

2013

Patent Invalidity versus Noninfringement

Roger Ford

Follow this and additional works at: https://chicagounbound.uchicago.edu/law_and_economics



Part of the [Law Commons](#)

Recommended Citation

Roger Ford, "Patent Invalidity versus Noninfringement" (Coase-Sandor Institute for Law & Economics Working Paper No. 670, 2013).

This Working Paper is brought to you for free and open access by the Coase-Sandor Institute for Law and Economics at Chicago Unbound. It has been accepted for inclusion in Coase-Sandor Working Paper Series in Law and Economics by an authorized administrator of Chicago Unbound. For more information, please contact unbound@law.uchicago.edu.

CHICAGO

COASE-SANDOR INSTITUTE FOR LAW AND ECONOMICS WORKING PAPER NO. 670

(2D SERIES)

PUBLIC LAW AND LEGAL THEORY WORKING PAPER NO. 454



COASE-SANDOR INSTITUTE
FOR LAW AND ECONOMICS

THE UNIVERSITY OF CHICAGO LAW SCHOOL

PATENT INVALIDITY VERSUS NONINFRINGEMENT

Roger Allan Ford

THE LAW SCHOOL
THE UNIVERSITY OF CHICAGO

December 2013

This paper can be downloaded without charge at the Institute for Law and Economics Working Paper Series: <http://www.law.uchicago.edu/Lawecon/index.html> and at the Public Law and Legal Theory Working Paper Series: <http://www.law.uchicago.edu/academics/publiclaw/index.html> and The Social Science Research Network Electronic Paper Collection.

PATENT INVALIDITY VERSUS NONINFRINGEMENT

Roger Allan Ford†

Most patent scholars agree that the Patent and Trademark Office grants too many invalid patents and that these patents impose a significant tax upon industry and technological innovation. Although policymakers and scholars have proposed various ways to address this problem, including better ex ante review by patent examiners and various forms of ex post administrative review, the use of district courts to invalidate patents remains a core defense against bad patents.

This Article analyzes a previously unidentified impediment to the use of district courts to invalidate patents. Nearly every patent lawsuit rises or falls on one of two defenses: invalidity or noninfringement. Invalidity and noninfringement are distinct legal and factual issues that scholars usually analyze separately. Yet as this Article explains, the two issues are closely related, creating a series of trade-offs and asymmetries that lead many patent defendants to focus on noninfringement instead of invalidity. The net effect of these trade-offs and asymmetries is that patent defendants often have an incentive to argue noninfringement instead of invalidity, leading courts to invalidate fewer patents than they should. This exacerbates the problem of invalid patents, making it harder for individuals and companies to create new products and services.

The Article concludes by proposing three reforms to help restore the balance between invalidity and noninfringement. First, eliminating the elevated burden of proof for invalidity would remove one significant asymmetry that makes it harder to prevail on invalidity. Second, a bifurcation rule giving defendants the option to defer infringement issues until after validity has been decided would help litigants develop coherent trial narratives, allowing them to focus on validity issues early in a case, while delaying some

† Harry A. Bigelow Teaching Fellow and Lecturer in Law, the University of Chicago Law School. For helpful comments and discussions, I am indebted to Adam Chilton, Alex Stein, Alexander Boni-Saenz, Andres Sawicki, Anthony Casey, Anya Bernstein, Crystal Yang, Daniel Abebe, David Schwartz, Douglas Baird, Eduardo Peñalver, Gerard Magliocca, Gideon Parchomovsky, Glynn Lunney, Greg Reilly, Jason Rantanen, Jennifer Berk, John Rappaport, Jonathan Masur, Joseph Miller, Kate Darling, Katherine Strandburg, Kevin Collins, Lee Fennell, Lior Strahilevitz, Lisa Larrimore Ouellette, Mark Lemley, Michael Risch, Randal Picker, Sarah Burstein, Sarah Wasserman Rajec, Saul Levmore, Stephen Yelderman, Tun-Jen Chiang, Victoria Schwartz, Vincent Buccola, and Zachary Clopton, and to participants at the University of Chicago Law School Research Colloquium and Work-in-Progress Workshop, the 2013 Works in Progress in Intellectual Property conference at Seton Hall University School of Law, the 2013 Patent Conference at the IIT Chicago-Kent College of Law, and the 2013 IP Scholars Conference at the Benjamin N. Cardozo School of Law.

settlements until after courts have ruled on invalidity challenges. And third, a new cause of action for an accounting, brought against industry competitors by a litigant that successfully invalidates a patent, would help eliminate the collective-action problem posed by invalidity’s public-good nature.

- INTRODUCTION 72
- I. PATENT LITIGATION AND INVALID PATENTS 76
 - A. Patent Defenses 77
 - 1. *Invalidity*..... 78
 - 2. *Noninfringement* 81
 - 3. *The (Partial) Independence of Invalidity and Noninfringement* 85
 - B. Invalid Patents..... 87
 - 1. *The Problem* 87
 - 2. *Three Solutions*..... 91
- II. THE DEFENDANT’S CHOICE: INVALIDITY VERSUS NONINFRINGEMENT 93
 - A. Trade-Offs 93
 - 1. *Claim-Construction Strategy* 94
 - 2. *Trial Narratives*..... 98
 - 3. *Resource Constraints*..... 101
 - B. Asymmetries 103
 - 1. *Invalidity’s Elevated Burden of Proof* 103
 - 2. *Information and Timing Advantages* 104
 - 3. *Asymmetric Outcomes* 109
 - C. What About Settlement? 112
 - D. What About the Merits? 114
- III. THREE REFORMS..... 118
 - A. Eliminate the Elevated Burden of Proof for Invalidity 118
 - B. Permit Defendants to Bifurcate Patent Litigation ... 119
 - C. Allow a Successful Patent Challenger to Recover from Other Beneficiaries of an Invalidity Judgment . 123
- CONCLUSION 127

INTRODUCTION

Archers hate vibrations. An archer releasing a bowstring and firing an arrow unleashes a great deal of force in a short time, much of which sends the arrow toward the target. Some of the force, however, is transferred to the bow, causing it to vibrate and throwing off the accuracy of the shot. To address this problem, inventors have created numerous damping systems to absorb and dissipate these vibrations. One such system was created by Steven C. Sims, who received for his invention a patent, the '842 patent, titled "Archery Bow Accessories with Bow Vibration Decay Pattern Modifiers for Improving Accu-

racy.”¹ The patent describes a “mushroom-like” attachment that screws into each end of the bow, made out of a soft polymer that can “wobble and jiggle” when the bow is fired, absorbing and dissipating the vibrations.²

Armed with this patent, Sims and his company, Sims Vibration Laboratory, Inc., targeted Bow Jax Inc., asserting that its products infringed the ’842 patent and two others.³ Bow Jax makes damping systems similar to the one described in the ’842 patent, including one that attaches to each end of a bow and dissipates vibrations by wobbling. The Bow Jax system is not identical to the one described in the ’842 patent, though—instead of the mushroom shape described and claimed in the ’842 patent, Bow Jax’s dampers have an X shape with four arms that vibrate when an arrow is fired.⁴

Faced with the threat of patent litigation, Bow Jax, like most accused infringers, had two major defenses on which it could have relied: invalidity and noninfringement.⁵ An invalidity defense asserts that the patent holder did not satisfy the basic requirements to obtain a patent, usually because the claimed invention was not novel or

¹ U.S. Patent No. 6,298,842 (filed Jan. 6, 2000) (issued Oct. 9, 2001).

² *Id.* at col. 1 ll. 35, 46.

³ See Plaintiff Bow Jax’s First Amended Complaint ¶ 10, *Bow Jax, Inc. v. Sims Vibration Lab., Inc.*, No. 2:09-CV-047-RMP (E.D. Wash. Aug. 31, 2010), ECF No. 88; Defendants’ Answer to First Amended Complaint and Counterclaims ¶ 10, *Bow Jax, Inc. v. Sims Vibration Lab., Inc.*, No. 2:09-CV-047-RMP (E.D. Wash. Sept. 20, 2010), ECF No. 92.

⁴ See *Limb Dampeners*, BOWJAX, INC., <http://www.bowjax.com/products/limb-dampeners/> (last visited Aug. 19, 2013). (You may notice that in the course of two paragraphs and two footnotes I have used three versions of the company’s name. The company’s legal name, according to its filings with the Idaho Secretary of State, is “Bow Jax Inc.” Court filings in the patent litigation use “Bow Jax, Inc.”—the legal name, plus a comma—while the company’s website says “Bowjax, Inc.” I use the legal name unless context dictates otherwise.)

⁵ It is incomplete to call noninfringement a “defense.” Although “[n]oninfringement” and “absence of liability for infringement” are specifically listed in the Patent Act as “defenses” to a claim for patent infringement, 35 U.S.C. § 282(b)(1) (2006 & Supp. V 2011), they are not affirmative defenses in the traditional sense because the defendant asserting the defense does not take on the burdens of production or persuasion. Noninfringement is just the inverse of infringement, which the plaintiff must prove to recover. See *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1327 (Fed. Cir. 2008) (explaining that the plaintiff’s burden to prove infringement never shifts to the defendant, as “the risk of decisional uncertainty stays on the proponent of the proposition”); see also Gideon Parchomovsky & Alex Stein, *Intellectual Property Defenses*, 113 COLUM. L. REV. (forthcoming 2013) (manuscript at 13), available at <http://ssrn.com/abstract=2247582> (“Generally speaking, a defendant in a patent infringement suit can escape liability by successfully asserting a coverage-related [i.e., noninfringement] or a validity-based defense.”). In practice, however, defendants in patent cases nevertheless make strategic decisions between the “defenses” of invalidity and noninfringement. See *infra* Parts II.A, II.C. In this argument I refer to invalidity and noninfringement as defenses because in most cases it is the defendant that decides which issues will be contested and because both invalidity and noninfringement are ways by which a defendant can avoid liability.

would have been obvious when it was invented.⁶ A noninfringement defense, on the other hand, asserts that the defendant's accused product or method does not fall within the scope of the invention claimed in the patent.⁷ Both defenses were plausible for Bow Jax: damping systems have been used by archers for decades,⁸ and Bow Jax's damping devices are significantly different from those described in the Sims patents. So, with two potentially winning arguments, Bow Jax did what many accused patent infringers do: it chose to rely on noninfringement. It filed a declaratory-judgment claim against Sims and his company, seeking a declaration that its products did not infringe the '842 patent.⁹

This is all too common a story in patent law: a patent is granted on an invention that is not really new, the patent holder goes after a potential infringer, and the accused infringer relies on noninfringement arguments instead of invalidity arguments.¹⁰ This is troublesome because invalid patents are arguably the single biggest problem in modern patent law.¹¹ It is not unusual for a new technology product to be covered, or arguably covered, by thousands of distinct patents owned by hundreds of different patent holders, many likely to be invalid. It is impossible to analyze all these patents, so potential infringers often ignore them until they are sued and then settle,

⁶ See 35 U.S.C. § 282(b) (2006 & Supp. V 2011) (listing defenses to patent infringement based on invalidity); see also *id.* § 102 (stating the conditions for patentability). See generally John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185, 208 (1998) (finding, in an empirical study, that most invalidity findings were based on problems of novelty or obviousness).

⁷ See 35 U.S.C. § 282(a) (listing noninfringement as a defense to patent infringement); see also 35 U.S.C. § 271 (2006 & Supp. V 2011) (defining patent infringement); 35 U.S.C. § 281 (2006) (providing for remedy for patent infringement); *Seal-Flex, Inc. v. Athletic Track & Court Constr.*, 172 F.3d 836, 842 (Fed. Cir. 1999) ("To show infringement of a patent, a patentee must supply sufficient evidence to prove that the accused product or process contains, either literally or under the doctrine of equivalents, every limitation of the properly construed claim.").

⁸ See *infra* note 15.

⁹ See Plaintiff Bow Jax's First Amended Complaint, *supra* note 3.

¹⁰ There are other defenses, such as the unenforceability of a patent due to inequitable conduct during its prosecution, see *Therasense, Inc. v. Becton, Dickinson & Co.*, 649 F.3d 1276, 1285 (Fed. Cir. 2011) (en banc), but noninfringement and invalidity play by far the largest roles in patent practice, see, e.g., Allison & Lemley, *supra* note 6 (limiting study on patent-litigation outcomes to validity decisions); Jay P. Kesan & Gwendolyn G. Ball, *How Are Patent Cases Resolved? An Empirical Examination of the Adjudication and Settlement of Patent Disputes*, 84 WASH. U. L. REV. 237, 271-78 (2006); Parchomovsky & Stein, *supra* note 5 (manuscript at 13).

¹¹ Recent book-length treatments include JAMES BESSEN & MICHAEL J. MEURER, *PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK* (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: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION AND PROGRESS, AND WHAT TO DO ABOUT IT* (2004).

whether or not the patents are valid.¹² This imposes a substantial tax on innovation, raising its cost and reducing the output of new products and services.¹³

The Bow Jax story had a happy ending for those worried about invalid patents: though the lawsuit between Sims and Bow Jax was settled,¹⁴ the U.S. Patent and Trademark Office (PTO) also initiated a reexamination of the '842 patent and eventually rejected the relevant claims as obvious.¹⁵ But administrative processes to invalidate patents can only do so much; courts also play a significant role in invalidating bad patents. And if defendants avoid arguing invalidity, courts will invalidate fewer bad patents than is optimal.

Ideally, defendants would analyze invalidity and noninfringement separately, relying on each defense if and when it is strong enough to be worth arguing. District courts would then be able to invalidate bad patents, creating benefits for innovators and consumers. And the legal literature typically treats them this way, analyzing the two defenses separately.¹⁶ Yet invalidity and noninfringement are interrelated, with trade-offs and asymmetries that have a substantial effect on parties' strategic behavior and on the structure of patent doctrine more broadly.

This Article provides the first detailed examination of the interaction between invalidity and noninfringement. It argues that these

¹² See Mark A. Lemley, *Ignoring Patents*, 2008 MICH. ST. L. REV. 19, 20.

¹³ See, e.g., Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 SCIENCE 698, 698 (1998) (identifying "an unintended and paradoxical consequence of biomedical privatization: [that a] proliferation of intellectual property rights upstream may be stifling life-saving innovations further downstream in the course of research and product development"); Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting*, in 1 INNOVATION POLICY AND THE ECONOMY 119 (Adam B. Jaffe et al. eds., 2001) (discussing problems caused by the combination of overlapping patent rights and the holdup risk caused by the patent system).

¹⁴ See Stipulated Consent Order and Dismissal at 1–2, *Bow Jax, Inc. v. Sims Vibration Lab., Inc.*, No. 2:09-CV-047-RMP (E.D. Wash. Sept. 26, 2012), ECF No. 272.

