 1952 Patent Act was co-drafted by then-Examiner-in-Chief Pasquale J. (Pat) Federico[189] and then-patent attorney and future C.C.P.A. and Federal Circuit Judge Giles Sutherland Rich.[190] In a first-person account of the drafting of the clause, Judge Rich explained the choice of positive language:

> There is an interesting thing about the introductory clause of . . . [§] 102. Pat [Federico] originally wrote "An invention shall not be considered new or capable of being patented if . . . ." As the drafting progressed, taking a tip from the Lanham Act, section 2, we turned it into the positive statement "A person shall be entitled to a patent unless . . . ." as it reads

[186] *Cf.* FTC REPORT, *supra* note 82, at 9 ("[T]he courts have interpreted the patent statute to require the PTO to grant a patent application unless the PTO can establish that the claimed invention does not meet one or more of the patentability criteria. Once an application is filed, the claimed invention is effectively presumed to warrant a patent unless the PTO can prove otherwise.").

[187] Paul R. Michel, *The Challenge Ahead: Increasing Predictability in Federal Circuit Jurisprudence for the New Century*, 43 AM. U. L. REV. 1231, 1249 (1994).

[188] FTC REPORT, *supra* note 82, at 31-32.

[189] For a short biographical sketch, see Giles S. Rich, *P.J. (Pat) Federico and His Works*, 64 J. PAT. OFF. SOC'Y 3, 3-11 (1982).

[190] *See* Giles S. Rich, *Congressional Intent — Or, Who Wrote the Patent Act of 1952?, Lecture Presented at the First Annual Institute on Patent Law (Mar. 21-22, 1963)*, *in* PATENT PROCUREMENT AND EXPLOITATION 61, 67-69 (1963) (discussing the composition of the Drafting Committee for the bill that became the 1952 Patent Act).

> today. We just felt like slapping down the detractors of the patent system, many of whom were in the judiciary.[191]

The judicial hostility existed at the Supreme Court, which Justice Jackson admitted in a 1949 opinion had a "strong passion . . . for striking [patents] down"[192] and believed that "the only patent that is valid is one which this Court has not been able to get its hands on."[193]

But the Federal Circuit's motivation for an expansive interpretation of the clause might have less to do with changing attitudes about the patent system and more to do with the court's interest in exerting its influence over the PTO. To the extent that the Federal Circuit views itself as the overseer of the agency,[194] the court has an interest in ensuring that the PTO refrains from making arbitrary patentability determinations. This explains, at least in part, why the court insists that the PTO supports determinations of unpatentability with factual evidence or sound technical reasoning[195] rather than with conclusory statements[196] or subjective judgments.[197] Thus, it could be argued that

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[191] Janice M. Mueller, *A Rich Legacy*, 14 BERKELEY TECH. L.J. 895, 902 (1999) (quoting an e-mail from Judge Giles S. Rich to Janice Mueller, Assoc. Professor, The John Marshall Law School (Aug. 8, 1997)). The original language appeared in the first bill introduced in Congress relating to what became the Patent Act of 1952 in 1950. The text was changed in a subsequent bill introduced in the next congressional session. *Compare* H.R. 9133, 81st Cong. § 102 (2d Sess. 1950) ("An invention shall not be considered new or capable of being patented if . . . ."), *with* H.R. 3760, 82d Cong. § 102 (1st Sess. 1951) ("A person shall be entitled to a patent unless . . . .").

[192] Jungersen v. Ostby & Barton Co., 335 U.S. 560, 572 (1949) (Jackson, J., dissenting).

[193] *Id.* Judge Rich wrote shortly before his death that Justice Jackson's words "rocked the patent bar at that time and for many years to come." George M. Sirilla & Giles S. Rich, *35 U.S.C. § 103: From* Hotchkiss *to Hand to Rich, the Obvious Patent Law Hall-of-Famers*, 32 J. MARSHALL L. REV. 437, 485 (1999).

[194] *Cf.* Clarisa Long, *The PTO and the Market for Influence in Patent Law*, 157 U. PA. L. REV. 1965, 1975 (2009) ("In addition to getting more autonomy from executive branch oversight, the PTO has also been trying to get more deferential review of its decisions from the Federal Circuit."); Masur, *Patent Inflation*, *supra* note 13, at 472 (explaining how the Federal Circuit "dictates" the rules of substantive patent law to the PTO).

[195] *See, e.g.*, *In re* Marzocchi, 439 F.2d 220, 224 (C.C.P.A. 1971) (noting that specific technical reasons are required to challenge enablement). The Federal Circuit has held that the Administrative Procedure Act, which governs PTO tribunals and the related judicial review, requires the agency to provide a record with full, reasoned, and well-articulated explanations for its conclusions. *In re* Sang-Su Lee, 277 F.3d 1338, 1342 (Fed. Cir. 2002) (citing Dickinson v. Zurko, 527 U.S. 150 (1999)).

[196] *See, e.g.*, *In re* Kahn, 441 F.3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rationale underpinning to support the legal conclusion of obviousness."); *accord* K/S HIMPP v. Hear-Wear

the current proof paradigm exists simply to ensure fairness in patent examination. A different view is that it reflects skepticism about the PTO's technical competence.[198]

In fact, the introductory clause of § 102 raises an interesting interpretive question. I contend that the language "[a] person shall be entitled to a patent unless . . . ." simply states that *unless* the applicant satisfies the statutory patentability criteria, the applicant is not entitled to a patent. Or, stated differently, *if* the applicant satisfies the statutory patentability criteria, then the applicant is entitled to a patent. The clause says nothing about a presumption or burden of proof — all it does is merely state what must be done to receive a patent.

This interpretation makes sense as a normative matter. The current proof paradigm is anomalous and outside of the mainstream of agency action. Even for mundane things like driver's licenses, permits, and passports, the applicant does not presumptively get it unless the agency can prove nonentitlement. There is no presumption at all; rather, *the applicant has the burden of proving an entitlement* (by for example, providing documentary evidence and satisfying prescribed criteria).[199] And those rights pale in comparison to the twenty-year exclusory right conferred by a patent. It is nonsensical that anyone who shows up at the PTO is presumptively entitled to a patent *and will get one* unless the examiner can prove nonentitlement by a preponderance of the evidence.[200]

Techs., LLC, 751 F.3d 1362, 1365 (Fed. Cir. 2014).

197 For an example of the courts chastising the PTO for subjective judgments, see *In re* Ratti, 270 F.2d 810, 814 (C.C.P.A. 1959) (rejecting the agency's contention that an invention must possess "some definite advantage over the prior art" in order to be patentable).

198 *See* Craig Allen Nard, *Deference, Defiance, and the Useful Arts*, 56 OHIO ST. L.J. 1415, 1449-50 (1995) (raising the issue of technical competence and noting concerns from the members of the patent bar "who believe that the PTO could be more efficient and technologically savvy"). *But see* Arti K. Rai, *Engaging Facts and Policy: A Multi-Institutional Approach to Patent System Reform*, 103 COLUM. L. REV. 1035, 1068-69 (2003) (arguing that the Federal Circuit should defer more often to the PTO's technical expertise).

199 *See, e.g.*, KAN. STAT. ANN. § 8-240 (2015) (setting forth the requirements for a driver's license, which include a vision test, written test, driving test, and documentation showing full legal name, age, address of permanent residency, social security number, and proof of lawful presence in the United States); 22 C.F.R. §§ 51.20–.28 (2015) (setting forth the requirements for a U.S. passport; including the completion of an application; photographs that confirm to prescribed criteria; and identity, which "the applicant has the burden of establishing" with certain forms of documentary evidence).

200 *See supra* Part II.A.1.

It is now time to do away with this pro-patent bias. As discussed below in Part III, I propose a regime which does away with the presumption of patentability and places the burden of persuasion on the applicant.[201] This would eliminate the proof asymmetry and rebalance the scales of patentability.

B. The Information Asymmetry

To a large extent, the assurance of a good PTO examination is all about information.[202] Clearly an examiner must have all of the relevant technical information in hand in order to accurately gauge patentability. A fair amount of information comes from the searchable body of patent and non-patent literature[203] (although examiners show a bias toward the former).[204] But given that the inventor is generally a person of extraordinary skill[205] who knows more about the invention and the technical field than the examiner,[206] no one actually believes that all of the relevant information that the inventor has ends up before the examiner.[207] This information asymmetry inevitably allows

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[201] *See infra* Part III.

[202] *See* Christopher A. Cotropia, *Modernizing Patent Law's Inequitable Conduct Doctrine*, 24 BERKELEY TECH. L.J. 723, 748 (2009) ("The assurance of a good patent quality is all about information . . . .").

[203] The patent literature consists of issued patents and published patent applications. Principal sources of nonpatent literature include books, treatises, and technical journals.

[204] *See* John R. Allison & Mark A. Lemley, *The Growing Complexity of the United States Patent System*, 82 B.U. L. REV. 77, 102 (2002) ("[T]he PTO is much more likely to find documents that it itself has generated."); Bhaven N. Sampat, Determinants of Patent Quality: An Empirical Analysis 3 (Sept. 2005) (unpublished manuscript), *available at* http://www.immagic.com/eLibrary/ARCHIVES/GENERAL/COLUMBIA/C050902S.pdf (finding that examiners are less likely to find nonpatent prior art).

[205] Unlike the PHOSITA, patent law presumes that inventors have extraordinary skill. Standard Oil Co. v. Am. Cyanamid Co., 774 F.2d 448, 454 (Fed. Cir. 1985).

[206] *See* Abbot Labs. v. Sandoz, Inc., 544 F.3d 1341, 1357 (Fed. Cir. 2008) (noting that "the patent practice includes recognition that the inventor usually knows more about the field than does the 'expert' patent examiner"); Lichtman & Lemley, *supra* note 22, at 53 (explaining that examiners "have backgrounds roughly related to the technology at hand, but . . . are rarely experts on the precise details of the relevant invention").

[207] *See* MARTIN J. ADELMAN ET AL., CASES AND MATERIALS ON PATENT LAW 579 (4th ed. 2015) ("Experience teaches, however, that applicant obligations of candor may be tempered by the great incentive they possess not to disclose information that might deleteriously impact their prospective patent rights."); Timothy R. Holbrook, *Patents, Presumptions, and Public Notice*, 86 IND. L.J. 779, 805, 818 (2011) [hereinafter *Presumptions*] (exploring the incentives for applicants to behave strategically and withhold certain information from the examiner, particularly in the absence of an

bad patents to slip through the cracks and further contributes to the patent quality problem.

1. Understanding the Information Deficit

Patent procurement imposes a substantial information burden on the PTO. As Professor Lee Petherbridge has explained:

> The Patent Office has three primary information functions . . . collection, use, and recordation. The Patent Office performs its "collection" function by (1) collecting information concerning the boundaries of the property for which an applicant seeks the right to exclude and (2) collecting information concerning the prior art [or other patently relevant factors]. The Patent Office performs its "use" function by engaging in the substantive decision making that attends the statutory requirements for patentability. The Patent Office performs its "recordation" function by (1) recording information useful for defining the boundaries of the property and (2) recording information that shows how the boundaries of the patented property make that property . . . distinct from property already in the public domain.[208]

The collection and use functions in particular can be very information-demanding inquiries.[209] For example, the Federal Circuit has articulated eight factors which can be relevant in determining whether an applicant's disclosure satisfies the enablement requirement; including the state of the prior art and the PHOSITA's knowledge and level of skill.[210] Similarly, nonobviousness is a highly fact-intensive inquiry that also depends on the nature of the technology and the PHOSITA's knowledge and skill.[211] The information demands of these

adversarial check); *infra* notes 218–19 and accompanying text.

208 Lee Petherbridge, *Positive Examination*, 46 IDEA 173, 189 (2006).

209 *See* Peter Lee, *Patent Law and the Two Cultures*, 120 YALE L.J. 2, 62-74 (2010) (exploring the information-demanding nature of the patentability requirements and the associated costs and externalities).

210 *See* discussion *supra* note 124 (discussing the test for enablement set forth in *In re* Wands, 858 F.2d 731, 737 (Fed. Cir. 1988)).

211 Christopher A. Cotropia, *Nonobviousness and the Federal Circuit: An Empirical Analysis of Recent Case Law*, 82 NOTRE DAME L. REV. 911, 929 (2007). The nonobviousness requirement, embodied in § 103(a) of the Patent Act, denies patents for trivial extensions of what is already in the public domain. *See* John F. Duffy, *Inventing Invention: A Case Study of Legal Innovation*, 86 TEX. L. REV. 1, 6-17 (2007)

multifactor inquiries intensify as the subject matter becomes more complex.[212]

The information deficit is exacerbated by a disconnect between the patent examiner and mainstream science and technology. Structural and substantive aspects of patent examination cause this technological lag.[213] Given the technical nature of the examiner's job, one might expect this individual to know exactly what is happening at the forefront of theory and experiment in a particular discipline. This is not the case, however, because the examiner is not an active researcher. And the examiner's time pressures, incentives, and production goals afford little opportunity for professional development.[214] Together, these realities essentially divorce examiners from the frontlines of science — a place where patent protection is often crucial.[215] An unfamiliarity with new technologies and lack of information about them may ultimately hurt patent (examination) quality.[216]

Solving the information-gathering problem is not easy. For instance, providing examiners with more time to work on complex cases would not solve the problem. As Joseph Scott Miller has argued:

(exploring the wisdom of denying patents for trivial inventions). For the basic framework for determining nonobviousness set forth by the Supreme Court in *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966), see discussion *supra* note 151.

[212] *See* Lee, *supra* note 209, at 67.

[213] Seymore, *Patently Impossible*, *supra* note 170, at 1512-14.

[214] For a discussion of the examiner's incentives, see *supra* notes 12 and 173. The amount of time the PTO allots for an examiner to dispose of a case depends on factors like patent seniority and the technology involved. *See* Michael D. Frakes & Melissa F. Wasserman, *Does Agency Funding Affect Decisionmaking?: An Empirical Assessment of the PTO's Granting Patterns*, 66 VAND. L. REV. 65 app. A, at 135-36 tbl.1 (tabulating examiner hours allotted for various technology classes).

[215] *See, e.g.*, Lemley, *Rational Ignorance*, *supra* note 11, at 1504 (suggesting that a firm may obtain a patent to "stake their claim" in an area of technology to signal to investors and competitors that it operates at the cutting edge); Clarisa Long, *Patent Signals*, 69 U. CHI. L. REV. 625, 647-49 (2002) (arguing that firms obtain patents to show their R&D acumen or technological capacity).

[216] BESSEN & MEURER, *supra* note 1, at 161; *see also* John R. Allison & Ronald J. Mann, *The Disputed Quality of Software Patents*, 85 WASH. U. L. REV. 297, 314 (2007) ("[P]atent examiners unfamiliar with a cutting-edge technology like software may be less capable of assessing the quality of the disclosure or of the innovation than they are in technological areas with which they are more familiar."). To improve technical training in the examining corps, the PTO has created a program which invites technical experts to volunteer as guest lecturers "to update [examiners] on technical developments, the state of the art, emerging trends, maturing technologies, and recent innovations in their fields." Patent Examiner Technical Training Program, 75 Fed. Reg. 56059 (Sept. 15, 2010).

> [E]ven if the Patent Office were to invest far more in reviewing applications, its review would still suffer from a basic knowledge deficit compared to that which well-informed inventors and their competitors possess. Unlike these parties, the Patent Office is not actually innovating on the leading edge of technological change in a given field.[217]

Applicants can do much to improve the information deficit because they "know better than [the PTO or] anyone else precisely what it is they have developed or invented."[218] The challenge is to get this knowledge into the examiner's hands.[219]

2. Proof Problems

There is a link between the information asymmetry and proof asymmetry discussed in the previous section.[220] To understand this linkage, it is first necessary to ask why the Federal Circuit embraces the current proof paradigm. One reason might be that the court wants to maximize the quantity of information generated during

[217] Joseph Scott Miller, *Building a Better Bounty: Litigation-Stage Rewards for Defeating Patents*, 19 BERKELEY TECH. L.J. 667, 733 (2004).

[218] *See id.* at 734.

[219] The PTO seeks to combat its information deficit by imposing upon applicants "a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability." 37 C.F.R. § 1.56(a) (2015). I should note that recent amendments to the patent statute under the America Invents Act permit third parties to submit patents, published patent applications, or other printed publications to the PTO for consideration and inclusion in the record of a pending patent application if accompanied by a concise statement of relevance. 35 U.S.C. § 122(e) (2012); 37 C.F.R. § 1.290 (2015). But third-party submission will likely only have a negligible impact on patent quality. *See* Christopher A. Cotropia et al., *Do Applicant Patent Citations Matter?*, 42 RES. POL'Y 844, 845-48 (2013) (finding that examiners overwhelmingly evaluate prior art that they uncover through their own search); Wagner, *supra* note 77, at 2163-64 ("I am skeptical that broadening public access (e.g., allowing additional third party submissions) will be scaled to anything near the size required to make a substantial contribution to patent quality . . . ."); Paul Morgan, *Guest Post: Should you Submit Third-Party Prior Art?*, PATENTLY-O (Jan. 16, 2012), http://patentlyo.com/patent/2012/01/guest-post-should-you-submit-third-party-prior-art.html (questioning overall effectiveness of third-party submissions, examiner reliance on such submissions, and challenging the "strange inherent assumption that large numbers of the public have nothing better to do with their time and money than to undertake the tens of thousands of prior art searches and claim-relevant submissions that would be needed to have any significant effect on patent examination quality for the more than 500,000 patent applications a year").