¹⁵ See *Ex parte Sims Vibration Lab., Inc.*, No. 2013-001458, 2013 Pat. App. LEXIS 784 (P.T.A.B. Feb. 19, 2013). The reexamination was requested by Bow Jax, see Request for Reexamination, U.S. Patent No. 6,298,842 C1, Control No. 90/009,930 (filed Aug. 5, 2011), suggesting that it saw the PTO as a better venue than the district court for its invalidity arguments, see *infra* note 169. The examiner found the invention obvious in view of two broad categories of prior art: different kinds of damping systems that were attached to archery bows, see, e.g., Archery Stabilizer, U.S. Patent No. 4,936,283 (filed Mar. 17, 1989); Archery Bow with Resiliently Mounted Stabilizers, U.S. Patent No. 3,412,725 (filed Mar. 29, 1965), and similar damping systems used in other contexts, including other kinds of sporting goods, see, e.g., U.S. Patent No. 5,362,046 (filed May 17, 1993) (baseball and softball bats, golf clubs, and tennis rackets); U.S. Patent No. 5,314,180 (filed Dec. 16, 1992) (rackets); U.S. Patent No. 3,941,380 (filed July 12, 1973) (tennis rackets and baseball bats).

¹⁶ See, e.g., Parchomovsky & Stein, *supra* note 5 (manuscript at 2) ("[Under] the approach taken by most intellectual property scholars[,] . . . each defense is analyzed on a standalone basis.").

trade-offs and asymmetries result in too few patents being found invalid because defendants are often better off pursuing noninfringement defenses, while society is often better off if they pursue invalidity defenses. It then concludes with a proposal for reforms that would help create balance between invalidity and noninfringement.

After a brief background in Part I, Part II discusses the trade-offs and asymmetries between invalidity and noninfringement. Although in many cases only one of the two defenses will have plausible merit, in a surprising number of cases both defenses are plausible, at least at the beginning of the case. In these cases, trade-offs lead most defendants to focus their efforts on just one of the defenses, and asymmetries bias that choice in favor of noninfringement. Trade-offs between invalidity and noninfringement include the strategic choice between broad and narrow claim constructions, the need for a single, coherent narrative for trial, and limited litigation resources. Asymmetries between invalidity and noninfringement include the elevated burden of proof that applies to invalidity defenses, information and timing advantages that make it comparatively easier for a defendant to argue noninfringement, and the difference in outcomes between a successful noninfringement judgment and a successful invalidity judgment.

Part III proposes reforms. First, these tradeoffs and asymmetries provide another reason to eliminate the elevated burden of proof for invalidity defenses. Second, giving defendants the option to bifurcate cases and defer consideration of infringement issues until after validity is determined would eliminate the conflict between trial narratives, would give litigants enough time to focus on the invalidity case, and would eliminate the need in many cases to ever litigate infringement. And third, a new cause of action would allow a successful patent challenger to collect, from competitors who benefit from the judgment, a portion of those benefits. This cause of action, akin to an action for an accounting, would better align the incentives of a patent defendant with the public interest in its defense.

I

PATENT LITIGATION AND INVALID PATENTS

This Part provides background, discussing the roles of invalidity and noninfringement defenses in patent litigation and the problem of invalid patents.

A. Patent Defenses

A patent grants to an inventor the exclusive rights, for a limited time, to make, use, sell, offer to sell, and import his or her invention.¹⁷ A patent represents a bargain between an inventor and society: in return for inventing something new and disclosing it to the world, the inventor gets the reward of a temporary monopoly over that invention.¹⁸ An inventor can only obtain that monopoly, however, if he or she fulfills the patent bargain: the invention must be novel and non-obvious, and it must be fully described, enabled, and claimed in the patent document so that others can make and use the invention once the patent has expired.

A patent holder who believes that someone else is making, using, selling, offering for sale, or importing a product or process that incor-

¹⁷ 35 U.S.C. § 271(a) (2006); *see also* U.S. CONST. art. I, § 8, cl. 8 (granting Congress the power “[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries”). I should note that this Article is primarily concerned with utility patents, though many of the arguments could also extend to plant patents and design patents. *See* 35 U.S.C. § 161 (2006) (plant patents); 35 U.S.C. § 171 (2006) (design patents).

¹⁸ This is the traditional economic account for patent law: that it provides ex ante incentives both to create inventions and to disclose those inventions to the world. The classic statement of this traditional account is Fritz Machlup’s 1958 Senate report. STAFF OF S. SUBCOMM. ON PATENTS, TRADEMARKS & COPYRIGHTS OF THE S. COMM. ON THE JUDICIARY, 85TH CONG., AN ECONOMIC REVIEW OF THE PATENT SYSTEM (Comm. Print 1958) (prepared by Fritz Machlup) (evaluating economic justifications for the patent system); *see also* Mazer v. Stein, 347 U.S. 201, 219 (1954) (“The economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors in ‘Science and useful Arts.’”); WILLIAM M. LANDES & RICHARD A. POSNER, THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW 294 (2003) (“The standard rationale of patent law is that it is an efficient method of enabling the benefits of research and development to be internalized, thus promoting innovation and technological progress.”); Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1580 (2003) (“There is virtually unanimous agreement that the purpose of the patent system is to promote innovation by granting exclusive rights to encourage invention.”). On the disclosure justification for patents, *see* Jeanne C. Fromer, *Patent Disclosure*, 94 IOWA L. REV. 539, 541 (2009) (“[P]atent disclosure indirectly stimulates future innovation by revealing the invention’s design so that others can use it fruitfully when the patent term expires and design around, improve upon, or be inspired by the invention, even during the patent term.”); Lisa Larrimore Ouellette, *Do Patents Disclose Useful Information?*, 25 HARV. J.L. & TECH. 545, 556 (2012) (“Disclosure theory focuses on the quid pro quo of the patent system: the inventor receives the exclusive patent right in exchange for fully disclosing the invention to society . . .”).

The principal alternative view is provided by prospect theory, which asserts an ex post justification for patents: that by granting a monopoly over a new technology after the technology has been invented, patents encourage investment in developing and commercializing the new invention while avoiding wasteful duplication of effort. *See* John F. Duffy, *Rethinking the Prospect Theory of Patents*, 71 U. CHI. L. REV. 439, 440 (2004); Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 265–66 (1977); *see also* Mark A. Lemley, *Ex Ante Versus Ex Post Justifications for Intellectual Property*, 71 U. CHI. L. REV. 129 (2004) (critiquing ex post justifications for patents).

porates his or her invention can sue for patent infringement.¹⁹ The defendant accused of patent infringement then has two principal defenses, invalidity and noninfringement, which correspond to the two sides of the patent bargain. An invalidity defense focuses on what the inventor contributed to obtain the patent—whether he or she invented something novel and nonobvious and disclosed it to the world in compliance with the patent laws. A noninfringement defense, on the other hand, focuses on the monopoly the inventor gets in exchange for that invention and disclosure—whether the defendant’s product or process falls within that monopoly.

1. *Invalidity*

An invalidity defense asserts that even though the PTO granted a patent, that patent is invalid because the inventor failed to comply with the basic requirements for patentability.²⁰ The focus of any invalidity decision, then, is on the state of the world when the patent was granted rather than the details of the defendant’s accused product or process. There are several invalidity doctrines, but they can be placed into three broad categories: doctrines that ensure an inventor has created something meaningfully new, doctrines that ensure an invention is fully disclosed to the public, and doctrines that govern the types of inventions to which the law extends patent rights.²¹

First, doctrines that ensure an inventor has created something meaningfully new include the novelty and nonobviousness requirements, which are the core doctrines at issue in most invalidity challenges.²² Their purpose is to help ensure that an inventor has meaningfully contributed to society before he or she is rewarded with a monopoly.²³ Novelty doctrine generally requires that the claimed

¹⁹ 35 U.S.C. § 281 (2006); *see also* Seal-Flex, Inc. v. Athletic Track & Court Constr., 172 F.3d 836, 842 (Fed. Cir. 1999) (explaining legal standards for evaluating patent disputes).

²⁰ *See* 35 U.S.C. § 282(b)(2)–(3) (2006 & Supp. V 2011) (invalidity defenses).

²¹ This taxonomy borrows from the one given in Andres Sawicki, *Better Mistakes in Patent Law*, 39 FLA. ST. U. L. REV. 735 (2012). Sawicki breaks patentability doctrines into four categories: scope, covering patentable subject matter and utility; the invention itself, covering novelty and nonobviousness; disclosure, covering enablement and best mode; and the definiteness doctrine. *Id.* at 742–44. I include the written-description requirement and group it with the disclosure and indefiniteness doctrines, all of which concern different aspects of the patentee’s disclosure to the world.

²² *See* Allison & Lemley, *supra* note 6, at 208 (finding that 138 out of a sample of 191 patents found invalid in patent litigation were invalidated on the basis of 35 U.S.C. § 102 [novelty] or § 103 [obviousness]).

²³ The requirement that an inventor contribute something new to society has been a fixture since the early days of patent law. *See, e.g.*, 2 WILLIAM BLACKSTONE, COMMENTARIES *407 n.30 (“The grant of a patent . . . is in the nature of a purchase for the public, to whom the patentee is bound to communicate a free participation in the benefit of his invention, at the expiration of the time limited.”); 1 WILLIAM C. ROBINSON, THE LAW OF PATENTS FOR USEFUL INVENTIONS § 221 (1890) (“The consideration for the grant of [an inventor’s] exclusive privilege is the benefit which he confers upon the public . . .”). Indeed, the

invention not have been known, used, or described by others before the patent applicant came up with the claimed invention.²⁴ Nonobviousness doctrine adds to this by requiring that an invention not have been obvious to a person having ordinary skill in the art as of the time of invention.²⁵ These doctrines help ensure that the patent bargain is a good one for society: because society generally gains little or nothing from the independent invention of technologies that already exist, or that are obvious even if they have not been assembled in the precise form contemplated by the inventor, no reward is necessary to encourage their creation.²⁶ Moreover, such monopolies would be counterproductive to the prospect nature of patent rights since independent inventors, each with his or her own patent rights, would lead to just the sort of wasteful duplication of effort in developing and commercializing an invention that the patent system seeks to avoid.

Second, doctrines that ensure that an invention is fully disclosed to the public include the written-description, enablement, best-mode,

requirement may be constitutional: the Intellectual Property Clause of Article III authorizes Congress to extend exclusive rights only to “Authors and Inventors,” U.S. CONST. art. I, § 8, cl. 8, in contrast with the British practice of granting patents to individuals favored by the Crown, inventors or not. *See* *Graham v. John Deere Co.*, 383 U.S. 1, 5–6 (1966) (noting that the Intellectual Property Clause “was written against the backdrop of the practices . . . of the Crown in granting monopolies to court favorites in goods or businesses which had long before been enjoyed by the public”). *But see* Tun-Jen Chiang, *First-to-File as a Rule of Evidence*, 30 YALE J. ON REG. ONLINE 11 (2012) (arguing that even if the Constitution limits patents to inventors, a rule granting a patent to the first filer is a constitutional rule of evidence).

²⁴ *See* 35 U.S.C. § 102 (Supp. V 2011) (novelty requirements). This description necessarily simplifies a complex set of statutory rules; the statutory limits of novelty are both broader and narrower than this description implies. For example, the United States has traditionally used a first-to-invent rule, awarding patent rights to the first inventor to create an invention even if he or she filed a patent application later than another inventor. This rule was not absolute, however: under the rule, various kinds of prior art counted or did not count to show earlier invention, depending on what kind of prior art they were, what country they were from, when they were from, and so forth. *See* 35 U.S.C. § 102 (2006), *amended by* Leahy-Smith America Invents Act, Pub. L. No. 112-29, § 3(b)(1), 125 Stat. 284, 285–87 (2011). Under the America Invents Act, which applies to patent applications filed since March 16, 2013, the United States has switched to a first-to-file rule, under which the first inventor to file a patent application will be entitled to a patent unless the invention was previously patented, described, or used in public, with various exceptions. *See* § 3(b)(1), (n), 125 Stat. at 293.

²⁵ *See* 35 U.S.C. § 103(a) (2006) (amended 2011); *see also* *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 401 (2007) (discussing the legal test for obviousness); *Graham*, 383 U.S. at 17–19 (1966) (same). The America Invents Act also included changes to section 103, requiring that a claimed invention not have been obvious at the time of its effective filing date (rather than the time of invention). *See* § 3(c), 125 Stat. at 287. This change, however, does not change the essential purpose of the obviousness requirement.

²⁶ The current rule is not the only possible balance; patent law could drive a harder bargain. *See, e.g.*, Michael Abramowicz & John F. Duffy, *The Inducement Standard of Patentability*, 120 YALE L.J. 1590, 1599 (2011) (proposing that the nonobviousness requirement be construed to limit patents to “those inventions which would not [ever] be disclosed or devised but for the inducement of a patent” (quoting *Graham*, 383 U.S. at 11) (internal quotation marks omitted)).

and definiteness requirements. These doctrines all require clear disclosures of specific aspects of the claimed invention, though for somewhat different purposes. The written-description and definiteness requirements are relevant during the term of the patent: they require the disclosure of information that helps readers know the boundaries of the patentee's exclusive rights so that they can more easily predict whether their activities would infringe the patent.²⁷ The enablement and best-mode requirements, on the other hand, are directed to conduct after a patent has expired: they help ensure that others can make use of the invention after the limited patent monopoly has ended and that others can improve and build upon the invention without "undue experimentation."²⁸ They do so by requiring that a patent provide enough information to enable someone who is skilled in the art of the invention to make and use the invention while also disclosing the "best mode" contemplated by the inventor for practicing the invention.²⁹ Together, these disclosure doctrines help ensure that the patentee has fulfilled his side of the patent bargain by making available whatever new thing he or she has invented, in a form that allows others to make use of the knowledge.

Third, doctrines that govern the types of inventions to which the law extends patent rights include the utility and patentable-subject-matter requirements.³⁰ These doctrines prevent an

²⁷ See 35 U.S.C. § 112(a)–(b) (2006 & Supp. V 2011) (laying out the written-description and definiteness requirements); *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1346 (Fed. Cir. 2010) (en banc) (observing that one purpose of the written-description requirement is "to inform the public during the life of the patent of the limits of the monopoly asserted, so that it may be known which features may be safely used or manufactured without a license and which may not" (quoting *Schriber-Schroth Co. v. Cleveland Trust Co.*, 305 U.S. 47, 57 (1938)) (internal quotation marks omitted)); *Athletic Alts., Inc. v. Prince Mfg., Inc.*, 73 F.3d 1573, 1581 (Fed. Cir. 1996) (observing that the primary purpose of the definiteness requirement is "to guard against unreasonable advantages to the patentee and disadvantages to others arising from uncertainty as to their [respective] rights" (alteration in original) (quoting *Gen. Elec. Co. v. Wabash Appliance Corp.*, 304 U.S. 364, 369 (1938)) (internal quotation marks omitted)); Michael Risch, *A Brief Defense of the Written Description Requirement*, 119 YALE L.J. ONLINE 127 (2010), <http://yalelawjournal.org/2010/03/09/risch.html>. To this list of doctrines, one could add the basic requirement that a patentee write claims setting forth his or her invention. See 35 U.S.C. § 112(b)–(f).