[220] *See supra* Part II.A.

examination to ensure the production of a robust record for appeal.[221] When the court adjudicates an ex parte appeal from the PTO,[222] it receives a record, which is expressly limited to the prosecution history[223] and proceedings before the Patent Trial and Appeal Board.[224]

So one could argue that the court has constructed the current proof paradigm — at least in part — to address its own information deficit.[225] In deciding whether the applicant or the PTO is in the best position to provide this information, the court seems to believe — and perhaps not unreasonably so (even if not rightly) — that requiring the PTO to both go first by building a prima facie case of unpatentability and to carry the burden of persuasion is the best way to achieve this goal.[226]

Yet, if anything, this proof paradigm exacerbates the information asymmetry. While requiring the examiner to present a prima facie case of unpatentability might be a sensible way to begin prosecution, assigning the PTO the burden of persuasion — particularly when coupled with the presumption of patentability — is a bad way to force information from the applicant. What it does is force information from the *examiner*, who must articulate why the invention fails to meet one or more of the statutory patentability criteria.[227] Then and only then

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[221] *See* Holbrook, *Presumptions*, *supra* note 207, at 817-18 (noting that the court's use of presumptions in the infringement context serves an "information-forcing" function).

[222] For a general discussion of ex parte appeals, see *supra* note 59.

[223] The prosecution history "is the written record of an applicant's dealings with the [PTO], including any actions taken by the examiner, and any statements, arguments, or modifications of the claims made by the applicant." DURHAM, *supra* note 15, at 196.

[224] 35 U.S.C. § 144 (2012); *see also In re* Gartside, 203 F.3d 1305, 1314 (Fed. Cir. 2000) ("In appeals from the Board, we have before us a comprehensive record that contains the arguments and evidence presented by the parties . . . . That record, when before us, is closed . . . . [and] thus dictates the parameters of our review."). By contrast, when a disgruntled applicant files a civil action, "there are no limitations on a patent applicant's ability to introduce new evidence in a § 145 proceeding beyond those already present in the Federal Rules of Evidence and the Federal Rules of Civil Procedure." Kappos v. Hyatt, 132 S. Ct. 1690, 1700-01 (2012); *see also* discussion supra note 59. So in contrast to direct appeal from PTAB, the § 145 path can provide the Federal Circuit with more information.

[225] *See supra* note 221.

[226] Put simply, the court views the status quo as the most pragmatic way to get information in the ex parte appeal context. *See* Lee, *supra* note 209, at 77-79 (arguing that in contrast to district court judges who can conduct complicated factfinding and the Supreme Court which can take a "big picture" approach to patent cases, the Federal Circuit is primarily concerned with "everyday practicality").

[227] *See* discussion *supra* Part II.A.1.

must the applicant provide any information — but only enough to adequately attack or rebut the examiner's contentions.[228] In other words, applicants have an incentive to behave strategically by providing information that is only absolutely necessary to move prosecution forward and get the claims allowed.[229] Much of what the applicant knows about the invention or technology fails to reach the examiner which, in turn, exacerbates the information deficit in the PTO and ultimately at the Federal Circuit.[230] The resulting information asymmetry tips the scales of patentability toward the applicant and compromises patent quality.

C. The Legal Asymmetry

There is an additional asymmetry in patent examination that has escaped the attention of legal scholars. It is the difference in legal acumen between the examiner and applicant — what I call the legal asymmetry. Below I explain how it also tips the scales toward patent issuance.

1. A Mismatch in Legal Acumen

Examiners are hired primarily for their technical experience and ability to apply it to patent examination.[231] Most examiners have a bachelor's or master's degree in the sciences or engineering.[232] Despite criticisms about their level of expertise,[233] examiners are presumed to

[228] *See* James B. Thayer, *The Burden of Proof*, 4 HARV. L. REV. 45, 58 (1890) ("He awaits the action of his adversary; and it is enough if he simply repel him."). Of course, the applicant must comply with the duty of candor. 37 C.F.R. § 1.56(a) (2015).

[229] *See* Bruce L. Hay & Kathryn E. Spier, *Burdens of Proof in Civil Litigation: An Economic Perspective*, 26 J. LEGAL STUD. 413, 417 (1997) (discussing how the burden of proof assignment can alter a party's strategy in presenting information); *supra* note 207.

[230] *See supra* text accompanying notes 221–26.

[231] *See* Tamara Dillon, *Patent Work: The Other Side of Invention*, OCCUPATIONAL OUTLOOK Q. 18, 21 (2009); *Patent Examiner Positions*, USPTO, http://careers.uspto.gov/Pages/PEPositions (last visited July 20, 2015).

[232] *See* sources cited *supra* note 231.

[233] *See, e.g.*, THOMAS H. STANTON ET AL., NAT'L ACAD. OF PUB. ADMIN., U.S. PATENT AND TRADEMARK OFFICE: TRANSFORMING TO MEET THE CHALLENGES OF THE 21ST CENTURY, at xviii (2005), *available at* http://www.napawash.org/images/reports/2005/05USPatentandTrademarkOffice.pdf ("With only 45 percent of the workforce having five years or more of service, USPTO lacks adequate numbers of seasoned examiners to meet its mission challenges."). Many examiners leave the PTO after a few years for other careers. Mark A. Lemley, *Can the Patent Office Be Fixed?*, 15 MARQ. INTELL. PROP. L. REV. 295, 300 (2011). But examiner tenure varies by technical field. *See* Lemley &

be competent in their field of examination.[234] Indeed, this (presumed) technical expertise undergirds the statutory presumption of patent validity.[235]

But there is also a legal component to patent examination. Three patentability requirements — nonobviousness, enablement, and definiteness — are legal conclusions.[236] So patent prosecution involves the exchange of technical *and* legal arguments between the examiner and applicant.[237] Yet, most examiners are not lawyers. And while the PTO offers training on procedural and legal topics related to patent examination,[238] it cannot compare to formal legal training — reading cases and statutes, deductive reasoning, and learning to think like a lawyer — or the expertise acquired in patent practice.[239] This gives rise to a mismatch in legal acumen in patent examination — a nonlawyer examiner (likely a novice)[240] on one side and a patent prosecutor on the other.[241]

Sampat, *supra* note 173, at 820 n.11 (noting that turnover is higher in computer arts and communications positions than in the chemical and mechanical arts).

234 *In re* Lemin, 364 F.2d 864, 867 (C.C.P.A. 1966); *see also* W. Elec. Co. v. Piezo Tech., Inc., 860 F.2d 428, 433 (Fed. Cir. 1988) ("It is no more appropriate to question a patent examiner's technical expertise than it is to question the quality of a judge's law school education or judicial experience.").

235 Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1139 (Fed. Cir. 1985). For a discussion of the presumption of validity, see *supra* notes 72–74 and accompanying text.

236 *See* AK Steel Corp. v. Sollac, 344 F.3d 1234, 1238-39 (Fed. Cir. 2003) ("Whether the subject matter of a patent claim satisfies the enablement requirement of 35 U.S.C. § 112, ¶ 1, is a question of law based on underlying facts."); Honeywell Int'l Inc. v. Int'l Trade Comm'n, 341 F.3d 1332, 1338 (Fed. Cir. 2003) ("[A] determination of whether a claim recites the subject matter which that applicant regards as his invention and is sufficiently definite, so as to satisfy the requirements of 35 U.S.C. § 112, ¶ 2, is a legal conclusion that is reviewed de novo."); *In re* Kotzab, 217 F.3d 1365, 1369 (Fed. Cir. 2000) ("The ultimate determination of whether an invention would have been obvious under 35 U.S.C. § 103(a) is a legal conclusion based on underlying findings of fact.").

237 *See* discussion *supra* Part II.A.1.

238 FY 2014 PERFORMANCE REPORT, *supra* note 14, at 51-53. The PTO's Office of Patent Training offers courses and programs for new and experienced examiners on legal and technical topics. *See id.*

239 The last point is particularly true for the vast majority of examiners who have a short tenure in the PTO and hence, limited experience. *See supra* note 233 and accompanying text.

240 *See supra* note 233 and accompanying text.

241 In describing patent prosecutors, the Federal Circuit has noted that the patenting process "is a complicated one, one that requires both technical and legal credentials in order to effectively prosecute patents for inventors." Nilssen v. Osram Sylvania, Inc., 504 F.3d 1223, 1235 (Fed. Cir. 2007). It is true that nonlawyer patent

2. Consequences

This legal asymmetry exacerbates the patent quality problem. Since the statutory patentability criteria are legal doctrines,[242] a nonlawyer examiner can be hard pressed to craft robust *legal* arguments for denying a patent. Conversely, a nonlawyer may struggle to respond to sophisticated (or even rudimentary) legal arguments made by the applicant to rebut a prima facie case of unpatentability. The point here is that the examiner's lack of legal acumen can tip the scales of patentability toward the applicant.

To illustrate, suppose the examiner has rejected a claim to a new class of chemical compounds for failure to satisfy the enablement requirement of 35 U.S.C. § 112(a) because the applicant's written description cannot teach a PHOSITA how to make and use the full scope of what is claimed without undue experimentation.[243] The applicant responds to the rejection with the following:

> In [1950 case], the C.C.P.A.[244] held that enablement only requires . . . . And in [1990 case], the Federal Circuit similarly held that enablement can be shown by . . . . Accordingly, the applicant respectfully asserts that the rejected claim complies with the enablement requirement of § 112(a).

Although this illustration may seem trite, a nonlawyer examiner might be hard pressed to figure out: (1) what the cited cases *actually say*; (2) even assuming that the applicant is making the argument in good faith, if the cited cases are relevant; and (3) how the *legal* standard for enablement has evolved over the past 65 years and, thus, if the cited cases are still good law. There is a good chance that a lawyer-examiner could successfully challenge the applicant's rebuttal arguments because the examiner knows about (or has the legal aptitude to understand) the Federal Circuit's move toward "full scope" enablement[245] and recent cases applying the more rigorous

agents can prosecute applications upon exhibiting a comprehensive knowledge of patent law through passage of a registration examination (that is, the patent bar exam). *See* 37 C.F.R. § 11.7 (2015). Of course, patent agents employed by law firms are supervised by an attorney.

242 *See supra* note 236 and accompanying text.

243 *See supra* notes 121–24 and accompanying text.

244 For a discussion of the C.C.P.A. (a predecessor to the Federal Circuit), see *supra* notes 180–81.

245 *See* ALZA Corp. v. Andrx Pharm., LLC, 603 F.3d 935, 940-41 (Fed. Cir. 2010); Sitrick v. Dreamworks, LLC, 516 F.3d 993, 999 (Fed. Cir. 2008) ("Enabling the full scope of each claim is 'part of the *quid pro quo* of the patent bargain.'"); Sean B.

standard.[246] By contrast, a nonlawyer examiner might be inclined to acquiesce rather than spend time on a hard case.[247] The point is that the examiner's technical training is certainly helpful but inadequate to thoroughly resolve this patentability issue.

The proof paradigm discussed above makes the situation even worse.[248] Recall that the applicant enjoys a presumption of patentability and the examiner carries the burden of persuasion on unpatentability.[249] Given this proof asymmetry and the examiner's heavy caseload, incentives, and time pressures,[250] a savvy applicant who responds to the examiner with legal arguments — perhaps dubious or fallacious but nevertheless hard for a nonlawyer to challenge — can lead the examiner to grant the patent just to be done with the matter.[251] Of course, examiner acquiescence frustrates the

Seymore, *The Enablement Pendulum Swings Back*, 6 NW. J. TECH. & INTELL. PROP. 278, 284-89 (2008) (describing the emergence of "full scope" enablement as a "lever to invalidate patents").

246 *See* Promega Corp. v. Life Techs. Corp., 773 F.3d 1338, 1348-49 (Fed. Cir. 2014) (noting that, as in *Wyeth*, "the claims at issue here similarly cover potentially thousands of undisclosed embodiments in an unpredictable field" but the written description only provides a "starting point" for the PHOSITA); Wyeth & Cordis Corp. v. Abbott Labs., 720 F.3d 1380, 1386 (Fed. Cir. 2013) (determining that "there is no genuine dispute that practicing the full scope of the claims, measured at the filing date, required undue experimentation" because the written description "disclose[d] only a starting point for further iterative research in an unpredictable and poorly understood field").

247 *See supra* notes 12 and 173.

248 The proof paradigm is discussed *supra* Part II.A.

249 *See supra* Part II.A.1.

250 *See supra* notes 12 and 173.

251 *See* BURK & LEMLEY, *supra* note 1, at 23 ("[A]n examiner has no incentive to spend more time on harder cases. Quite the contrary — their incentive is to dispose of cases as quickly as possible. . . . [T]he easiest way for an examiner [to do so] is to grant rather than to deny a patent."); Joseph Farrell & Robert P. Merges, *Incentives to Challenge and Defend Patents: Why Litigation Won't Reliably Fix Patent Office Errors and Why Administrative Patent Review Might Help*, 19 BERKELEY TECH. L.J. 943, 944 (2004) (mentioning the strategy of "wearing down the examiner" to obtain a patent). But this strategy can ultimately backfire because statements made to an examiner become a part of the prosecution history and may "illuminate" the scope of the claims. Invitrogen Corp. v. Biocrest Mfg., L.P. 327 F.3d 1364, 1367 (Fed. Cir. 2003). Thus, arguments made to induce a patent grant by convincing the examiner that the claimed invention meets the statutory patentability requirements may "limit[] the interpretation of claims so as to exclude any interpretation that may have been disclaimed or disavowed during prosecution in order to obtain claim allowance." Standard Oil Co. v. Am. Cyanamid Co., 774 F.2d 448, 452 (Fed. Cir. 1985). Arguments made to support patentability may also preclude a finding of infringement under the doctrine of equivalents. Tex. Instruments Inc. v. U.S. Int'l Trade Comm'n, 988 F.2d 1165, 1174 (Fed. Cir. 1993).

very purpose of patent examination and compromises patent quality.[252]

III. REBALANCING THE SCALES OF PATENTABILITY

This Article has shown that anyone who seeks a patent on anything is in a very favorable position from the outset. While the three asymmetries described herein work individually and collectively to tip the scales in favor of issuance, it is the proof asymmetry that causes the most mischief because it exacerbates the other asymmetries.[253] To address this problem, I offer a new evidentiary framework for patent examination which eliminates the proof asymmetry and, in doing so, mitigates the information and legal asymmetries. Implementing this proposal would rebalance the scales of patentability and improve patent quality.

A. A New Proof Paradigm

1. Overview

The starting point for the proposal is that rebalancing the scales of patentability — that is, making the issuance of a patent far from a sure thing — will require three key changes in the rules of patent examination. First, the presumption of patentability would be eliminated.[254] Second, while the burden of building a prima facie case would remain with the examiner, the burden of persuasion would now rest with the applicant. This means that an applicant's failure to establish patentability by a preponderance of the evidence will result in a patent denial. Both changes could be accomplished by judicial decision.[255]

Third, I propose a supplementation rule. In limited circumstances, the applicant would be allowed to amend the patent document to include additional technical information to support patentability. This would require the Federal Circuit and the PTO to liberalize the "new matter" doctrine which severely restricts post-filing amendments to the disclosure.[256] To be clear, this would not give the applicant a

[252] *See* discussion *supra* Part I.B.

[253] *See* discussion *supra* Parts II.B–C.

[254] *See supra* Part II.A.3.

[255] *See* discussion *supra* Part II.A.3 (arguing that both the presumption of patentability and current burden-shifting framework lack a sound statutory basis).

[256] When an applicant amends the written description, the PTO instructs

"second bite at the apple" with respect to compliance with the statutory patentability requirements; rather, the supplementation rule merely allows the applicant to adduce additional proof of patentability and include it in the patent document. The key question is whether the additional technical information "was inherently contained in the original application"[257]as of the filing date sought — a fact-based inquiry, which depends on "the nature of the disclosure, the state of the art, and the nature of the added matter."[258] If the examiner makes a positive finding, the additional technical information would be incorporated; thereby yielding a more technically robust patent document than the one originally filed.

2. Mechanics

Adopting this framework would recalibrate the entire patent procurement process by making it less pro-applicant. The nature and amount of proof required from the applicant would depend on the nature of the examiner's rejection and the facts. Below I present illustrations for nonobviousness and enablement — patentability requirements involving highly fact-intensive inquiries.[259]

a. Nonobviousness

Suppose that an inventor develops a stainless steel dinner fork with five tines. Believing that the invention does a better job of spearing food and holding it in place than the traditional forks (with fewer tines), the inventor files a patent application later that year claiming the fork. Though multi-tined forks exist in the prior art, the claimed device is novel because it is not identically disclosed therein.[260]

examiners to be on the alert for "new matter." *See* 35 U.S.C. § 132(a) (2012) ("No amendment shall introduce new matter into the disclosure of the invention."); 37 C.F.R. § 1.121 (2015); MPEP, *supra* note 114, § 706.03(o) (alerting examiners). The new matter prohibition "serve[s] to ensure that the patent applicant was in full possession of the claimed subject matter on the application filing date." TurboCare Div. of Demag Delaval Turbomachinery Corp. v. Gen. Elec. Co., 264 F.3d 1111, 1118 (Fed. Cir. 2001).

257 *TurboCare*, 264 F.3d at 1118 (quoting Schering Corp. v. Amgen Inc., 222 F.3d 1347, 1352 (Fed. Cir. 2000)).

258 Brooktree Corp. v. Advanced Micro Devices, Inc., 977 F.2d 1555, 1574 (Fed. Cir. 1992).

259 Enablement and nonobviousness are legal questions reviewed de novo by the court. *See In re* '318 Patent Infringement Litig., 583 F.3d 1317, 1323 (Fed. Cir. 2009) (discussing enablement); *In re* Kubin, 561 F.3d 1351, 1355 (Fed. Cir. 2009) (discussing nonobviousness).