²⁸ *Nat'l Recovery Techs., Inc. v. Magnetic Separation Sys., Inc.*, 166 F.3d 1190, 1196 (Fed. Cir. 1999).

²⁹ 35 U.S.C. § 112(a); see also *Warner-Lambert Co. v. Teva Pharms. USA, Inc.*, 418 F.3d 1326, 1336–37 (Fed. Cir. 2005) (describing the enablement requirement); *Eli Lilly & Co. v. Barr Labs., Inc.*, 251 F.3d 955, 963–64 (Fed. Cir. 2001) (describing the best-mode requirement); *Nat'l Recovery Techs.*, 166 F.3d at 1195–96 (describing the enablement requirement). The America Invents Act eliminated failure to satisfy the best-mode requirement as a ground for invalidating a patent, though the requirement continues to exist when prosecuting a patent application. See § 15, 125 Stat. at 328 (amending 35 U.S.C. § 282 (2006)).

³⁰ See 35 U.S.C. § 101 (2006) (limiting patents to "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement

inventor from obtaining a patent on an invention that is overly conceptual or abstract, because it would preempt too much subsequent innovation.³¹ Thus, under the patentable-subject-matter doctrine, an inventor may not patent “laws of nature, physical phenomena, [or] abstract ideas.”³² Likewise, under the usefulness doctrine, an inventor may not patent an invention for which no practical use is yet known so that it can only be used for further research.³³ These doctrines also have a secondary purpose of reinforcing the requirement that an inventor create something new since laws of nature, physical phenomena, and abstract ideas are more likely than other inventions to have been discovered, created, or used before.

2. Noninfringement

A noninfringement defense argues that even if a patent is valid, it does not cover what the accused infringer makes or does.³⁴ This is an argument that the accused product or process does not fall within the monopoly granted to the inventor as the other half of the patent bargain. The scope of the patent monopoly is determined by the patent’s claims, which must “particularly point[] out and distinctly claim[] the subject matter which the inventor or a joint inventor regards as the invention.”³⁵ Under the modern law of patent infringement, the claims define the scope of the invention and thus the limits of the inventor’s monopoly rights.³⁶ This was not always so: until 1836, pat-

thereof”); *Bilski v. Kappos*, 130 S. Ct. 3218, 3225–29 (2010) (evaluating the scope of 35 U.S.C. § 101); *Diamond v. Chakrabarty*, 447 U.S. 303, 308–10 (1980) (same).

³¹ See Katherine J. Strandburg, *Much Ado About Preemption*, 50 Hous. L. Rev. 563, 568 (2012) (noting that patent law seeks to exclude overly conceptual or abstract ideas in order to avoid preempting subsequent ideas but arguing that preemption concerns may be overhyped).

³² *Chakrabarty*, 447 U.S. at 309.

³³ See *Brenner v. Manson*, 383 U.S. 519, 534–35 (1966) (“Unless and until a process is refined and developed to this point—where specific benefit exists in currently available form—there is insufficient justification for permitting an applicant to engross what may prove to be a broad field.”).

³⁴ See 35 U.S.C. § 282(b)(1) (2006 & Supp. V 2011) (noninfringement defense); *Seal-Flex, Inc. v. Athletic Track & Court Constr.*, 172 F.3d 836, 842 (Fed. Cir. 1999) (discussing the elements of infringement).

³⁵ 35 U.S.C. § 112(b) (2006 & Supp. V 2011).

³⁶ See *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004))); see also *Merrill v. Yeomans*, 94 U.S. 568, 570 (1876) (observing that claims are “of primary importance” in determining “precisely what it is that is patented”).

There is extensive recent literature debating whether claims really do, or should, set forth the scope of a patentee’s rights and whether courts do, or should, construe claims asexually to further other policy goals. See generally, e.g., Dan L. Burk & Mark A. Lemley, *Fence Posts or Sign Posts? Rethinking Patent Claim Construction*, 157 U. PA. L. REV. 1743, 1748 (2009) (arguing that patent claims fail to “specify the scope of the rights granted to patent-

ents did not even have to have claims, and the claim did not become the core language defining an invention until the late 1800s.³⁷

A patent claim generally contains two pieces: a preamble setting forth a general description of the invention and a listing of limitations—“elements, steps and/or relationships”—that describe the invention.³⁸ Determining if an accused product or process infringes a claim requires two steps: first, the language of the claim must be construed, defining the legal scope of the claim; and second, the accused product or process must be compared to the claim to see whether each limitation of the patent claim, as construed by the court, is satisfied by the accused product or process.³⁹ The accused product or process must satisfy every limitation of the claimed invention either literally or under the doctrine of equivalents to fall within the scope of the patent claim; if any limitation is not satisfied, there is no infringement.⁴⁰

tees” and suggesting reforms); Tun-Jen Chiang, *The Levels of Abstraction Problem in Patent Law*, 105 NW. U. L. REV. 1097, 1101 (2011) (arguing that despite the emphasis on claim construction, “courts select among multiple possible levels of abstraction arbitrarily and silently”); Tun-Jen Chiang & Lawrence B. Solum, *The Interpretation-Construction Distinction in Patent Law*, 123 YALE L.J. (forthcoming 2013), available at <http://ssrn.com/abstract=2234193> (arguing that the problem of ambiguity in patent claims is overstated); Christopher A. Cotropia, *Patent Claim Interpretation Methodologies and Their Claim Scope Paradigms*, 47 WM. & MARY L. REV. 49, 56 (2005) (exploring “the relationship between claim interpretation methodology and patent scope”); Christopher A. Cotropia, *What Is the “Invention”?*, 53 WM. & MARY L. REV. 1855 (2012) (arguing that courts deciding claim-construction disputes are really applying one of two conceptions of the “invention” claimed in a patent); Jeanne C. Fromer, *Claiming Intellectual Property*, 76 U. CHI. L. REV. 719 (2009) (discussing the different methodologies for claiming exclusive rights used in patent and copyright law); Oskar Liivak, *Rescuing the Invention from the Cult of the Claim*, 42 SETON HALL L. REV. 1 (2012) (arguing that patent law should pay more attention to the invention claimed in a patent, rather than solely to the words of the patent’s claims); Craig Allen Nard, *A Theory of Claim Interpretation*, 14 HARV. J.L. & TECH. 1 (2000) (discussing various theories of claim interpretation); Michael Risch, *The Failure of Public Notice in Patent Prosecution*, 21 HARV. J.L. & TECH. 179, 187–91 (2007) (pointing out flaws in patent claims and suggesting methods for enhancing public notice in claim construction); David L. Schwartz, *Practice Makes Perfect? An Empirical Study of Claim Construction Reversal Rates in Patent Cases*, 107 MICH. L. REV. 223, 259–60 (2008) (finding that district judges are generally bad at claim construction and positing the explanation that “[c]laim construction may be inherently indeterminate”). I do not grapple with that literature here. For present purposes, it suffices to say that the noninfringement inquiry focuses on comparing each accused product or process to each asserted patent claim, regardless of how that claim is construed.

³⁷ ROBERT PATRICK MERGES & JOHN FITZGERALD DUFFY, *PATENT LAW AND POLICY: CASES AND MATERIALS* 798 (5th ed. 2011).

³⁸ 37 C.F.R. § 1.75(e)(3) (2012); PATENT & TRADEMARK OFFICE, U.S. DEP’T OF COMMERCE, *MANUAL OF PATENT EXAMINING PROCEDURE* § 608.01(i)(e)(3) (8th ed., rev. 9 2012) [hereinafter *MPEP*], available at <http://www.uspto.gov/web/offices/pac/mpep/>.

³⁹ *Seal-Flex*, 172 F.3d at 842.

⁴⁰ This is sometimes called the “All Elements Rule” or “All Limitations Rule.” See, e.g., *Johnston v. IVAC Corp.*, 885 F.2d 1574, 1577 n.3 (Fed. Cir. 1989); ROBERT L. HARMON, CYNTHIA A. HOMAN & CHARLES M. MCMAHON, *PATENTS AND THE FEDERAL CIRCUIT* § 7.1(a)(i), at 467–68 (10th ed. 2011).

It is worth briefly illustrating how this works with an example. One of the patents at issue in the ongoing Apple–Samsung smartphone patent litigation is U.S. Patent No. 7,469,381, which is titled “List Scrolling and Document Translation, Scaling, and Rotation on a Touch-Screen Display.”⁴¹ As Apple explained in a court filing, the patent relates to a “method for displaying images on touch screens: when one uses a finger to drag a displayed page past its bottom edge, for example, and releases the finger, the page bounces back to fill the full screen.”⁴² Claim 1 of the ’381 patent, in the typically impenetrable language of patents, claims the following invention:

1. A computer-implemented method, comprising:
 - at a device with a touch screen display:
 - displaying a first portion of an electronic document;
 - detecting a movement of an object on or near the touch screen display;
 - in response to detecting the movement, translating the electronic document displayed on the touch screen display in a first direction to display a second portion of the electronic document, wherein the second portion is different from the first portion;
 - in response to an edge of the electronic document being reached while translating the electronic document in the first direction while the object is still detected on or near the touch screen display:
 - displaying an area beyond the edge of the document, and
 - displaying a third portion of the electronic document, wherein the third portion is smaller than the first portion; and
 - in response to detecting that the object is no longer on or near the touch screen display, translating the electronic document in a second direction until the area beyond the edge of the electronic document is no longer displayed to display a fourth portion of the electronic document, wherein the fourth portion is different from the first portion.⁴³

In its effort to prove that one accused product, the Samsung Infuse 4G smartphone, infringed this claim, Apple used a claim chart to compare each of the claim’s limitations to the way the accused phone worked. As an example, one line of the chart showed⁴⁴:

⁴¹ U.S. Patent No. 7,469,381 (filed Dec. 14, 2007) [hereinafter ’381 Patent].

⁴² Apple Inc.’s Motion for a Preliminary Injunction at 4, *Apple, Inc. v. Samsung Elecs. Co.*, No. 11-CV-01846-LHK, 2011 U.S. Dist. LEXIS 139049 (N.D. Cal. Dec. 2, 2011), *aff’d in part, vacated in part*, 678 F.3d 1314 (Fed. Cir. 2012), ECF No. 86.

⁴³ ’381 Patent claim 1.

⁴⁴ Apple Inc.’s Motion for a Preliminary Injunction, *supra* note 42, at 21.

Claim 1	Samsung Infuse 4G
<p>in response to an edge of the electronic document being reached while translating the electronic document in the first direction while the object is still detected on or near the touch screen display: displaying an area beyond the edge of the document, and displaying a third portion of the electronic document, wherein the third portion is smaller than the first portion; and</p>	<p>In response to reaching the edge of an electronic document while it is moving in the first direction and the finger is still on the touch screen, the Infuse 4G displays a black region beyond the edge, and thus displays a smaller “third portion” of the document. (<i>See</i> Balakrishnan Decl. ¶¶ 42-46, Ex. 13a.)</p> <div data-bbox="476 352 832 679" style="text-align: center;"> </div> <p><i>Figure 3: Displaying “area beyond edge” and smaller “third portion” while moving document in first direction</i></p>

In response, Samsung argued that the accused smartphone failed to meet this limitation because the “area beyond the edge of the document”—the black area outlined in green in Apple’s photograph—was not “displayed,” since no light was emitted by the smartphone’s AMOLED screen when it showed solid black.⁴⁵ (They also made another argument related to the requirement that the document be translated in a “first direction.”⁴⁶)

The dispute over the “displaying” requirement, then, focused on the first step of the infringement analysis, claim construction.⁴⁷ Apple asserted that the accused smartphone “display[ed] an area beyond the edge of the document” by showing a black region when the photograph (the “document”) was pulled partially offscreen by the user. Samsung responded that it did not “display” such an area because the smartphone did not emit light when it displayed black, and the term “display” requires emitting light. The court sided with Apple, concluding that “displaying” meant “showing or revealing to the viewer” since nothing in the patent required the device to emit light as it did

⁴⁵ Samsung’s Opposition to Apple’s Motion for a Preliminary Injunction at 26–27, *Apple*, 2011 U.S. Dist. LEXIS 139049 (No. 11-CV-01846-LHK), ECF No. 429 (internal quotation marks omitted).

⁴⁶ *Id.* at 27.

⁴⁷ *Cf. Athletic Alts., Inc. v. Prince Mfg., Inc.*, 73 F.3d 1573, 1578 (Fed. Cir. 1996) (“Where, as here, the parties do not dispute any relevant facts regarding the accused product but disagree over which of two possible meanings of Claim 1 is the proper one, the question of literal infringement collapses to one of claim construction and is thus amenable to summary judgment.”).

so.⁴⁸ It thus found that Apple was likely to be able to prove infringement of the '381 patent.⁴⁹

This pattern is typical for many, if not most, infringement disputes: with little or no dispute about how the accused product or process works, the entire ball game comes down to what exactly the patent claim requires.⁵⁰ If the patent is construed broadly enough to encompass the accused product or process, the court is likely to find infringement. If instead the patent is construed more narrowly, the court is unlikely to find infringement.⁵¹

3. *The (Partial) Independence of Invalidity and Noninfringement*

At the highest level, invalidity and noninfringement are independent defenses focused on different issues. Invalidity is focused on the patent and the universe that existed when the inventor applied for the patent without regard to the accused product or process. Noninfringement looks to the patent as it exists now and to the accused product or process. The two defenses are thus formally independent: nothing prevents a defendant from arguing both that the plaintiff's asserted patent is invalid and that, regardless, its accused product or process does not infringe the patent. A patent issued today on the broad category of flying vehicles would be invalid because prior art like the Wright brothers' airplane, helicopters, and jetpacks would render its claims non-novel, but a carmaker sued on that patent would also have an airtight noninfringement defense.

That independence is limited, however, because both defenses depend on the scope of the patent claims and thus on how the claims are construed. The basic question of a noninfringement defense—whether the accused product or process satisfies every limitation of the patent claim—depends on what those claims mean. Likewise, each of the three basic invalidity arguments depends on how a claim is construed, albeit to varying degrees.

First, determining whether a claim was novel and nonobvious requires comparing the construed claims to the prior art. If the claimed invention, as construed by the court, existed in the prior art or was

⁴⁸ *Apple*, 2011 U.S. Dist. LEXIS 139049, at *101–02 (internal quotation marks omitted).

⁴⁹ *Id.* at *106–08.

⁵⁰ See, e.g., *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 375 (1996) (patent dispute turning on the meaning of “inventory” in the asserted patent claim); *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998) (patent dispute turning on the meaning of the word “when”).

⁵¹ See Schwartz, *supra* note 36, at 230 (“[I]f the claim language is broad . . . the claim should be construed broadly. . . . [I]f the embodiments described in the detailed description of the patent are all narrow, then the language in the claim must also be narrowly construed.”).

obvious in view of the prior art, then the claim is invalid.⁵² But it is impossible to know whether the prior art disclosed any specific claim limitation without knowing what exactly that claim limitation means.