260 For a discussion of the novelty requirement, see *supra* note 150.

The examiner then evaluates nonobviousness — the major obstacle to patentability[261] and the "bread and butter" of patent examination.[262] The examiner finds two prior art references from the same field of endeavor[263] which teach all of the limitations[264] of the claimed device: a cutlery book published in 1985 disclosing a four-tined stainless steel dinner fork and a merchandise catalog from 1939 disclosing a silver five-tined serving fork. After making the factual findings set forth in *Graham v. John Deere Co.*[265] as to the scope and content of the prior art, the differences between the prior art and the claimed invention, and the PHOSITA's level of skill,[266] the examiner concludes that it would have been obvious for a PHOSITA at the time of filing to produce the claimed device.

The examiner supports this conclusion with two rationales. First, a PHOSITA could have combined the teachings of the two references in a predictable manner[267] to produce the claimed device with a reasonable expectation of success.[268] Second, the claimed invention was obvious to try because a PHOSITA seeking to solve the problem would have been aware of a finite number of predictable solutions

261 *See In re* Fisher, 421 F.3d 1365, 1382 (Fed. Cir. 2005) (Rader, J., dissenting) ("The proper tool for assessing sufficient contribution to the useful arts is the [non]obviousness requirement of 35 U.S.C. § 103."); Robert P. Merges, *Commercial Success and Patent Standards: Economic Perspectives on Innovation*, 76 CALIF. L. REV. 803, 812 (1988) (describing nonobviousness as the "final gatekeeper of the patent system"); John R. Thomas, *Formalism at the Federal Circuit*, 52 AM. U. L. REV. 771, 789 (2003) (describing nonobviousness as "[t]he fundamental gatekeeper to patenting").

262 Dennis D. Crouch, *Understanding the Role of the Board of Patent Appeals: Ex Parte Rejection Rates on Appeal* 8 (Univ. of Mo. Sch. of Law Legal Studies Research Paper No. 2009-16, 2009), *available at* http://ssrn.com/abstract=1423922 (finding that ninety percent of randomly-selected cases on appeal decided a nonobviousness issue).

263 Nonobviousness is discussed *supra* note 151. Briefly, a prior art reference qualifies as § 103(a) prior art if it is analogous to the field of invention. *See In re* Kahn, 441 F.3d 977, 986-87 (Fed. Cir. 2006). Prior art references drawn from the same field of endeavor are considered analogous. *See id.* at 987.

264 Recall that a patent claim defines the (scope of the) invention. 35 U.S.C. § 112(b) (2012). Claim "limitations" further limit the breadth of the claim. 1 CHISUM, *supra* note 52, at Gl-3. In the illustration in the above text, "stainless steel," "dinner," and "five-tine[d]" are claim limitations.

265 383 U.S. 1, 17 (1966).

266 *Id.*; *see also* discussion *supra* note 211.

267 *See* MPEP, *supra* note 114, § 2143(I)(A) (noting that combining references according to known methods to produce a predictable result is an appropriate rationale to support a conclusion of obviousness); *cf.* KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 416 (2007) (explaining that a combination of elements "must do more than yield a predictable result").

268 *See In re* O'Farrell, 853 F.2d 894, 903-04 (Fed. Cir. 1988) ("Obviousness does not require absolute predictability . . . . [just] a reasonable expectation of success.").

(adding tines) and thus would have had good reason to pursue the claimed invention.[269]

Having made a prima facie case, the burden of going forward shifts to the applicant.[270] The applicant argues that the claimed device satisfies a long-felt but unresolved need in the art.[271] The examiner responds with a request for actual proof;[272] specifically, "objective evidence that an art recognized problem existed in the art for a long period of time without solution."[273] Reminded that "the mere passage of time without the claimed invention is not evidence of nonobviousness,"[274] the applicant abandons this strategy and attempts to prove nonobviousness by showing praise for the invention by others in the art.[275] The proffered evidence includes a copy of a short write-up about the fork in *Food & Wine* magazine.

Upon consideration of the entire record,[276] the examiner concludes that the applicant has not rebutted the prima facie case of nonobviousness. If the applicant is unwilling or unable to adduce new arguments or evidence, the new fork is rendered unpatentable.

Of course, denying patentability makes sense. From a theoretical standpoint, the nonobviousness requirement worked as intended — to prevent the issuance of a patent for a trivial extension of what is already in the public domain.[277] Modifying known devices (a four-tined stainless steel dinner fork and a five-tined serving fork) to

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269 *See KSR*, 550 U.S. at 421 (endorsing the "obvious to try" rationale); MPEP, *supra* note 114, § 2143(I)(A) (same).

270 *In re* Piasecki, 745 F.2d 1468, 1472 (Fed. Cir. 1984).

271 Evidence that the invention satisfied a long-felt and unmet need that existed as of the filing date can serve as an indicator of nonobviousness. *See supra* note 151.

272 During the course of patent examination, the examiner may request "[t]echnical information known to [the] applicant concerning . . . the disclosure, the claimed subject matter, other factual information pertinent to patentability, or concerning the accuracy of the examiner's stated interpretation of such items." 37 C.F.R. § 1.105(a)(1)(viii) (2015).

273 MPEP, *supra* note 114, § 716.04(I).

274 *In re* Kahn, 441 F.3d 977, 990-91 (Fed. Cir. 2006) (quoting Iron Grip Barbell Co. v. USA Sports, Inc., 392 F.3d 1317, 1325 (Fed. Cir. 2004)).

275 The Federal Circuit has recognized praise as a secondary (objective) indicator of nonobviousness. *See* Brown & Williamson Tobacco Corp. v. Philip Morris, Inc., 229 F.3d 1120, 1129 (Fed. Cir. 2000); 2 CHISUM, *supra* note 52, § 5.05[4] (describing cases where praise was used as a tool to overcome nonobviousness).

276 *See supra* note 114 and accompanying text.

277 *See* Edmund W. Kitch, Graham v. John Deere Co.*: New Standards for Patents*, 1966 SUP. CT. REV. 293, 301 (explaining that nonobviousness is based on the principle that "a patent should not be granted for an innovation unless [it] would have been unlikely to have been developed absent the prospect of a patent"); discussion *supra* note 211.

produce a predictable, trivial modification (a stainless-steel five-tined dinner fork) draws on knowledge already in the public domain and well within the PHOSITA's skill and ordinary creativity.[278] Thus, (the inducement of) a patent is unnecessary since the fork came about through ordinary technological progress.[279]

b. Enablement

The second scenario is when the sufficiency of the applicant's disclosure — and enablement in particular — is at issue. To illustrate how enablement would screen inventions in the new paradigm, consider again the hypothetical discussed earlier involving a claim to a new wood cleaner made from citrus oil, mineral oil, and white vinegar.[280] Although the applicant only provided exemplification for a lemon oil embodiment, the patent application states that the invention "is not limited to the example chosen . . . [but] other citrus oils, including, but not limited to, orange, lime, citron, and tangerine may be used."[281]

Recall that the examiner rejected the claim as prima facie nonenabled.[282] The rejection states that a PHOSITA could not read the applicant's description about the single embodiment actually made (lemon oil) and extrapolate how to make other embodiments encompassed by the claim (the universe of citrus oils) with a reasonable expectation of success.[283] Specifically, the examiner

[278] *See* Anderson's-Black Rock, Inc. v. Pavement Salvage Co., 396 U.S. 57, 60-62 (1969) (explaining that an invention derived from old elements which does no more than expected is obvious, despite being new and useful).

[279] *See* Michael J. Meurer & Katherine J. Strandburg, *Patent Carrots and Sticks: A Model of Nonobviousness*, 12 LEWIS & CLARK L. REV. 547, 549 (2008) ("The nonobviousness threshold may be used as a 'stick' to induce researchers to pursue more difficult, socially preferred research projects."); *cf. Graham v. John Deere Co.*, 383 U.S. 1, 11 (1966) (explaining that the nonobviousness requirement arose to "weed[] out those inventions which would not be disclosed or devised but for the inducement of a patent").

[280] *See supra* text accompanying notes 117–38.

[281] *See supra* text accompanying notes 118–19.

[282] *See supra* text accompanying note 125.

[283] In fields like chemistry, results are often unpredictable because a PHOSITA often must engage in trial and error to figure out what works and what does not. *See* Cedarapids, Inc. v. Nordberg, Inc., No. 95-1529, 1997 WL 452801, at *2 (Fed. Cir. Aug. 11, 1997) (explaining that in the chemical arts, "a slight variation . . . can yield an unpredictable result or may not work at all"); *In re* Wright, 999 F.2d 1557, 1564 (Fed. Cir. 1993) (testing enablement by determining if a skilled scientist would have reasonably believed that the inventor's success with the described embodiment(s) "could be extrapolated with a reasonable expectation of success" to other

contends that a PHOSITA would have to engage in undue experimentation to elucidate which citrus oils work, as well as the proper ratios of citrus oil, mineral oil, and white vinegar to achieve the claimed result (wood cleaning).[284]

At this point the burden shifts to the applicant to establish by a preponderance of the evidence that the PHOSITA's knowledge in combination with the applicant's teaching can actually enable the full scope of the claim.[285] In response, the applicant argues that a well-trained chemist would know where to look in the scientific literature and could use trial and error to figure out what works.[286] The examiner determines that the proffered evidence is insufficient to rebut the prima facie case of nonenablement because it is not a "persuasive argument[], supported by suitable [evidence] where necessary, that [a PHOSITA] would be able to make and use the claimed invention using the application as a guide."[287]

At this point, examination could take two paths. Consider first the scenario in which the applicant is unable or unwilling to produce the requisite evidence. Mindful of the burden of proof, the applicant voluntarily cancels the broad generic claim (to all citrus oils) and pursues a narrower subgenus claim (covering a handful of citrus oils similar to lemon oil). The examiner would allow this claim. Importantly, the applicant obtains a much narrower patent than that which probably would have issued under the current regime.

Now consider a scenario in which the applicant can adduce additional proof of patentability — most likely experimental details for more citrus oils. As far as the burden is concerned, the additional technical information would provide more enablement and allow the applicant to obtain a patent with claims covering additional citrus oils (but still narrower than what was originally sought). The proposed

embodiments encompassed by the claims).

[284] *See supra* text accompanying notes 125–31.

[285] The scope of enablement is the sum of what is taught in the patent document plus what is known to a PHOSITA without undue experimentation. Nat'l Recovery Techs., Inc. v. Magnetic Separation Sys., Inc., 166 F.3d 1190, 1196 (Fed. Cir. 1999).

[286] Applicants often respond to enablement rejections by stating that "a patent need not teach, and preferably omits, what is well known in the art." *See* Hybritech, Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1384 (Fed. Cir. 1986). But that oft-repeated statement "is merely a rule of supplementation, not a substitute for a basic enabling disclosure." Genentech, Inc. v. Novo Nordisk, A/S, 108 F.3d 1361, 1366 (Fed. Cir. 1997), *cited with approval in* ALZA Corp. v. Andrx Pharms., LLC, 603 F.3d 935, 940-41 (Fed. Cir. 2010).

[287] MPEP, *supra* note 114, § 2164.05 (citing *In re* Brandstadter, 484 F.2d 1395, 1406-07 (C.C.P.A. 1973)).

supplementation rule would permit the applicant to incorporate the additional technical information into the patent document.[288] And to be clear, the supplementation rule would not allow the applicant to include post-filing inventive activity — only evidence that shows the state of the art or otherwise proves enablement as of the filing date sought.

B. Theoretical Justifications

1. The Prima Facie Case of Unpatentability

Recall that under the current regime, the examiner bears the burden of establishing a prima facie case of unpatentability.[289] Once established, the burden of production shifts to the applicant to rebut the inference of unpatentability by a preponderance of the evidence.[290] If sufficient rebuttal evidence is produced, the inference "is dissipated"[291] and the examiner must consider all of the facts in evidence — including those adduced during later stages of prosecution — before drawing a final conclusion as to patentability.[292] Insufficient rebuttal evidence, however, compels a conclusion of unpatentability.[293]

The proposed framework retains the prima facie case as a procedural device for several reasons. First, in ex parte matters, it serves as an orderly mechanism for initially producing evidence[294] and developing the written record of the proceedings before the PTO.[295] The Federal Circuit defends the prima facie case because of this information-gathering function:

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[288] *See supra* Part III.A.1.

[289] *See supra* note 105 and accompanying text.

[290] *In re* Oetiker, 977 F.2d 1443, 1445 (Fed. Cir. 1992); *In re* Piasecki, 745 F.2d 1468, 1472 (Fed. Cir. 1984).

[291] *Piasecki*, 745 F.2d at 1472.

[292] *See Oetiker*, 977 F.2d at 1445 ("[T]he ultimate determination of patentability is made on the entire record."); *Piasecki*, 745 F.2d at 1472 (noting that once the prima facie inference is rebutted, "the examiner must consider all of the evidence anew"); *In re* Rinehart, 531 F.2d 1048, 1052 (C.C.P.A. 1976) (warning examiners not to become analytically fixated on the prima facie case or "to provide that decision with an undeservedly broadened umbrella effect").

[293] *See* 1 CHRISTOPHER B. MUELLER & LAIRD C. KIRKPATRICK, FEDERAL EVIDENCE § 3:6, at 438-43 (3d ed. 2007) (describing the function of the presumptions).

[294] *Piasecki*, 745 F.2d at 1472; *see also In re* Dillon, 919 F.2d 688, 710 (Fed. Cir. 1990) (en banc) ("[T]he principle underlying orderly patent examination is that the burden in the first instance is on the examiner to establish that the claimed invention is *prima facie* unpatentable . . . .").

[295] *In re* Morris, 127 F.3d 1048, 1054 (Fed. Cir. 1997).

> [I]ts purpose is simply to provide sufficient notice to the applicant to facilitate his effective submission of information. Since the applicant is in the best position to cheaply provide information about the purported invention, the PTO's authority to shift the burden to obtain this information [after the prima facie case it met] is crucial to ensure that the PTO is not mak[ing] patentability determinations on insufficient facts and information.[296]

Second, an applicant should know clearly and specifically why the invention is putatively unpatentable.[297] It would make little sense for the examiner to "sit mum, leaving the applicant to shoot arrows into the dark hoping to somehow hit a secret objection harbored by the examiner."[298] Finally, the prima facie case mitigates arbitrariness to the extent that it prevents the PTO from denying patents without a sufficient factual basis.[299]

2. Shifting the Burden of Persuasion to the Inventor

The principal significance of the burden of persuasion is to "indicate[] which party must satisfy the decisionmaker in order to avoid losing on a given issue."[300] Where the burden rests can depend upon the existence of a presumption since the latter can assign the former.[301] This is the case in patent law because assigning the burden of persuasion to the PTO stems from the presumption of patentability.[302] So eliminating the presumption makes it easier to shift the burden of persuasion to the applicant.

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296 Hyatt v. Dudas, 492 F.3d 1365, 1370 (Fed. Cir. 2007) (internal quotations omitted).

297 *See Oetiker*, 977 F.2d at 1449 (Plager, J., concurring).

298 *Id.*

299 *Id.*; *see also supra* Part II.A.1 (arguing that the current presumption of patentability is justified in part by the fear of PTO arbitrariness).

300 A GUIDE TO FEDERAL AGENCY ADJUDICATION 68 (Michael Asimow ed., 2003); *cf.* Tech. Licensing Corp. v. Videotek, Inc., 545 F.3d 1316, 1326 (Fed Cir. 2008) ("[T]he burden of persuasion . . . is the ultimate burden assigned to a party who must prove something to a specified degree of certainty . . . .").

301 *See* 2 KENNETH S. BROUN ET AL., MCCORMICK ON EVIDENCE § 343, at 500 (6th ed. 2006); Ronald J. Allen, *Presumptions in Civil Actions Reconsidered*, 66 IOWA L. REV. 843, 845 (1981). Presumptions themselves are often "created by courts and by legislatures to accomplish various objectives or policies." Mason Ladd, *Presumptions in Civil Actions*, 1977 ARIZ. ST. L.J. 275, 279.

302 *See In re* Epstein, 32 F.3d 1559, 1570 (Fed. Cir. 1994) (Plager, J., concurring); *Oetiker*, 977 F.2d at 1449; *In re* Warner, 379 F.2d 1011, 1016 (C.C.P.A. 1967).

This shift is consistent with the scholarly literature on evidence. At first glance this might seem surprising because the burden of persuasion often rests with the same party that carries the initial burden of production.[303] Yet this is not a hard-and-fast rule. Evidence scholars have long urged that there is no single overarching principle which dictates how the burden of persuasion should be assigned.[304] Rather, it may depend upon a myriad of factors.[305] Two common factors — both of which are relevant for patent examination — are access to proof and substantive policy considerations.[306]

A doctrine has emerged which assigns the burden of persuasion to a party if it has superior information needed to prove an issue, even if that party does not bear the initial burden of producing evidence.[307] The Supreme Court recognizes and applies this doctrine because "considerations of fairness" require allocation to a party if the facts needed to establish an issue lie "peculiarly within [that party's] knowledge."[308] This happens in negligence cases, for example, where

[303] BROUN ET AL., *supra* note 301, § 337, at 477; 21B CHARLES ALAN WRIGHT & KENNETH W. GRAHAM, JR., FEDERAL PRACTICE AND PROCEDURE: FEDERAL RULES OF EVIDENCE § 5122, at 401 (2d ed. 2005) ("[T]he same party who has the burden of persuasion also starts out with the burden of producing evidence . . . .").

[304] *See* BROUN ET AL., *supra* note 301, § 337, at 477; *see also* Fleming James, Jr., *Burdens of Proof*, 47 VA. L. REV. 51, 62 (1961) ("[T]he production burden and the persuasion burden [do] not always march hand in hand." (citing JAMES BRADLEY THAYER, A PRELIMINARY TREATISE ON EVIDENCE AT THE COMMON LAW 370-78 (1898))).