Second, determining the scope of the inventor's mandatory disclosures under the written-description, enablement, best-mode, and definiteness requirements also requires construing the claims. The written-description and enablement requirements, for example, require the inventor to describe fully his or her invention and to enable others to make full use of it. If a claim is construed to cover a particular form of the invention and that form was not described or enabled, then the patent may be invalid. If, however, that claim is construed not to cover that form of the invention, then it does not matter if the patent described or enabled it.⁵³

And third, determining whether a claim has utility and falls within the statutory patentable subject matter likewise requires knowing what those claims cover—i.e., how courts have construed them. In *Bilski v. Kappos*,⁵⁴ for instance, the Supreme Court construed two claims in the petitioner's patent application to cover the "concept of hedging, described in claim 1 and reduced to a mathematical formula in claim 4."⁵⁵ The Court concluded that these proposed claims were not patentable because granting them would "[a]llow[] petitioners to patent risk hedging," a "basic concept" and "abstract idea"⁵⁶ too broad to constitute a "process, machine, manufacture, or composition of matter."⁵⁷ If, however, the proposed claims had been construed to require more than the naked "concept of hedging," then the claims might have been patentable. As Justice John Paul Stevens put it in his concurring opinion, "the Court artificially limit[ed] petitioners' claims to hedging, and then conclude[d] that hedging is an abstract idea rather than a term that describes a category of processes includ-

⁵² Indeed, the Supreme Court has expressly compared the processes of determining invalidity and infringement, both of which involve comparing something—the prior art, or the accused product or process—to the patent claims. See *Peters v. Active Mfg. Co.*, 129 U.S. 530, 537 (1889) ("That which infringes, if later, would anticipate, if earlier." (quoting *Peters v. Active Mfg. Co.*, 21 F. 319, 321 (C.C.S.D. Ohio 1884)) (internal quotation marks omitted)); see also *Int'l Seaway Trading Corp. v. Walgreens Corp.*, 589 F.3d 1233, 1239 (Fed. Cir. 2009) ("[I]t has been well established for over a century that the same test must be used for both infringement and anticipation.").

⁵³ This necessarily simplifies a complex question about the scope of a patent's written description and enablement. For a more detailed discussion of the effects of claim construction on the written-description and enablement requirements, see Chiang, *supra* note 36, at 1131–34; see also Dan L. Burk & Mark A. Lemley, *Quantum Patent Mechanics*, 9 LEWIS & CLARK L. REV. 29, 46–52 (2005) (discussing ambiguities in claim construction).

⁵⁴ 130 S. Ct. 3218 (2010).

⁵⁵ *Id.* at 3231.

⁵⁶ *Id.*

⁵⁷ 35 U.S.C. § 101 (2006).

ing petitioners' claims. Why the Court [did] this [was] never made clear."⁵⁸

It is easy to overstate the degree to which invalidity and noninfringement are related. Invalidity is, at its core, about what came before the invention (the prior art) and what is disclosed in the patent document (the written description and other specification). Noninfringement, in contrast, is essentially about the accused product or process, which has little or nothing to do with the prior art and the patent's specification. But claim construction plays an important role—sometimes the critical role—in each determination, so the two issues are not wholly independent.

B. Invalid Patents

Patents are granted after a review by the PTO, which must make sure that an applicant “is entitled to a patent under the law” before granting the patent.⁵⁹ To make this determination, patent examiners review the patent application, perform their own search for prior art, and determine if the proposed patent claims meet the patentability rules.⁶⁰ If a proposed claim fails one of the specific requirements of patentability set forth in 35 U.S.C. §§ 101, 102, or 103, the examiner must reject the application; otherwise the PTO must issue the requested patent.⁶¹

Despite this review, many invalid patents make it through prosecution, creating significant problems for companies and individuals that want to make and sell new products and services. Though scholars—and much of the public—basically agree that this is a serious problem, there is far less agreement about the best solution.

1. *The Problem*

Among patent scholars, there is almost unanimous agreement that patent examiners do not do their job particularly well, with the

⁵⁸ *Bilski*, 130 S. Ct. at 3235 (Stevens, J., concurring in the judgment); see also *Ultramercial, Inc. v. Hulu, LLC*, No. 2010-1544, 2013 WL 3111303, at *3-4 (Fed. Cir. June 21, 2013) (observing that claim construction will usually be required before a court will find a patent claim invalid under § 101).

⁵⁹ 35 U.S.C. § 131 (2006).

⁶⁰ See generally MPEP, *supra* note 38, § 704-704.14 (describing the examiner's prior-art search and setting forth the kinds of information a patent examiner may require an applicant to submit); *id.* § 904-904.03 (providing instructions on how to conduct a prior-art search).

⁶¹ See 35 U.S.C. § 131 (“[I]f on . . . examination it appears that the applicant is entitled to a patent under the law, the Director shall issue a patent therefor.”). Accordingly, the burden of proof is on a patent examiner to justify denying a requested patent. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992), *abrogated on other grounds by KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007).

PTO issuing many invalid patents.⁶² Indeed, nearly half of all litigated patents that make it to a final judgment are invalidated by the courts.⁶³ And this statistic may understate the number of invalid patents in force since very few patents are litigated and since patent holders have an opportunity and an incentive to choose those patents and claims that are more likely to survive judicial review.⁶⁴

There are different explanations for the PTO's less-than-effective screening system. First, patent examiners have little incentive to reject bad patent applications and every incentive to grant more patents. Rejecting an application creates more work for an examiner since he or she must justify the rejection and since it likely results in another round of dialogue with the applicant. Approving an application, however, gets the file off the examiner's desk for good.⁶⁵ And the PTO has at times encouraged this approach, famously asserting that its "primary mission" is "to help customers get patents."⁶⁶

Second, even if they wanted to, patent examiners may just be too overwhelmed to catch bad patents. In recent years, the PTO has received more than 500,000 patent applications per year and granted

⁶² See, e.g., BESSEN & MEURER, *supra* note 11; JAFFE & LERNER, *supra* note 11; 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, 944–46 (2004); Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1495–97 & nn.1–4 (2001); Robert P. Merges, *As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform*, 14 BERKELEY TECH. L.J. 577, 589–91 (1999); Sawicki, *supra* note 21, at 736; R. Polk Wagner, *Understanding Patent-Quality Mechanisms*, 157 U. PA. L. REV. 2135, 2139–45 (2009).

⁶³ Allison & Lemley, *supra* note 6, at 205–07. This does not mean, by the way, that district courts are effectively doing their job of invalidating bad patents since very few cases make it to a final decision on validity.

⁶⁴ See Lemley, *supra* note 62, at 1501–03 (observing that a "tiny number" of patents are litigated each year). Conversely, it might be the case that only the close calls make it to a final determination because most patents are valid and defendants choose to license the patents in settlement. But parties settle cases for many reasons, including reducing the risk of an adverse outcome, so it is hard to know how much we can infer from the statistics. See, e.g., George L. Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. LEGAL STUD. 1 (1984) (observing that because most disputes are settled out of court and settlements occur in the shadow of governing legal rules, it is difficult or impossible to infer overall trends applicable to legal disputes by observing litigation outcomes).

⁶⁵ Lemley, *supra* note 62, at 1496 n.3; see also Corinne Langinier & Philippe Marcoul, *Monetary and Implicit Incentives of Patent Examiners* (Univ. of Alta. Dep't of Econ., Working Paper No. 2009-22, 2009), available at <http://www.economics.ualberta.ca/~media/economics/FacultyAndStaff/WPs/WP2009-22-Langinier.pdf> (concluding that rewarding patent examiners for rejecting applications, rather than for allowing patents, would give examiners greater incentives to search for information). There is evidence that examiners act more quickly and grant more patents when it is economically advantageous to the PTO for them to do so. 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. 67, 101–18 (2013) (analyzing the influence of the PTO's budget structure on patent decisions).

⁶⁶ PATENT & TRADEMARK OFFICE, U.S. DEP'T OF COMMERCE, FY2001 CORPORATE PLAN 23 (2001), available at <http://www.uspto.gov/web/offices/com/corpplan/pt04.pdf>.

almost 250,000 patents per year.⁶⁷ A patent examiner spends just eighteen hours on the average patent application—spread out over a year or two—in which he or she must review the application; conduct a prior-art search; review both the prior art submitted by the applicant and that uncovered in the search; compare the prior art to the claimed invention; go through multiple rounds of office actions (written statements finding claims patentable or not and if not, explaining why not) and responses to office actions; perhaps conduct an interview with the applicant; and ensure the application complies with various formalities.⁶⁸ And third, patent examiners often lack the information needed to determine whether a patent application should be approved. Though patent examiners do specialize in a particular technology area, they are not experts; most have a bachelor's or master's degree and less than three years of experience examining patent applications.⁶⁹ Nor can examiners benefit from the perspectives provided by an adversarial process since patent prosecution is conducted *ex parte*.⁷⁰

The resulting invalid patents have pernicious effects on individuals and companies that create new products and services, effects that are exacerbated by the sheer scale of the modern patent system.⁷¹ It is

⁶⁷ PATENT & TRADEMARK OFFICE, U.S. DEP'T OF COMMERCE, U.S. PATENT STATISTICS CHART: CALENDAR YEARS 1963–2012 (2013), available at http://www.uspto.gov/web/office/ac/ido/oeip/taf/us_stat.pdf. Notably, this does not mean that examiners actually reject half of the patent applications filed; an applicant who receives a “final rejection” can refile the same application over and over again until the examiner approves of some patent claims or the applicant decides to appeal. See generally 37 C.F.R. § 1.53 (2013) (detailing the filing requirements for a patent application). The real patent-approval rate is in the neighborhood of 70%. See Dennis Crouch, *Patent Application Outcomes: Rising Allowances and Falling Abandonments*, PATENTLY-O (Dec. 6, 2012), <http://www.patentlyo.com/patent/2012/12/patentlyo-application-outcomes-rising-allowances-and-falling-abandonments.html>.

⁶⁸ Lemley, *supra* note 62, at 1496 n.3.

⁶⁹ See Tamara Dillon, *Patent Work: The Other Side of Invention*, OCCUPATIONAL OUTLOOK Q., Fall 2009, at 18, 21; *Patent Examiner Experience Levels*, PATENTLY-O (Feb. 5, 2010), <http://www.patentlyo.com/patent/2010/02/patent-examiner-experience-levels.html>. Turnover is a significant problem at the agency, with one examiner leaving for every two hired even as the office tries to expand significantly. See U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-07-1102, U.S. PATENT AND TRADEMARK OFFICE: HIRING EFFORTS ARE NOT SUFFICIENT TO REDUCE THE PATENT APPLICATION BACKLOG (2007).

⁷⁰ See Doug Lichtman & Mark A. Lemley, *Rethinking Patent Law's Presumption of Validity*, 60 STAN. L. REV. 45, 54–56 (2007); Victor Wong, *Going from Inquisitorial to Adversarial*, YALE J.L. & TECH. (Apr. 22, 2011), <http://www.yalelawtech.org/ip-in-the-digital-age/going-from-inquisitorial-to-adversarial/>.

⁷¹ About nine million U.S. patents have been issued since the launch of the patent system in the 1790s, of which more than two million are still in force. See USPTO PATENT FULL-TEXT AND IMAGE DATABASE, <http://patft.uspto.gov> (follow “Advanced Search” hyperlink; choose option for “1790 to present [entire database]” from “Select Years” menu; search “isd/1/1/1790>1/1/2014”; then click “search” button) (searched Sept. 29, 2013) (finding 9,278,679 patents issued since 1790); Dennis Crouch, *How Many US Patents Are In-Force?*, PATENTLY-O (May 4, 2012), <http://www.patentlyo.com/patent/2012/05/how-many-us-patents-are-in-force.html>.

no longer the case, if it ever was, that a single invention is likely to be covered by a single patent; today, it is far more likely that a new product is covered by thousands of patents.⁷² Such “patent thickets” impose a significant tax on innovation since a company must, at least in theory, obtain licenses to all those thousands of patents before it introduces a new product.⁷³ Invalid patents multiply the size of this tax since the holder of an invalid patent will want a royalty just as much as the holder of a valid patent will. Patent litigants, like all litigants, are risk averse, with both sides having incentives to license even invalid patents.⁷⁴ Potential infringers might choose to do so both because of the sheer scale of the patent-thicket problem—sorting thousands of potentially relevant patents into groups of valid and invalid patents would be a monumental undertaking—and because patent litigation is uncertain enough that paying the tax is simpler and cheaper than fighting.⁷⁵ Fighting is a risk because any patent holder can block, or attempt to block, the accused infringer’s activity; although injunctions are no longer almost automatic when a patent holder prevails in court,⁷⁶ they are still a significant risk, especially when multiplied across thousands of patents.⁷⁷ And patent holders are, of course,

⁷² This is especially the case in the information-technology industry, where innovation is an iterative process by which new features and technologies build incrementally on each other. In contrast, the pharmaceutical industry may be a notable exception because pharmaceutical patents can precisely claim a particular molecule, because pharmaceutical-patent claims that are broad and vague enough to apply to many innovations are rare, and because the pharmaceutical industry relies more than many industries on concentrated high-fixed-cost investment that is a better match for patent protection. See generally BURK & LEMLEY, *supra* note 11, at 37–65 (describing the industry-specific nature of the patent system); see also Alexander Tabarrok, *Patent Theory Versus Patent Law*, 1 CONTRIBUTIONS TO ECON. ANALYSIS & POL’Y, no. 1, 2002, art. 9, at 19 (suggesting that patent law may be more necessary in the pharmaceutical industry than in other industries because the ratio of innovation costs to imitation costs is higher in the pharmaceutical industry).

⁷³ See *supra* note 13; see also Henry E. Smith, *Intellectual Property as Property: Delineating Entitlements in Information*, 116 YALE L.J. 1742, 1799–819 (2007) (discussing the role of information costs in intellectual property). Patent thickets are particularly important in industries like the information-technology industry in which improvements happen through incremental changes and recombinations of previous technologies. See, e.g., Adam Mossoff, *The Rise and Fall of the First American Patent Thicket: The Sewing Machine War of the 1850s*, 53 ARIZ. L. REV. 165, 171–82 (2011) (describing the history of incremental innovation that led to a patent thicket in sewing-machine technology). One surprisingly common response to patent thickets is simply to ignore them. See Lemley, *supra* note 12, at 20–22.

⁷⁴ As in most types of litigation, most patent lawsuits are settled—not counting the many patent disputes that are settled before litigation. See Kesan & Ball, *supra* note 10, at 271–74; *infra* Part II.C.

⁷⁵ See generally 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, 76–95 (2006) (examining transaction costs in patent disputes).

⁷⁶ See *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006) (outlining the test for granting permanent injunctions in patent cases).

⁷⁷ In the three years after *eBay* was decided, district courts granted permanent injunctions in forty-eight out of sixty-seven cases in which successful patent plaintiffs sought them. Ernest Grumbles III, Rachel C. Hughey & Susan Perera, *The Three Year Anniversary of*

happy to collect licensing revenue and are likely willing to discount their royalties to avoid the risk of an invalidity judgment.

2. *Three Solutions*

Scholars and patent practitioners have proposed three types of solutions to the problem of invalid patents.

First, better review by the PTO could lead to fewer bad patents being granted.⁷⁸ Expanding the number of patent examiners, the amount of time examiners can spend on each patent application, or the ability of examiners to track down prior-art references⁷⁹ could make it easier for examiners to figure out when a patent application claims something that is truly new, and thus to distinguish between valid and invalid patents. Requiring patent applicants to provide examiners with more information, such as the results of a comprehensive prior-art search, would also give examiners more information to work with.⁸⁰ Likewise, finding ways to reduce examiner turnover could lead to examiners who are more experienced and knowledgeable, and thus better able to distinguish between valid and invalid pat-

eBay v. MercExchange: *A Statistical Analysis of Permanent Injunctions*, INTELL. PROP. TODAY, Nov. 2009, at 25, 26.

⁷⁸ See, e.g., Robert D. Atkinson & Daniel D. Castro, *A National Technology Agenda for the New Administration*, 11 YALE J.L. & TECH. 190, 192–94 (2009); Wade M. Chumney, David L. Baumer & Roby B. Sawyers, *Patents Gone Wild: An Ethical Examination and Legal Analysis of Tax-Related and Tax Strategy Patents*, 46 AM. BUS. L.J. 343, 402 (2009); Jay P. Kesan, *Carrots and Sticks to Create a Better Patent System*, 17 BERKELEY TECH. L.J. 763, 765 (2002); Merges, *supra* note 62, at 600–15 (making suggestions for improving the examination process); Arti K. Rai, *Growing Pains in the Administrative State: The Patent Office’s Troubled Quest for Managerial Control*, 157 U. PA. L. REV. 2051, 2080–81 (2009); Mark A. Lemley, *Fixing the Patent Office* 8–12 (Stanford Law Sch. John M. Olin Program in Law & Econ., Working Paper No. 422, 2012), available at <http://ssrn.com/abstract=2023958>; see also Michael Abramowicz & John F. Duffy, *Ending the Patenting Monopoly*, 157 U. PA. L. REV. 1541, 1576–601 (2009) (proposing expanded competition in patent examination); Lichtman & Lemley, *supra* note 70, at 61–63 (proposing a system by which a patent applicant can pay for extra-rigorous patent prosecution and receive a “gold-plated” patent); Stephen Yelderian, *Improving Patent Quality with Applicant Incentives* (Aug. 16, 2012) (unpublished manuscript), available at <http://ssrn.com/abstract=2147491> (proposing ways to give patent applicants incentives to pursue narrower patent claims).

⁷⁹ The America Invents Act, which was signed into law in 2011, makes one kind of information more easily available to examiners: it permits third parties to submit prior-art information relevant to any application before the examiner issues a notice of allowance. See Leahy-Smith America Invents Act, Pub. L. No. 112-29, § 8, 125 Stat. 284, 315–16 (2011) (codified at 35 U.S.C. § 122(e) (Supp. V 2011)).

⁸⁰ Such a requirement was, at one point, included in a draft patent-reform bill, though it did not make it into the America Invents Act. See Lisa A. Dolak, *The Inequitable Conduct Gyre Widens*, 50 IDEA 215, 244–45 (2010) (reporting a proposal to require patent applicants to submit to the PTO “a search report and other information and analysis relevant to patentability” (quoting H.R. 1908, 110th Cong. § 12 (2007) (internal quotation marks omitted))); *Patent Reform: Required Pre-Filing Search and Patentability Analysis*, PATENTLY-O (July 18, 2007), <http://www.patentlyo.com/patent/2007/07/patent-reform-r.html> (same).

ents.⁸¹ But all these measures would be expensive, and it is unclear whether they would be worth the expense since most patents are never enforced.⁸²

Second, various forms of administrative review by the PTO after a patent has been granted could invalidate bad patents.⁸³ This approach provides a form of adversarial argument, with members of the public—usually potential infringers—playing a role in initiating, and sometimes litigating, the administrative review. It also shifts some of the burden of identifying bad patents to the public, who can provide information to the PTO and challenge a patent's validity without undergoing the greater burden of litigating the dispute. It also allows the PTO to concentrate its resources on the patents that are important enough to merit further review. These advantages have led many scholars and policymakers to embrace various forms of post-grant review.⁸⁴ But this approach could apply only to the few patents that are important enough to receive extra scrutiny and not the far-larger category of patents, many invalid, that are never litigated or seriously contested. It would thus do little to combat the patent-thicket problem.

Third, district courts can and do invalidate patents in litigation, both in standard patent-infringement litigation and in declaratory-judgment claims brought by potential infringement defendants. Like administrative review, litigation concentrates on a small fraction of patents and benefits from an adversarial process, but unlike administrative review it is extraordinarily expensive and time-consuming. And it is imperfectly suited for invalidating bad patents since much of a typical case is consumed by unrelated infringement issues and since district courts must apply a presumption of validity. District courts also lack expertise and have other structural shortcomings that limit

⁸¹ The PTO has itself taken this approach in recent years, hiring scores of new examiners and opening or announcing new satellite offices staffed with patent examiners in Detroit, Denver, Dallas–Fort Worth, and Silicon Valley. See David Kappos, *Progress Report on Satellite Office Openings*, DIRECTOR'S FORUM: A BLOG FROM USPTO'S LEADERSHIP (Sept. 12, 2012), http://www.uspto.gov/blog/director/entry/progress_report_on_satellite_office.

⁸² See Edmund W. Kitch, *Graham v. John Deere Co.: New Standards for Patents*, 1966 S. CT. REV. 293, 345–46 (discussing the validity of unenforced patents); Lemley, *supra* note 62, at 1514–15 (same); Jonathan S. Masur, *Costly Screens and Patent Examination*, 2 J. LEGAL ANALYSIS 687, 706 (2010) (discussing unenforced patents).

⁸³ As modified by the America Invents Act, there are three forms of post-grant administrative review available in the U.S. patent system: ex parte reexamination, see 35 U.S.C. §§ 302–307 (2006 & Supp. V 2011); inter partes review, see *id.* §§ 311–319 (Supp. V 2011); and post-grant review, see *id.* §§ 321–329 (Supp. V 2011). See also Andrei Iancu & Ben Haber, *Post-Issuance Proceedings in the America Invents Act*, 93 J. PAT. & TRADEMARK OFF. SOC'Y 476 (2012).

⁸⁴ See, e.g., Farrell & Merges, *supra* note 62, at 967; Mark D. Janis, *Rethinking Reexamination: Toward a Viable Administrative Revocation System for U.S. Patent Law*, 11 HARV. J.L. & TECH. 1, 93–111 (1997); cf. 35 U.S.C. §§ 301–307 (ex parte reexamination); *id.* §§ 311–319 (inter partes reexamination); *id.* §§ 321–329 (post-grant review). On the relative merits of pre- and post-grant procedures, see Kesan & Gallo, *supra* note 75, at 109–12.

their ability to decide complex technological cases like patent lawsuits.⁸⁵ Moreover, potential infringers have imperfect incentives to challenge patents as invalid.⁸⁶ These and other factors mean that litigation challenges to patent validity have high error costs.⁸⁷ Scholars have nevertheless proposed ways to make litigation a more useful tool in invalidating bad patents.⁸⁸

Which of these three mechanisms is best is to some degree beside the point. We need not choose a single mechanism for weeding out bad patents; rather, the goal should be to make each mechanism as effective as it can be without sacrificing other goals.⁸⁹ If we can make one mechanism more cost-effective at preventing an invalid patent from being issued, or at eliminating it after the fact without affecting the other mechanisms or producing other adverse consequences, we should do so. Accordingly, the next Part discusses a substantial impediment to the use of litigation to invalidate patents.

II

THE DEFENDANT'S CHOICE: INVALIDITY VERSUS NONINFRINGEMENT

This Part introduces the trade-offs and asymmetries between patent invalidity and noninfringement that lead many defendants to choose to focus on just one of the two defenses, and in many cases to prefer to focus on noninfringement.

A. Trade-Offs

An accused infringer fighting a patent lawsuit makes many important strategic decisions in the course of litigating the case, but proba-

⁸⁵ See, e.g., Jeanne C. Fromer, *District Courts as Patent Laboratories*, 1 U.C. IRVINE L. REV. 307, 313–19 (2011).

⁸⁶ See Farrell & Merges, *supra* note 62, at 950–60 (analyzing skewed incentives in patent litigation).

⁸⁷ See Anup Malani & Jonathan S. Masur, *Raising the Stakes in Patent Cases*, 101 GEO. L.J. 637, 658–76 (2013) (proposing a set of enhanced rewards and penalties to mitigate error costs in patent litigation).

⁸⁸ See, e.g., Joseph Scott Miller, *Building a Better Bounty: Litigation-Stage Rewards for Defeating Patents*, 19 BERKELEY TECH. L.J. 667, 704–30 (2004) (proposing a litigation-based bounty scheme); John R. Thomas, *Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties*, 2001 U. ILL. L. REV. 305, 340–47 (proposing that the PTO pay bounties to members of the public who provide information leading to the rejection of patent applications); Edward Hsieh, Note, *Mandatory Joinder: An Indirect Method for Improving Patent Quality*, 77 S. CAL. L. REV. 683, 692–93 (2004) (proposing mandatory joinder of all infringers into a single patent case to eliminate the collective-action problem in challenging patent validity); Matthew K.K. Sumida, Note, *Defendant Class Actions and Patent Infringement Litigation*, 58 UCLA L. REV. 843, 881–86 (2011) (proposing the use of defendant class actions to resolve patent disputes).

⁸⁹ Cf. Sawicki, *supra* note 21 (discussing potential mistakes at different points in a patent's lifetime and analyzing which mistakes are better and worse for society).

bly the most critical one is what arguments to make in defense. In nearly every patent case, the two leading candidates are invalidity and noninfringement. And as discussed above, invalidity and noninfringement are distinct issues that can be argued simultaneously.⁹⁰ Yet several trade-offs exist between invalidity and noninfringement so that patent defendants face pressure to focus on one or the other.

For both invalidity and noninfringement, the defendant is usually the party that decides whether the issue will be seriously contested. This is straightforward for invalidity, which is an affirmative defense that must be proved by clear and convincing evidence and so can only come up as an issue if raised by the defendant.⁹¹ The point is less obvious with noninfringement since the plaintiff has the burden of proving infringement and must meet that burden to win the case.⁹² In practice, though, meeting this burden is relatively simple if the defendant does not put effort into a counterargument; the plaintiff can typically rely on an expert witness, testifying at a relatively high level of generality, that the accused product or process satisfies every limitation of the asserted claims. The issue is really only contested when the defendant argues that the accused product or process is missing certain claim limitations.

That the defendant chooses what issues to contest is a rather banal point, but it has profound consequences in patent litigation because defendants usually choose to focus on one or the other of the two defenses. Several trade-offs penalize patent defendants who try to keep both defenses alive even if they both could have merit in any particular case. These trade-offs include trade-offs in claim-construction strategy, the need for a coherent trial narrative, and resource constraints.

1. *Claim-Construction Strategy*

The biggest factor pushing patent litigants toward focusing on one defense is the need for a claim-construction strategy that supports that defense. One of the important strategic decisions a patent litigant makes is what claim constructions to propose and argue for. It is often difficult or impossible to construe claims in a way that is compatible with both invalidity and noninfringement arguments, so the choice of claim constructions can act as a fork in the road, forcing defendants to choose one or the other. And because claim construc-

⁹⁰ See *supra* Part I.A.3.

⁹¹ See 35 U.S.C. § 282(a) (2006 & Supp. V 2011) (“A patent shall be presumed valid. . . . The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity.”); *Microsoft Corp. v. i4i Ltd. P’ship*, 131 S. Ct. 2238, 2240 (2011) (holding that invalidity must be proved by clear and convincing evidence).

⁹² See 35 U.S.C. § 281 (2006) (“A patentee shall have remedy by civil action for infringement of his patent.”).

tion is such a malleable and uncertain process, and unusually dependent on facts for a question of law, the parties' arguments have a disproportionate impact on the court's ultimate claim constructions.⁹³

In many patent cases—perhaps most patent cases—the defendant must choose between arguing for broad claim constructions that support its invalidity arguments and arguing for narrow claim constructions that support its noninfringement arguments.⁹⁴ Narrow claim constructions, in general, are better for noninfringement arguments because fewer products and processes will fall into narrow claims than into broad ones. Narrow claim constructions make it harder to prove invalidity, though, because fewer prior-art references will describe elements of a narrower claim. Similarly, broad claim constructions make it harder to argue noninfringement since it is easier to prove that a product or process falls within a broader category than a narrower category, while broad claim constructions make it easier to argue invalidity since more prior art can anticipate or render obvious a patent claim.⁹⁵ As the famed patent judge Giles Rich quipped decades ago, “[t]he stronger a patent the weaker it is and the weaker a patent the stronger it is.”⁹⁶

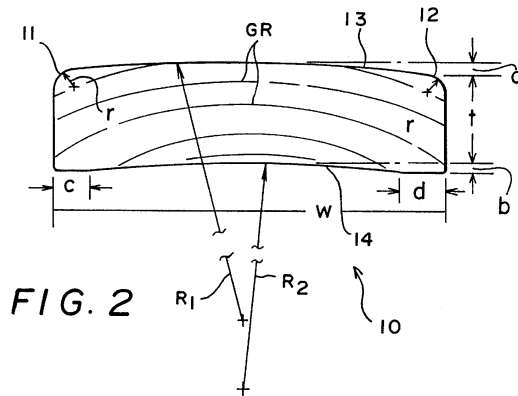
⁹³ See, e.g., Kimberly A. Moore, Markman *Eight Years Later: Is Claim Construction More Predictable?*, 9 LEWIS & CLARK L. REV. 231, 233 (2005) (noting the unpredictability of claim construction); Schwartz, *supra* note 36, at 259–60 (“Claim construction may be inherently indeterminate.”).

⁹⁴ In the American patent system, the meaning of a claim's language is a question of law to be resolved by the court. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 384 (1996). Generally, partway through a case, the parties will meet and confer to discuss which claim terms are in need of construction and will propose constructions. For terms for which the parties cannot agree on constructions, the parties will submit proposed claim constructions and supporting briefs to the court. The court will then hold a hearing called a Markman hearing; consider the parties' arguments; and construe the claims. See, e.g., N.D. CAL. LOC. PAT. R. 4-1 to 4-7 (providing for claim-construction proceedings); E.D. TEX. PAT. R. 4-1 to 4-6 (same); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1311–19 (Fed. Cir. 2005) (en banc) (discussing the roles of law and fact in claim construction); *id.* at 1332–33 (Mayer, J., dissenting) (same); MODEL LOCAL PATENT RULES R. 4-1 to 4-7 (Intellectual Prop. Owners Ass'n 2009) (providing for claim-construction proceedings). Claim construction is essentially the midterm of a patent case, with expert reports that rely on the construed claims, dispositive motions, and trial usually coming later.