[305] *See, e.g.*, BROUN ET AL., *supra* note 301, § 337, at 477 (explaining that the allocation "will depend upon the weight that is given to any one or more of several factors, including: (1) the natural tendency to place the burdens on the party desiring change, (2) special policy considerations such as those disfavoring certain defenses, (3) convenience, (4) fairness, and (5) the judicial estimate of the probabilities"); MUELLER & KIRKPATRICK, *supra* note 293, § 3:3, at 430-33 (listing five factors: custom, substantive policy, access to proof, probable truth, and proof unavailable); WRIGHT & GRAHAM, *supra* note 303, § 5122, at 401-02 (discussing "disturb[ing] the status quo" and "[t]he Three Ps — Policy, Probability, and Possession of Proof").

[306] *See* sources cited *supra* note 305.

[307] *See* BROUN ET AL., *supra* note 301, § 337, at 475 ("A doctrine often repeated by the courts is that where the facts with regard to an issue lie peculiarly in the knowledge of a party, that party has the burden of proving the issue."); JOHN MACARTHUR MAGUIRE, EVIDENCE: COMMON SENSE AND COMMON LAW 179 (1947) (asserting that the burden of persuasion "is to be borne by the party having peculiar knowledge of the facts"); MUELLER & KIRKPATRICK, *supra* note 293, § 3:3, at 432-33 (discussing access to proof); Ronald J. Allen, *Presumptions, Inferences and Burden of Proof in Federal Civil Actions — An Anatomy of Unnecessary Ambiguity and a Proposal for Reform*, 76 NW. U. L. REV. 892, 899 (1982) [hereinafter *Presumptions, Inferences*] (noting that the burden of persuasion is frequently allocated to the party on issues peculiarly within the knowledge of that party).

[308] *See* United States v. N.Y., New Haven & Hartford R.R. Co., 355 U.S. 253, 256

some courts applying res ipsa loquitur will shift the burden of persuasion to the defendant when the plaintiff is disadvantaged by the defendant's superior access to relevant information.[309] Several commentators have argued that the superior information doctrine also makes sense from an economic perspective.[310]

In the patent examination context, the applicant has superior information about the invention.[311] This is why the PTO implements disclosure rules to help minimize its information deficit.[312] The applicant is often the "cheapest cost provider"[313] vis-à-vis the PTO when it comes to furnishing information for examination.[314] For these reasons, the superior information doctrine should be considered as a factor in reallocating the burden of persuasion to the applicant.

Another important factor for allocating the burden of persuasion is the policy goal of the underlying substantive law.[315] Absent clear direction from Congress, the federal courts will allocate the burden in

n.5 (1957); *see also* WIGMORE, *supra* note 61, § 2486, at 290 (noting "peculiar means of knowledge" as a factor to consider in assigning the burden).

309 W. PAGE KEETON ET AL., PROSSER & KEETON ON THE LAW OF TORTS § 40, at 258-59 (5th ed. 1984); William L. Prosser, *The Procedural Effect of Res Ipsa Loquitur*, 20 MINN. L. REV. 241, 244-45 (1936) (noting that shifting the ultimate burden of proof to the defendant is "[t]he greatest effect" given to res ipsa loquitur).

310 *See* Hay & Spier, *supra* note 229, at 419 ("One party may have easier access to evidence than his opponent, meaning he can assemble the appropriate evidence at lower cost than his opponent. Other things being equal, the lower one party's relative costs, the stronger the argument for giving him the burden of proof."). A similar argument can be made for a party that has greater resources. *See* Richard A. Posner, *An Economic Approach to the Law of Evidence*, 51 STAN. L. REV. 1477, 1543 (1999) (arguing that burdens of production and persuasion are economizing devices and should therefore be assigned to the party with greatest access to resources).

311 *See* discussion *supra* Part II.B.

312 *See supra* note 219.

313 Jason Rantanen & Lee Petherbridge, *Toward a System of Invention Registration: The Leahy-Smith America Invents Act*, 110 MICH. L. REV. FIRST IMPRESSIONS 24, 29 (2011), *available at* http://repository.law.umich.edu/cgi/viewcontent.cgi?article=1046&context=mlr_fi.

314 *Id.* at 28 ("[W]here the cost of having the patent applicant provide information is relatively low, and particularly where the cost to the patent office of providing information is prohibitively high, the law allocates the cost of the information to the party seeking the exclusive rights.").

315 *See* WIGMORE, *supra* note 61, § 2486, at 291 (explaining that allocating the burden of persuasion can be "merely a question of policy and fairness"). Some commentators suggest that this may be the most important factor. *See* MUELLER & KIRKPATRICK, *supra* note 293, § 3:3, at 431 ("First and perhaps most important, burdens are allocated to serve substantive policy . . . ."); WRIGHT & GRAHAM, *supra* note 303, § 5122, at 402 ("In determining the placement of burdens of proof, courts begin with the policy of the substantive law . . . .").

a manner consistent with their perceptions of good policy.[316] Eliminating the presumption of patentability and allocating the burden of persuasion to the applicant could be used to modulate applicant behavior and promote certain policy objectives of the patent system.[317]

C. The Benefits of Symmetry

1. Improved Patent Quality

The quality of an issued patent depends on the quality of the underlying PTO examination.[318] This Article has shown that three asymmetries tip the scales of patentability so far in the applicant's favor that quality is inevitably compromised.

My proposal would eliminate the proof asymmetry. Requiring applicants to establish patentability would necessarily mitigate the information asymmetry. While the proposal would not relieve the examiner of establishing a prima facie case of unpatentability,[319] placing the burden of persuasion on the applicant combined with eliminating the presumption of patentability would compel the applicant (rather than the examiner) to furnish information to carry the burden of proof and ultimately prevail.[320] If the applicant could not do so, a patent would not issue.[321] But even if the applicant prevails, the resulting patent would be of higher quality (vis-à-vis one that would have issued under the current regime) because furnishing more information to the examiner should lead to a more robust examination.[322]

Adopting the proposal would also ameliorate the legal asymmetry. The new proof paradigm would force the applicant to disclose more technical information about the invention to carry the burden of proof,[323] allowing the examiner to evaluate patentability based on

316 Allen, *Presumptions, Inferences*, *supra* note 307, at 898.

317 *See infra* Part III.C.

318 *See supra* note 202 and accompanying text.

319 *See supra* Part III.B.1.

320 *See supra* Part III.A.

321 One might ask if the applicant could simply file continuation applications or RCEs to prolong prosecution. Doing so would be pointless because the applicant still faces the affirmative burden of proving patentability. Put differently, the proposed regime completely changes the examiner-applicant dynamic — strategies like "wearing down the examiner" would be less fruitful.

322 *See* discussion *supra* Part II.B, para. 1.

323 *See supra* text accompanying note 320.

objective evidence and lessening the need to consider dubious legal arguments. As above, this new regime would lead to a more technically robust patent examination and improve the quality of issued patents.

Here it is important to note that the proposal would not place additional burdens on the examiner or the PTO. This is very important given the PTO's chronic funding concerns.[324] My proposal accepts the normative idea that "[i]mproving examination efficiency and patent quality should be a 'mutually shared responsibility' of both the PTO and patent applicants."[325] I contend that modifying the evidentiary rules of patent examination to rebalance the scales of patentability would achieve this result and promote other policy goals of the patent system.

2. Modulating Inventor Behavior

The proposed regime would clearly affect inventor-filing behavior. Lacking a presumption of patentability and faced with the ultimate burden of proof, inventors with trivial or underdeveloped inventions might realize that pursuing a patent would be a waste of time and money.[326] This would leave the inventor with two options. The first option would be to not file at all. Perhaps the invention would be technically infeasible or unlikely to gain much attention in the marketplace.[327] Or perhaps the potential value of a conceived idea is not great enough to justify the expense of adducing sufficient proof for an inevitable fight over patentability.[328]

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[324] The PTO is entirely funded by user fees; however, it collects more fee revenue each year than Congress appropriates. Unfortunately, the agency is not permitted to spend the surplus. *See* FY 2014 PERFORMANCE REPORT, *supra* note 14, at 27, 37-38.

[325] Brian E. Mack, Note, *PTO Rulemaking in the Twenty-First Century: Defining the Line Between Strategic Planning and Abuse of Authority*, 75 FORDHAM L. REV. 2105, 2151 (2007) (quoting Letter from Rick D. Nydegger, Chair, Patent Pub. Advisory Comm. of the U.S. Patent & Trademark Office, to Honorable Jon Dudas, Under Sec'y of Commerce for Intellectual Prop. 5 n.4 (May 3, 2006)); *see also* Steve Lohr, *U.S. Seeking Stricter Rules on Qualifying for a Patent*, N.Y. TIMES (June 7, 2007), http://www.nytimes.com/2007/06/07/business/07patent.html (quoting Jon Dudas, then Director of the United States Patent and Trademark Office) ("There ought to be a shared responsibility for patent quality among the patent office, the applicants and the public . . . . If everything is done right at the front end, we'll have to worry a lot less about litigation later.").