⁹⁵ These trade-offs between narrow and broad claim constructions have been repeatedly recognized by scholars and practitioners. See, e.g., Tun-Jen Chiang, *The Advantages of Inter Partes Reexamination*, 90 J. PAT. & TRADEMARK OFF. SOC'Y 579, 581 (2008) (“[T]he ideal tactical posture for an accused infringer is to receive a broad claim construction for invalidity analysis but maintain a narrower claim construction for infringement analysis; with patent holders preferring the opposite. Keenly aware of such potential gamesmanship by both sides, the Federal Circuit has repeatedly held that claims must be construed consistently between the two analyses.”); Matthew B. Lowrie, *Critical Issues in Managing Patent Litigation*, 44 IDEA 267, 280 (2004) (“The strategy issues related to what claim construction to ask for also fundamentally impact a patent litigation. The trade-off typically involves whether to ask for a broad construction (infringement is easier, but validity more difficult) or a narrow construction (same, but in reverse).”).

⁹⁶ Giles S. Rich, *The Proposed Patent Legislation: Some Comments*, 35 GEO. WASH. L. REV. 641, 644 (1967) (emphasis omitted).

A classic example of the importance of broader and narrower claim constructions is *Nystrom v. TREX Co.*⁹⁷ Nystrom concerned a patent covering boards used to build outdoor decks.⁹⁸ The patent claimed to solve a problem with standard flat deck boards, which would accumulate water, leading to decay. The patent described a slightly rounded board that, when oriented so the convex side faced up, would shed water to the sides of each board. Figure 2 of the patent showed a cross section of the invention⁹⁹:



Although the specification of the patent described a board milled from solid wood logs and repeatedly discussed wooden boards,¹⁰⁰ the asserted claims just used the term “board” without specifying the material from which the board was made.¹⁰¹ Nystrom sued TREX, a company that made composite deck boards made out of a mixture of wood fibers and plastic.¹⁰²

The asserted patent claimed a “board for use in constructing a flooring surface for exterior use” satisfying various other limitations.¹⁰³ The parties disagreed about the proper construction of the

⁹⁷ 424 F.3d 1136 (Fed. Cir. 2005). I borrow this example from Dave Schwartz. See Schwartz, *supra* note 36, at 231–33.

⁹⁸ See *Nystrom*, 424 F.3d at 1140; U.S. Patent No. 5,474,831 (filed July 13, 1992) [hereinafter ‘831 Patent].

⁹⁹ ‘831 Patent fig. 2.

¹⁰⁰ *E.g.*, *id.* at col. 1, ll. 27–37 (“wood flooring for exterior use”); *id.* at col. 1, ll. 48–55 (“[V]ery little change has been made in the basic design of wood building materials . . .”); *id.* at col. 3, ll. 25–35 (“growth rings” and “bark side”).

¹⁰¹ See *id.* at claims 1–15, 18–20.

¹⁰² *Nystrom*, 424 F.3d at 1140.

¹⁰³ ‘831 Patent at claim 1. The full language of claim 1, one of several similar asserted claims, reads:

1. A board for use in constructing a flooring surface for exterior use, said board having a top surface, a bottom surface and opposite side edges, said top surface being manufactured to have a slightly rounded or curved configuration from a longitudinal center line thereof downwardly toward each side edge, thereby defining a convex top surface which sheds water and at the same time is comfortable to walk on, and said bottom surface having a

term “board,” among other claim terms. The plaintiff proposed a broad construction for “board,” suggesting it meant “an elongated piece of construction material for use in building” regardless of the material from which the board was made.¹⁰⁴ The defendant proposed a narrower construction, under which “board” meant “wood board cut from a log” or “solid all wood board.”¹⁰⁵

The defendant’s narrower construction gave it an airtight noninfringement case: since its boards were made from a wood–plastic composite and not just wood cut from a log, they would not satisfy every limitation of a claim that required solid-wood boards.¹⁰⁶ The plaintiff would have a better shot under its broader construction since a board can be “an elongated piece of construction material for use in building” regardless of whether it is made from wood, metal, stone, or a wood–plastic composite. A greater universe of boards would infringe such a broadly construed claim.

Although *Nystrom* was decided on the issue of infringement, the point applies just as well to invalidity. If a court construes “board” to require a solid-wood board milled from a log, then the universe of relevant prior art is limited to solid-wood boards or, perhaps, boards made from other materials that would make a solid-wood board obvious. If a “board” can be made out of any building material, then the universe of prior art expands significantly. Yet anything in the prior art that satisfies a claim’s limitations can invalidate a patent; the prior art does not need to anticipate or render obvious every possible board covered by the claim.¹⁰⁷ If the prior art contained steel planks or stone slabs that met each of the claim limitations at issue in *Nystrom*, then the claims would be found invalid regardless of whether the prior art anticipated solid-wood or composite boards. So anything that expands the universe of prior art makes it easier to prove invalidity.

This strategic dynamic means that parties often go all in on either invalidity or noninfringement, arguing for broad claim constructions

concave configuration for nesting engagement with the top surface of another board so that a plurality of the boards may be stacked one on top of the other with the stability of conventional boards having flat top and bottom surfaces.

Id.

¹⁰⁴ *Nystrom v. TREX Co.*, No. 2:01-cv-905, 2002 U.S. Dist. LEXIS 27501, at *10 (E.D. Va. Aug. 19, 2002) (internal quotation marks omitted), *aff’d in relevant part, rev’d in part*, 424 F.3d 1136 (Fed. Cir. 2005).

¹⁰⁵ *Id.* at *10 & n.2 (internal quotation marks omitted).

¹⁰⁶ Indeed, *Nystrom* conceded noninfringement, 424 F.3d at 1140–41, after the district court construed “board” to mean “piece of elongated construction material made from wood cut from a log,” 2002 U.S. Dist. LEXIS 27501, at *16.

¹⁰⁷ *Cf. Zenith Elecs. Corp. v. PDI Commc’n Sys., Inc.*, 522 F.3d 1348, 1363 (Fed. Cir. 2008) (“Anticipation requires a showing that each element of the claim at issue, properly construed, is found in a single prior art reference.”).

that shore up their invalidity arguments or narrow claim constructions that shore up their noninfringement arguments. The alternative can be middle-of-the-road constructions that do not help either defense enough to be successful. Unless the defendant's case is unusually strong, then, claim-construction strategy can force the defendant to jettison one defense in favor of the other.

2. *Trial Narratives*

Even if a defendant pursues both invalidity and noninfringement defenses at the start of a case, the need for a simple, coherent narrative of the case will often lead that defendant to focus on one defense or the other by the time the case reaches trial.¹⁰⁸ Every (good) trial lawyer tries to simplify his or her case and tell jurors a straightforward, appealing story that just happens to support his or her client's side.¹⁰⁹ The need for this simple narrative is only magnified in patent trials, which otherwise stack complexity upon complexity. Many patents and accused products and processes are technically advanced and difficult even for experts to understand—understandably so, since patents by their nature protect new inventions. Invalidity and noninfringement are themselves complex legal concepts that can be difficult for jurors to understand. And invalidity and noninfringement have little in common, making it even harder to keep track of both simultaneously.

Trial lawyers are smart to focus on a simple narrative, even at the cost of a potential defense. Jurors hear competing stories from the plaintiff and the defense, and they must decide which story is more credible. Yet studies of jury psychology show that the credibility a juror assigns to a story is based not on the strength of the evidence but on the narrative plausibility of a party's arguments. A juror constructs

¹⁰⁸ Patent cases go to trial relatively often compared with other federal civil cases. In one study, for instance, 251 cases were decided by trial verdicts, compared to 377 decided in summary judgment, a ratio of one trial for every 1.5 summary judgments. Kesan & Ball, *supra* note 10, at 273–74. In federal civil cases as a whole, the ratio is closer to 2.5 summary judgments per trial. See Stephen B. Burbank, *Vanishing Trials and Summary Judgment in Federal Civil Cases: Drifting Toward Bethlehem or Gomorrah?*, 1 J. EMPIRICAL LEGAL STUD. 591, 616 (2004) (finding, based on data covering civil cases over four years in the Eastern District of Pennsylvania, that about 4.1% of cases ended in summary judgment, compared to 1.6% in trials). As with other kinds of cases, settlements are common, but if a case is likely to make it to judgment, then a trial is likely enough that we should expect parties to consider it when making strategic decisions.

¹⁰⁹ This advice is ubiquitous in books on trial strategy. The first four chapters of one trial-advocacy treatise, for instance, are titled “Storytelling,” “Storyboarding,” “Theming,” and “Story Structure.” RUSS M. HERMAN, *COURTROOM PERSUASION 2D: WINNING WITH ART, DRAMA AND SCIENCE*, at xvii (2009); see also, e.g., MARILYN J. BERGER, JOHN B. MITCHELL & RONALD H. CLARK, *TRIAL ADVOCACY: PLANNING, ANALYSIS, AND STRATEGY* 238–45 (2d ed. 2008) (advocating crafting an argument as a “[b]elievable [s]tory”); PAUL BERGMAN, *TRIAL ADVOCACY IN A NUTSHELL* 13–90 (5th ed. 2013) (“Part I. Strategies for Developing Argument-Centered Narratives”).

his or her own internal narrative representation of a case based on the evidence and his or her background knowledge. The juror then uses this narrative representation, not the raw evidence, to reach a verdict.¹¹⁰ And a patent holder can always present a simple, plausible narrative: “We invented this great new widget, and the defendant used (or stole) our idea.” A defendant can counter with its own simple narrative of invalidity (“The plaintiff didn’t invent anything”) or non-infringement (“Our product is fundamentally different”)—but only if it focuses on one defense. Otherwise, the response is a story that pulls in multiple directions: “Our product is fundamentally different from this thing the plaintiff invented—which, by the way, wasn’t actually new but had been invented before by this other inventor, or would have been obvious to any idiot in the field.” Such a narrative is less coherent and less intuitively plausible than the plaintiff’s simple narrative.¹¹¹ Indeed, such a story might even come across to jurors as some sort of too-good-to-be-true shell game, with a sort of “heads I win, tails you lose” quality.¹¹²

Bench trials could help since lawyers and judges may be better able than jurors to track multiple complex narratives simultaneously, yet most patent cases that go to trial are tried before juries. There are two reasons for this. First, a patent holder has a Seventh Amendment right to a jury trial, though certain equitable issues—like injunctions and the defense of unenforceability due to inequitable conduct—are decided by the judge.¹¹³ Second, juries are more likely than judges to

¹¹⁰ See Mark Cammack, *In Search of the Post-Positivist Jury*, 70 IND. L.J. 405, 462–73 (1995) (analyzing juror decision making); Roger Allan Ford, *Modeling the Effects of Peremptory Challenges on Jury Selection and Jury Verdicts*, 17 GEO. MASON L. REV. 377, 419 (2010) (“The plausibility of a story, though, depends on one’s perspective and one’s experience with the subject matter of the story.”). This reliance on narratives may not be a good thing. See Lisa Kern Griffin, *Narrative, Truth, and Trial*, 101 GEO. L.J. 281, 301–12 (2013) (warning against narrative bias).

¹¹¹ Arguably, trial narratives weigh not just in favor of choosing one defense but in favor of noninfringement. See Roger Shang & Yar Chaikovsky, *Inter Partes Reexamination of Patents: An Empirical Evaluation*, 15 TEX. INTELL. PROP. L.J. 1, 25 (2006) (“Seasoned patent litigators almost always prefer to focus on the noninfringement argument at trial, because, among other reasons, an argument of ‘we don’t infringe’ sounds more moral to a jury than an argument of ‘maybe we infringe but other people invented this first[]’ . . .”).

¹¹² Thanks to Joe Miller for this point.

¹¹³ See *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 372 (1996) (distinguishing the right to a jury trial of infringement issues from other matters that fall within the court’s equitable powers); *Shum v. Intel Corp.*, 499 F.3d 1272, 1276–79 (Fed. Cir. 2007) (distinguishing the right to a jury trial of state-law issues from equitable issues decided by a judge); *Gardco Mfg., Inc. v. Herst Lighting Co.*, 820 F.2d 1209, 1213 (Fed. Cir. 1987) (allowing an inequitable conduct claim to be decided without a jury); DONALD S. CHISUM, 6 CHISUM ON PATENTS § 19.03 (2012) (discussing *Gardco* and stating that “a district court may properly hold a separate trial directed solely to the issue of inequitable conduct in advance of a trial on the issues of infringement and validity even though the patentee had properly demanded trial by jury on those issues”).

find in favor of patent holders.¹¹⁴ Although some judicial districts are considered more favorable than others to patent holders, plaintiffs can usually choose where to file patent lawsuits.¹¹⁵ And patent holders have made aggressive use of that power, favoring districts like the Eastern District of Texas that are believed to be friendly to plaintiffs.¹¹⁶

¹¹⁴ See Mark A. Lemley, Jamie Kendall & Clint Martin, *Rush to Judgment?: Trial Length and Outcomes in Patent Cases*, 41 AIPLA Q.J. 169, 172–77 (2013) (finding, in a study of all patent trials over 11.5 years, that juries were significantly more likely to find in favor of patent holders, even controlling for differences in the kinds of cases tried by judges and juries). This is consistent with the conventional wisdom among patent litigators. See, e.g., ABA SECTION OF INTELLECTUAL PROP. LAW, PATENT LITIGATION STRATEGIES HANDBOOK ch. 6.IX.B (Barry L. Grossman & Gary M. Hoffman eds., 3d ed. 2010) (discussing strategic considerations in deciding whether to demand a jury trial); 5 INTELLECTUAL PROPERTY COUNSELING & LITIGATION § 82.02 (Lester Horwitz et al. eds., 2012) (“[A] plaintiff with a weak patent should seek a jury, since jurors will give more deference to the beribboned patent than the Judge.”); John M. Griem, Jr. & Emily Jayne Kunz, *Jury Trials in Patent Cases: Practical and Legal Considerations*, PAT. STRATEGY & MGMT., Jan. 2007, at 1 (discussing strategic considerations in deciding whether to demand a jury trial).

¹¹⁵ Although the general rule is that as long as the court has personal jurisdiction over the defendant, a plaintiff’s choice of forum is entitled to significant deference, a defendant can seek to transfer the case to another district court “[f]or the convenience of parties and witnesses, in the interest of justice.” 28 U.S.C. § 1404(a) (2006 & Supp. V 2011). An extensive case law has developed in the Federal Circuit governing transfer motions in patent cases, as numerous defendants, especially in cases pending in the Eastern District of Texas, have petitioned for writs of mandamus directing district judges to transfer cases to districts preferred by the defendants. See, e.g., *In re Verizon Bus. Network Servs.*, 635 F.3d 559, 561 (Fed. Cir. 2011); *In re Microsoft Corp.*, 630 F.3d 1361, 1363 (Fed. Cir. 2011); *In re Vistaprint Ltd.*, 628 F.3d 1342, 1343 (Fed. Cir. 2010); *In re Acer Am. Corp.*, 626 F.3d 1252, 1254 (Fed. Cir. 2010); *In re Zimmer Holdings, Inc.*, 609 F.3d 1378, 1379 (Fed. Cir. 2010); *In re Nintendo Co.*, 589 F.3d 1194, 1196 (Fed. Cir. 2009); *In re Hoffmann–La Roche Inc.*, 587 F.3d 1333, 1334 (Fed. Cir. 2009); *In re Genentech, Inc.*, 566 F.3d 1338, 1340 (Fed. Cir. 2009); *In re Volkswagen of Am., Inc.*, 566 F.3d 1349, 1350 (Fed. Cir. 2009); *In re TS Tech USA Corp.*, 551 F.3d 1315, 1317 (Fed. Cir. 2008). (Disclosure: I was counsel to petitioner Microsoft Corp. in the *Acer America Corp.* mandamus petition. The opinions stated in this Article are solely my own, and nothing in this Article is based on confidential information learned in the course of that representation.)

¹¹⁶ See, e.g., Julie Blackman, Ellen Brickman & Corinne Brenner, *East Texas Jurors and Patent Litigation*, JURY EXPERT, Mar. 2010, at 5. For what it’s worth, while the Lemley, Kendall & Martin study finds jury-trial success rates that vary across districts consistently with the conventional wisdom, the differences are “not statistically significant once we factor in the number of patents, the number of defendants, whether a judge or a jury decided the issue, whether there were non-patent issues in the case, and whether the case resulted in a split decision.” Lemley, Kendall & Martin, *supra* note 114, at 184. The authors in that study found, for example, win rates by patent holders of 70.8% in the Eastern District of Texas, a district usually seen as patent-friendly, compared to 44.4% in the Northern District of California, a district usually seen as patent-skeptical. See *id.* at 184–85. It is also possible that districts are seen as patent-friendly because they produce larger verdicts. The Eastern District of Texas, for instance, has produced two of the five largest patent verdicts in American history—but then the Northern District of California produced one of the others. See *Apple–Samsung Verdict Third Largest Ever in U.S. Patent Litigation: Lex Machina Data Confirms Historic Nature of Verdict*, LEX MACHINA (Aug. 24, 2012), <https://lexmachina.com/2012/08/24/apple-samsung-verdict-third-largest-ever-in-u-s-patent-litigation/>. Those five verdicts, as of December 30, 2012, were reached in these cases: (1) *Centocor Ortho Biotech, Inc. v. Abbot Labs.*, No. 2:07-cv-139-TJW (E.D. Tex. June 29, 2009) (\$1.67

3. Resource Constraints

Resource constraints also create a trade-off between invalidity and noninfringement, though the importance of the trade-off depends greatly on the stakes in the case. Patent cases are notoriously expensive to litigate. A 2011 survey of patent lawyers estimated that the median cost of litigating a patent case to final decision was \$2.5 million, when between \$1 million and \$25 million was at stake.¹¹⁷ If more than \$25 million was at stake, this estimated cost doubled to \$5 million.¹¹⁸ Besides attorneys' fees, parties can spend heavily on expert fees, expenses from investigating the accused product or process, and searching for prior art.

Very few of these expenses apply to both invalidity and noninfringement arguments, so the marginal cost of pursuing both defenses can be substantial. Consider, for instance, the steps involved in proving a patent invalid. First, generally, the patent and its prosecution history are analyzed—by patent litigators, technical experts, or both—to determine what the relevant patent claims cover and what the critical issues are likely to be. Second, a prior-art search is conducted to build a universe of relevant prior art. Third, the prior art and the relevant patent claims are compared to determine what limitations of the patent are covered by the prior art, what invalidity arguments can be made, and what the weaknesses are in those arguments. Fourth, proposed claim constructions that support the defendant's invalidity arguments are developed. Fifth, legal arguments, expert opinions, and supporting evidence are developed. Of all these steps, only the initial examination of the patent and prosecution history and the development of proposed claim constructions are likely to be relevant both for invalidity and noninfringement—and even then, those steps are likely to take longer and involve more debate if they must support two different defenses instead of just one. The other steps involving prior art are irrelevant for noninfringement arguments, and expert and legal work will rarely overlap.¹¹⁹ And, of course, proving nonin-

billion verdict, later overturned on appeal); (2) *Lucent Techs. Inc. v. Gateway, Inc.*, No. 3:02-cv-2060-B-CAB (S.D. Cal. Feb. 22, 2007) (\$1.52 billion verdict, later overturned by the court); (3) *Apple Inc. v. Samsung Elecs. Co.*, No. 11-cv-1846-LHK (N.D. Cal. Aug. 24, 2012) (\$1.05 billion verdict, currently on appeal); (4) *Monsanto Co. v. E.I. DuPont De Nemours & Co.*, 4:09-cv-686-ERW (E.D. Mo. Aug. 1, 2012) (\$1 billion verdict, case is ongoing); and (5) *Mirror Worlds, LLC v. Apple, Inc.*, No. 6:08-cv-88 (E.D. Tex. Oct. 1, 2010) (\$626 million verdict, later overturned on appeal).

¹¹⁷ AM. INTELLECTUAL PROP. LAW ASS'N, REPORT OF THE ECONOMIC SURVEY 2011, at I-153 (2011).

¹¹⁸ *Id.*

¹¹⁹ The best practice is to have separate paid experts for invalidity and noninfringement in order to prevent a single expert from taking inconsistent positions when discussing invalidity and noninfringement. Indeed, it is not uncommon for a defendant's legal team to have dedicated invalidity and noninfringement teams.

fringement has its own unique steps, including developing evidence about the accused product or process, learning how it works, and comparing its elements to the limitations of the asserted patent claims.

If enough is at stake, then the added cost of developing two defenses may be worth it. But with patent litigation becoming more and more expensive¹²⁰ and many frequent defendants facing dozens or hundreds of patent lawsuits,¹²¹ it is not surprising that defendants look to cut costs where they can. This strategy can be risky because a defendant losing a patent lawsuit may have to pay large damages or even take its product off the market if the patent holder can obtain a permanent injunction.¹²² But this risk is manageable because most patent cases settle¹²³ and because injunctions are more difficult to obtain since the Supreme Court's decision in *eBay Inc. v. MercExchange, L.L.C.*¹²⁴

B. Asymmetries

If trade-offs between noninfringement and invalidity lead most defendants to focus on just one of the two defenses, then the next obvious question is whether one defense or the other has any systematic advantage. This section discusses three asymmetries that can lead

¹²⁰ The American Intellectual Property Law Association has long conducted a biennial economic survey of its members. The 1991 survey found that the median patent litigation, through trial, would cost each side \$396,000. AM. INTELLECTUAL PROP. LAW ASS'N, REPORT OF ECONOMIC SURVEY 1991, at 29 (1991). In 2001, the survey broke out the average by the amount at stake in the case; with less than \$1 million at stake, the median reported cost was \$499,000, while if more than \$25 million was at stake, the median reported cost was \$2,992,000. AM. INTELLECTUAL PROP. LAW ASS'N, REPORT OF THE ECONOMIC SURVEY 2001, at 84–85 (2001). In 2011, those numbers had grown to \$650,000 (less than \$1 million at stake) and \$5 million (more than \$25 million at stake). AM. INTELLECTUAL PROP. LAW ASS'N, *supra* note 117, at I-153 to I-154.

¹²¹ This is especially common in the fields of computer hardware and software. According to searches of the Lex Machina patent-litigation database, for example, as of December 30, 2012, Apple Inc. was a party in 121 open patent cases; Microsoft Corp. was a party in 55 open cases; Google Corp. was a party in 86 open cases; various Sony companies were parties in 94 open cases; and various Samsung companies were parties in 104 open cases.

¹²² See 35 U.S.C. § 283 (2006) (injunctions); *id.* § 284 (2006 & Supp. V 2011) (damages).

¹²³ See *infra* Part II.C.

¹²⁴ 547 U.S. 388 (2006). Before *eBay*, a successful patent plaintiff was almost always entitled to a permanent injunction; the Federal Circuit applied a “general rule that courts will issue permanent injunctions against patent infringement absent exceptional circumstances.” *Id.* at 391 (quoting *MercExchange, L.L.C. v. eBay, Inc.*, 401 F.3d 1323, 1339 (Fed. Cir. 2005), *vacated*, 547 U.S. 388 (2006)) (internal quotation marks omitted). One study found that after *eBay* was decided, the proportion of winning patent plaintiffs who obtained an injunction dropped from 100% to 60%. Benjamin N. Simler & Scott McClelland, *A Model for Predicting Permanent Injunctions After eBay v. MercExchange*, 5 BLOOMBERG LAW REPORTS—INTELLECTUAL PROPERTY (2011).

defendants to prefer focusing on noninfringement: the elevated burden of proof that applies to invalidity defenses; information and timing advantages enjoyed by plaintiffs arguing validity; and the asymmetric outcomes of successful invalidity and noninfringement defenses.

1. *Invalidity's Elevated Burden of Proof*

The most basic asymmetry between litigating invalidity and noninfringement is in their burdens of proof: invalidity must be proved by clear and convincing evidence, while infringement must be proved only by a preponderance of the evidence.¹²⁵ This difference arises from 35 U.S.C. § 282(a), which requires that patents be “presumed valid” and that a party asserting that a patent claim is invalid has the burden of so proving.¹²⁶ Accordingly, to prevail on a noninfringement defense, an accused infringer must only show that the patent holder cannot win by a preponderance of the evidence, but to prevail on an invalidity defense, it must show that the patent is invalid by clear and convincing evidence, a substantially greater burden.

The standard justification for the elevated burden of proof is that a patent grant represents an administrative decision of the United States. Since such decisions are made only after extensive examination by expert patent examiners, the story goes, they are likely to be correct and are therefore entitled to some deference.¹²⁷ This justification has been criticized by scholars, judges, and the Federal Trade Commission, who point out that patent examiners spend little time on each patent, lack sufficient knowledge of the prior art, often have not even seen all the relevant prior art, and do not benefit from an adversarial presentation on the merits of a patent application.¹²⁸ I share

¹²⁵ See *Microsoft Corp. v. i4i Ltd. P'ship*, 131 S. Ct. 2238, 2240 (2011) (invalidity); *Centricut, LLC v. Esab Grp., Inc.*, 390 F.3d 1361, 1367 (Fed. Cir. 2004) (infringement).

¹²⁶ 35 U.S.C. § 282(a) (2006 & Supp. V 2011).

¹²⁷ See, e.g., *Microsoft*, 131 S. Ct. at 2249 (noting the “rationale underlying the presumption—that the PTO, in its expertise, has approved the claim” (quoting *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 426 (2007)) (internal quotation marks omitted)); HARMON, HOMAN & McMAHON, *supra* note 40, § 1.5(a); Lichtman & Lemley, *supra* note 70, at 53–56. Other justifications have also been asserted. See, e.g., *The Barbed Wire Patent*, 143 U.S. 275, 292 (1892) (observing that it was the patent holder “who first published this device; put it upon record; made use of it for a practical purpose; and gave it to the public, by which it was eagerly seized upon, and spread until there is scarcely a cattle-raising district in the world in which it is not extensively employed,” and concluding on that basis that “the doubts we entertain concerning the actual inventor of this device should be resolved in favor of the patentee”), *quoted in Microsoft*, 131 S. Ct. at 2249; Lichtman & Lemley, *supra* note 70, at 56–57 (observing, with some skepticism, that the presumption of validity “reduces uncertainty and thereby increases a patent holder’s incentive to invest in the development and commercialization of his patented technology”).

¹²⁸ See, e.g., Brief Amici Curiae of 37 Law, Business, and Economics Professors in Support of Petitioner, *Microsoft*, 131 S. Ct. 2238 (No. 10-290) (arguing against the clear-and-convincing-evidence standard); FED. TRADE COMM’N, TO PROMOTE INNOVATION:

this skepticism, though a full discussion of the merits of invalidity's elevated burden of proof are beyond the scope of this Article. Instead, the point is that it has the effect of making it harder to win on invalidity defenses, which makes defendants more likely to rely on noninfringement.¹²⁹

2. Information and Timing Advantages

Information and timing advantages also make it harder for a defendant to win on an invalidity defense. Litigating invalidity and noninfringement require different kinds of information.¹³⁰ Invalidity is a question about the asserted patent, so it depends on information about that patent—its claims, specification, and prosecution history—and information about the state of the world when the patent was granted (to the extent the invalidity argument is based on prior art). Noninfringement, on the other hand, is a question about the accused product or process, so it depends on the features and workings of that product or process.¹³¹

THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY 28 (2003), available at <http://www.ftc.gov/os/2003/10/innovationrpt.pdf> (recommending that Congress change the burden to a preponderance of the evidence); William Alsup, *Memo to Congress: A District Judge's Proposal for Patent Reform; Revisiting the Clear and Convincing Standard and Calibrating Deference to the Strength of the Examination*, 24 BERKELEY TECH. L.J. 1647, 1650–54 (2009) (discussing problems with the elevated burden of proof for invalidity); B.D. Daniel, *Heightened Standards of Proof in Patent Infringement Litigation: A Critique*, 36 AIPLA Q.J. 369, 412 (2008) (arguing that the public has a “paramount interest” in ensuring that only valid patents are granted and that this public interest suggests that the appropriate standard for evaluating invalidity claims is preponderance of the evidence); Alan Devlin, *Revisiting the Presumption of Patent Validity*, 37 SW. U. L. REV. 323, 333–38 (2008) (arguing that challenges the PTO faces—including limited information, increasing applicants, inadequate funding and improper incentives—undermine the presumption of validity); Lichtman & Lemley, *supra* note 70, at 59–61 (arguing that the elevated burden of proof for invalidity is illogical and departs from the pre-Federal Circuit case law).

¹²⁹ See, e.g., Chiang, *supra* note 36, at 1147 n.295; Lichtman & Lemley, *supra* note 70, at 51; Matthew D. Henry & John L. Turner, *The Court of Appeals for the Federal Circuit's Impact on Patent Litigation*, 35 J. LEGAL STUD. 85, 113 (2006) (suggesting that since the Federal Circuit began enforcing a stronger presumption of validity in 1982, “infringement has become the pivotal inquiry in patent cases”). Experimental evidence confirms that the elevated burden of proof can make a difference in jurors' assessments of close cases. See David L. Schwartz & Christopher B. Seaman, *Standards of Proof in Civil Litigation: An Experiment from Patent Law*, 26 HARV. J.L. & TECH. 429, 459–65 (2013).