[326] *See* JAFFE & LERNER, *supra* note 1, at 175.

[327] Cotropia, *Early Filing*, *supra* note 165, at 88-93. Of course, an invention which is technically infeasible probably has little market worth. *See id.* at 123.

[328] *Cf. id.* at 124 (using similar language in the context of an actual reduction to

The decision to not seek a patent is not a bad outcome. For the patent system the upsides are many: one less application to be examined (and one less application to strain PTO resources),[329] the derailment of an assuredly low-quality patent,[330] one less obstacle for other inventors,[331] and one less patent document whose disclosure would add little to the public storehouse of technical knowledge.[332]

The second option is to postpone filing until the invention is "further down the technology development path."[333] Indeed, patent law contemplates that the inventor will take time to perfect the invention before filing.[334] Again, for the patent system the upsides are many: better inventions,[335] more efficient patent examination,[336] improved patent quality,[337] reduced uncertainty,[338] and better disclosure.[339]

practice requirement).

329 *See id.* at 104-05; *see also supra* note 14 and accompanying text.

330 *See* Jay P. Kesan & Andres A. Gallo, *The Political Economy of the Patent System*, 87 N.C. L. REV. 1341, 1369 (2009) ("Higher quality patents mean that fewer patents will be granted.").

331 *See* Cecil D. Quillen, Jr., *Innovation and the U.S. Patent System*, 1 VA. L. & BUS. REV. 207, 210 (2006) (discussing patent obstacles).

332 *Cf.* Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 481 (1974) (explaining that when the information disclosed in a patent becomes publicly available it adds to the "general store of knowledge" which should stimulate ideas and promote technological development); *In re* Argoudelis, 434 F.2d 1390, 1394 (C.C.P.A. 1970) (Baldwin, J., concurring) (noting that the full and complete disclosure of how to make and use the claimed invention "adds a measure of worthwhile knowledge to the public storehouse").

333 Cotropia, *Early Filing*, *supra* note 165, at 122.

334 Although the patent laws encourage prompt filing, "the public interest is also deemed to be served by allowing an inventor time to perfect his invention . . . ." TP Labs., Inc. v. Prof'l Positioners, Inc., 724 F.2d 965, 968 (Fed. Cir. 1984).

335 Further development and refinement "produce a better invention — whether it be safer, cheaper, more efficient, more durable, or more effective." Seymore, *Teaching Function*, *supra* note 162, at 654.

336 For example, if the invention is actually made by the time of filing, it is much easier for the examiner to gauge compliance with the enablement requirement. *Id.* at 653. Relatedly, the applicant's ability to provide more technical information about the invention allows for a more robust examination and mitigates the examiner's information deficit. *See* discussion *supra* Part III.C.1.

337 Delayed filing allows the applicant to generate more technical information about the invention and allows for a more robust examination — leading to improved patent quality. *See* discussion *supra* Part II.B, para. 1.

338 Additional technical information "reduce[s] the uncertainty surrounding the invention before examination begins" because it allows the invention to elucidate "whether the invention provides the wanted results." Cotropia, *Early Filing*, *supra* note 165, at 123. And pushing examination forward in time "giv[es] the inventor

Yet, any discussion of delayed filing can be contentious given the oft-touted benefits of early filing in patent law.[340] Concerns about timing will certainly continue as the America Invents Act ("AIA") has converted the United States from a first-to-invent to a first-inventor-to-file patent system.[341] Under the proposed regime, an applicant might face a tradeoff between more pre-filing work (in part to adduce sufficient proof of patentability) and the perceived need to race to the PTO with an underdeveloped invention (and hope for the best).[342]

While it is certainly true that the AIA redefines prior art,[343] it is far from clear how the first-inventor-to-file system will affect filing behavior. To illustrate, consider the general rule under the AIA that any disclosure by a third party before the inventor's filing date will ordinarily defeat patentability.[344] Yet a third-party disclosure will not qualify as prior art if, within one year of filing, either the inventor had already disclosed the invention before the third party[345] or the third party somehow derived its disclosure from the inventor.[346] Under this

more certainty as to the invention's ultimate commercial worth." *Id.* (citing Michael Abramowicz, *The Danger of Underdeveloped Patent Prospects*, 92 CORNELL L. REV. 1065, 1075-76 (2007)).

339 "The resulting patent, by disclosing the . . . refinements to the invention, will 'provide[] the public a readily available teaching of the most practicable device.'" Seymore, *Teaching Function*, *supra* note 162, at 654 (quoting Brief for American Intellectual Property Law Association as Amicus Curiae Supporting Petitioner at 9, Pfaff v. Wells Elecs., Inc., 525 U.S. 55 (1998) (No. 97-1130)).

340 *Compare* John F. Duffy, *Rethinking the Prospect Theory of Patents*, 71 U. CHI. L. REV. 439, 464-65 (2004) (arguing that early filing leads to reduced patent terms, thereby dedicating the invention to the public at an earlier time), *and* Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 269-89 (1977) (arguing that early filing facilitates commercialization, coordinates the development of technology, and reduces wasteful duplicative efforts by competitors), *with* Seymore, *Teaching Function*, *supra* note 162, at 659-61 (arguing that ex ante incentives which encourage early filing can thwart innovation), *and* Cotropia, *Early Filing*, *supra* note 165, at 88-119 (discussing the costs of early filing).

341 *See* Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284, 285–87 (2011) (amending § 102(a) and repealing § 102(g)).

342 A race to the PTO "would encourage premature and sketchy technological disclosures in hastily-filed patent applications." Wendy Schacht & John R. Thomas, *Patent Reform: Innovation Issues*, *in* PAT. TECH. 1, 11 (Juanita M. Branes ed., 2007).

343 *See* 35 U.S.C. § 102(a) (2012); Robert A. Armitage, *Understanding the America Invents Act and Its Implications for Patenting*, 40 AIPLA Q.J. 1, 22-87 (2012) (discussing the AIA's prior art provisions). The changes apply to patent applications with an effective filing date on or after Mar. 16, 2013.

344 *See* 35 U.S.C. § 102(a).

345 *See id.* Under the 1952 Act, a one-year grace period applies to disclosures made by the inventor or third parties before filing. *See* 35 U.S.C. § 102(b) (2012).

346 35 U.S.C. § 102(b)(1)(B) (2012).

landscape inventors will have two low-cost options to secure an early filing date: to file a provisional patent application[347] or to simply make a pre-filing disclosure.[348] The ultimate choice of whether or when to file or disclose will depend on the inventor's overall patenting strategy.[349]

CONCLUSION

It is far too easy to get a (bad) patent. I have argued that low-quality patents issue not simply because of poor decision-making or policy choices by the PTO but because of a confluence of proof, information, and legal asymmetries that exist in the current patent examination paradigm. The proof asymmetry causes the most mischief because the presumption of patentability and locution of the burden of persuasion puts the applicant in a favorable position from the very outset of patent examination. This imbalance exacerbates the other asymmetries to the extent that anyone who files a patent application on anything will eventually get a patent. The situation is much different under the proposed regime, which rebalances the scales of patentability. By eliminating the presumption of patentability and placing a heavy evidentiary burden upon the applicant, all three asymmetries essentially disappear. Getting a patent would be far from guaranteed and inventors

347 A provisional patent application allows an inventor to obtain an early filing date for the invention before the inventor is ready to draft a claim or a full application. *See* 35 U.S.C. § 111(b). A provisional application is not examined and only requires a minimal filing fee. *See id.* The inventor must, however, submit a regular, "nonprovisional" application within one year, or the provisional is automatically abandoned. *See* § 119(e)(1). In short, the provisional patent provides an easy and inexpensive mode of entry into the U.S. patent system.

348 *See* Dennis Crouch, *Disclosure Under the AIA: Introducing The Poor Man's Provisional Patent Application*, PATENTLY-O (Sep. 21, 2011), http://patentlyo.com/patent/2011/09/disclosure-under-the-aia-the-poor-mans-provisional-patent-application.html (explaining that early public disclosure is "a really poor man's provisional application" because it "allows an applicant to buy an additional year of delay with few capital expenditures and without losing patent term but instead merely shifting the term forward in time").

349 An important constraint on a provisional application is that it must include a written description which satisfies the requirements of § 112. New Railhead Mfg., LLC v. Vermeer Mfg. Co., 298 F.3d 1290, 1294 (Fed. Cir. 2002). Also, a pre-filing disclosure might cause problems for inventors who contemplate filing abroad. The one-year grace period available in the United States is not available in many foreign countries. *See* Convention on the Grant of European Patents arts. 54–55, Oct. 5, 1973, 1065 U.N.T.S. 255, 272. Most of them have an absolute novelty requirement such that any pre-filing disclosure, including activity by the inventor, is patent-defeating. *Id.* art. 54. Accordingly, if foreign filing is a possibility, the applicant must take steps to avoid inadvertent or premature disclosure.

with dubious inventions might forego seeking a patent or choose to perfect their inventions before filing. Thus, this regime would improve patent quality and promote broader goals of patent policy.