¹³⁰ Asymmetric information is a common assumption in game-theoretic models of litigation, and it can have substantial effects on outcomes. See, e.g., DOUGLAS G. BAIRD ET AL., *GAME THEORY AND THE LAW* 252–60 (1994) (modeling sequential and unitary trials accompanied by information asymmetries); Kong-Pin Chen et al., *Sequential Versus Unitary Trials with Asymmetric Information*, 26 J. LEGAL STUD. 239, 250–53 (1997) (same); Michael J. Meurer, *The Settlement of Patent Litigation*, 20 RAND J. ECON. 77, 78–84 (1989) (modeling patent litigation and settlement licensing assuming, alternatively, common and private information about patent validity).

¹³¹ Both issues also depend on claim construction, which, like invalidity, depends on information about the patent and about the state of the world when the patent was issued. See *supra* Part I.A.3.

Generally, patent plaintiffs and defendants will have different levels of access to these different kinds of information. And as a result of this asymmetry, accused infringers will almost always have better access to the information needed to litigate noninfringement, while patent holders will often have better access to the information needed to litigate invalidity.

Accused infringers will almost always have better access to information needed to litigate noninfringement because they usually have better access to information about their own accused products or processes. The defendant usually developed those products or processes, manufactures or uses them, and knows how they work and what their components and steps are. The plaintiff may have some of this information as well since publicly available products can be purchased and analyzed, the results of processes can sometimes be obtained, and their makers and users often advertise specifications, schematics, and other details about the products' ingredients and features. But often, facts that are critical to the noninfringement analysis are expensive or impossible to obtain without inside information.

The extent of this information advantage can vary substantially by industry, type of patent, and type of product or process. Simple products and processes can lead to more symmetrical information since it is easier to understand just by examining it how a simple product or process works than to understand a complex one. It is far easier, for instance, to figure out how a tarp cover for a truck trailer works than to reverse engineer the source code to the graphics algorithms in Microsoft Windows.¹³² Regulated industries like food, pharmaceuticals, and wireless telecommunications in which competitors must disclose much information to the government and the public—including to patent holders—or more competitive industries in which competitors advertise more information to the public can also lead to more symmetrical knowledge between litigants since more information may be available to patent holders.¹³³ And even when the industry and parties are the same, some types of patent claims lead to greater infor-

¹³² Cf. *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1365–68 (2008) (holding invalid a patent on a tarp cover system for truck trailers, even after excluding all expert testimony supporting the invalidity determination, because “no such testimony [is] required” when “[t]he technology is simple and neither party claims that expert testimony is required”). (Disclosure: I was counsel to DeMonte Fabricating in the Federal Circuit appeal. The opinions stated in this Article are solely my own, and nothing in this Article is based on confidential information learned in the course of that representation.)

¹³³ See, e.g., *AstraZeneca Pharms. LP v. Apotex Corp.*, 669 F.3d 1370, 1378 n.5 (Fed. Cir. 2012) (observing that the plaintiff's complaint had relied upon information contained in the defendants' FDA filings); see also Benjamin N. Roin, *Unpatentable Drugs and the Standards of Patentability*, 87 TEX. L. REV. 503, 515–17 (2009) (arguing that the patent system is poorly suited to promoting pharmaceutical innovation since the standards of patentability and the social value of a new drug are poorly aligned).

mation advantages. In the pharmaceutical industry, for example, it is easy to tell if a drug infringes a patent on a specific active compound, since a chemist can just examine the accused drug and see if it uses the same compound and since federal law typically requires that a generic drug contain the same active ingredient and be bioequivalent to the original name-brand drug.¹³⁴ Without taking discovery, though, it may be impossible to tell if a drug was manufactured according to a patented manufacturing process since the result may be identical even if the compound was manufactured by a different process.¹³⁵ But despite these sources of potential variation, accused patent infringers generally will have better access than patent holders to the sorts of information and expertise needed to litigate infringement in most cases.

For invalidity, similar information advantages can benefit patent holders because patent holders sometimes (but not always) have better access to information about the patent and the prior art. If a patent holder filed the application that led to the asserted patent, then it will have preexisting knowledge about the content of that application and the prosecution of the patent. This might include knowledge about challenges to patentability raised by the patent examiner or about prior art the patent was drafted to overcome. If the patent holder practices its patented technology or is an active competitor in the technology field into which the patent falls, then it may also have preexisting knowledge about the history of the field (i.e., about the prior art).¹³⁶ An accused infringer may not have the same historical knowledge—especially if it is an upstart or if it competes in a different market.

To take one example of a patent holder's advantage in knowledge of prior art, Honeywell has been a leading maker of thermostats for more than a century.¹³⁷ Honeywell has many patents covering its products: a search of the PTO patent database finds 143 patents issued since 1976 assigned to Honeywell with the word "thermostat" in the title.¹³⁸ In 2012, Honeywell sued Nest Labs, a startup that makes a

¹³⁴ See 21 U.S.C. § 355(j)(2)(a)(ii) (2006) (active ingredients); *id.* § 355(j)(2)(a)(iv) (bioequivalence); 21 C.F.R. § 320 (2012) (bioequivalence).

¹³⁵ See, e.g., Julie E. Zink, *Shifting the Burden: Proving Infringement and Damages in Patent Cases Involving Inconsistent Manufacturing Techniques*, 2 HASTINGS SCI. & TECH. L.J. 81, 81 (2010) (discussing the role of discovery in patent-infringement cases that depend on the specific manufacturing processes used).

¹³⁶ I say "if" because patents can be bought and sold like any other property, and in many cases the patent has been sold or transferred between its prosecution and a subsequent patent lawsuit.

¹³⁷ *Honeywell History*, HONEYWELL, <http://honeywell.com/About/Pages/our-history.aspx> (last visited Sept. 29, 2013).

¹³⁸ The count includes ninety-one utility patents and fifty-two design patents. USPTO PATENT FULL-TEXT AND IMAGE DATABASE, <http://patft.uspto.gov> (follow "Advanced Search"

high-tech “smart” thermostat, for patent infringement.¹³⁹ Nest was founded in 2010 by Tony Fadell, who had previously run Apple’s iPod division;¹⁴⁰ it is safe to say that Nest does not have the same sort of institutional knowledge as Honeywell has of the thermostat prior art.¹⁴¹

These information advantages are not absolute or necessarily dispositive of the choice between arguing invalidity and arguing noninfringement. Sometimes there will be no advantage: a patent holder may have complete information (or at least adequate information) about how an accused product or process works, and an accused infringer may have as much or more information as the patent holder about the prior art. Other times the advantage can be overcome in the litigation process through liberal fact discovery and disclosure rules. But even when the court mitigates the effect of any information advantages through discovery and disclosure requirements, developing invalidity and noninfringement arguments is costly enough that having an information advantage can be quite valuable at the margin.

Moreover, although the litigation process is designed to cure some of these information advantages, timing effects reinforce these information advantages by making it more difficult for discovery and research to fill in the gaps between patent holders and accused infringers. Discovery forces defendants to disclose information about how their products and processes work, while the availability of expert witnesses helps defendants—or their counsel, in the case of information subject to a protective order—understand this information. And the inherent delays in litigation give plaintiffs time to investigate prior art and develop validity arguments, while rules that require each side

hyperlink; choose option for “1976 to present [full-text]” from “Select Years” menu; search “(tl/thermostat and an/honeywell”); then click “search” button) (searched Aug. 30, 2013). A broader search for patents assigned to Honeywell with the word “thermostat” anywhere in the title, abstract, or specification finds 586 patents issued since 1976. USPTO PATENT FULL-TEXT AND IMAGE DATABASE, <http://patft.uspto.gov> (follow “Advanced Search” hyperlink; choose option for “1976 to present [full-text]” from “Select Years” menu; search “(tl/thermostat or abst/thermostat or spec/thermostat) and an/honeywell”); then click “search” button) (searched Aug. 30, 2013).

¹³⁹ See Complaint and Demand for Jury Trial, *Honeywell Int’l, Inc. v. Nest Labs, Inc.*, No. 0:12-cv-00299-SRN-JSM (D. Minn. Feb. 6, 2012).

¹⁴⁰ Steve Lohr, *Ex-Apple Leaders Push the Thermostat into the Digital Age*, N.Y. TIMES, Oct. 25, 2011, at B4.

¹⁴¹ IBM is another good example. IBM has been the leading recipient of patents for every year in the last two decades, receiving patents in a variety of fields relating to computer software and hardware. Press Release, Int’l Bus. Machs. Corp., IBM Tops U.S. Patent List for 20th Consecutive Year (Jan. 10, 2013), <http://www-03.ibm.com/press/us/en/press-release/40070.wss>. IBM was issued 6478 patents in 2012, for a total of almost 67,000 patents between 1993 and 2012. *Id.* If IBM wanted to assert one of those patents, it would have a wealth of internal knowledge about the history of the computer industry that would help it find prior art and choose patents and claims that the court would be more likely to uphold.

to disclose invalidity contentions and prior art on which they expect to rely help eliminate any gaps in plaintiffs' and defendants' knowledge about invalidity.¹⁴²

These timing advantages arise because a patent holder typically can decide when to file a patent lawsuit.¹⁴³ A patent holder can take as much time as needed before filing a lawsuit to research the prior art and position itself to defend against invalidity arguments. Since both a patent's prosecution history and the prior art are generally available to the public,¹⁴⁴ a patent holder can effectively prepare much of its invalidity case before receiving disclosures from an accused infringer. The accused infringer, on the other hand, often has much less time to develop an invalidity case while the lawsuit is pending—as little as forty-five days under local rules in two districts that often hear patent cases.¹⁴⁵ Conversely, although a patent holder can spend as much time as it wants investigating the accused product or process before filing suit, in many cases the information necessary to develop infringement arguments is not available before the lawsuit is filed and discovery is available. Yet the accused infringer typically has complete information about the accused product or process well

¹⁴² Information about prior art and a defendant's invalidity contentions can be obtained through normal discovery tools such as document requests ("Produce copies of all prior art upon which you may rely to prove one or more of the asserted claims is invalid") and interrogatories ("State your complete basis for asserting that each asserted claim is invalid, including the specific prior art upon which you rely"), but several district courts have simplified the process by requiring that parties disclose certain contentions, typically by specific, court-ordered deadlines. *See, e.g.*, N.D. CAL. LOC. PAT. R. 3-1 to 3-4 (requiring parties to disclose infringement and invalidity contentions by certain deadlines); E.D. TEX. PAT. R. 3-1 to 3-4 (same); MODEL LOCAL PATENT RULES R. 3-1 to 3-5 (Intellectual Prop. Owners Ass'n 2009).

¹⁴³ A potential defendant can bring a claim for a declaratory judgment that a patent is invalid, but only when there is a "substantial controversy" over the patent's validity "of sufficient immediacy and reality to warrant the issuance of a declaratory judgment." *MedImmune, Inc. v. Genentech, Inc.*, 549 U.S. 118, 127 (2007) (quoting *Md. Cas. Co. v. Pac. Coal & Oil Co.*, 312 U.S. 270, 273 (1941)) (internal quotation marks omitted); *see also* Nick Walrath, *Expanding Standing in Patent Declaratory Judgment Actions to Better Air Public Policy Considerations*, 88 N.Y.U. L. REV. 477, 501 (2013) ("If we accept the need for greater consideration of public policy arguments in patent law, expanding standing in patent declaratory judgment actions offers a potentially attractive solution."). If a patent holder has not taken "any affirmative action" asserting its patent rights, though, there is probably no such controversy. 8 CHISUM, *supra* note 113, § 21.02[1][a][vi][C] (2012). A patent holder can stay under the radar, then, by investigating and waiting until it is ready to bring a claim.

¹⁴⁴ Before the America Invents Act, it was in rare cases possible to rely on prior art that was not available to the public. The America Invents Act expressly eliminates several of these corner cases, and may eliminate all of them. *See Did the AIA Eliminate Secret Prior Art?*, PATENTLY-O (Oct. 10, 2012), <http://www.patentlyo.com/patent/2012/10/did-the-aia-eliminate-secret-prior-art.html> (probably yes).

¹⁴⁵ *See* N.D. CAL. LOC. PAT. R. 3-3 (requiring a party arguing invalidity to disclose invalidity contentions "45 days after service upon it of the 'Disclosure of Asserted Claims and Infringement Contentions'"); E.D. TEX. PAT. R. 3-3 (same).

before the lawsuit is filed, along with the expertise needed to quickly harness that knowledge. Once it learns of a lawsuit, then, a defendant can develop noninfringement arguments much more quickly than it can develop invalidity arguments.

As with the underlying information advantages, these timing advantages do not necessarily apply in every case or even dictate which defenses a defendant will use when they do apply. In many cases, both patent holders and accused infringers have plenty of time to develop their arguments on invalidity and noninfringement. This can be because they anticipated litigation and prepared in advance, because they engaged in licensing negotiations before a lawsuit was filed and so had access to the same sorts of information they would later obtain in discovery, or because litigation proceeds slowly enough that they have time to develop their arguments even with the constraints litigation imposes. And in many cases, one defense is so much more viable than the other that the merits swamp any timing effects.¹⁴⁶ But just as information advantages can have effects at the margin, timing effects that magnify or reinforce these advantages can likewise affect the defenses upon which accused infringers rely.

3. *Asymmetric Outcomes*

Successful invalidity and noninfringement defenses also lead to different outcomes, which create post-judgment asymmetries. Both defenses, if successful, leave accused infringers free to continue to produce, use, and sell the accused products or processes, but each defense also has unique collateral consequences. A successful invalidity defense acts in rem on the patent claims that were found invalid: generally, those claims are dead and cannot be enforced in any subsequent patent litigation against the same or different defendants.¹⁴⁷ An invalidity judgment thus necessarily benefits anyone practicing the invention claimed in the patent (because he or she would otherwise be liable in a patent-infringement lawsuit) or practicing in the technology field to which the patent relates (because even if he or she does not infringe the patent, there is nevertheless a risk that the patent holder will sue). As Gideon Parchomovsky and Alex Stein explain, this makes invalidity a “general” defense, one with consequences far beyond the defendant who raises it.¹⁴⁸ A successful

¹⁴⁶ See *infra* Part II.D.

¹⁴⁷ See *Blonder-Tongue Labs., Inc., v. Univ. of Ill. Found.*, 402 U.S. 313, 324–26 (1971).

¹⁴⁸ See Parchomovsky & Stein, *supra* note 5 (manuscript at 2–3, 13) (describing three categories of defenses in intellectual-property cases: “general defenses,” which act to entirely negate intellectual-property rights; “individualized defenses,” which benefit only the specific defendants who raise them; and “class defenses,” which benefit specific classes of defendants but leave intellectual-property rights in place to apply against other defendants not within those classes).

noninfringement defense, on the other hand, means only that the defendant's accused product or process does not satisfy every element of the asserted claims; the patent remains in force, limiting both the defendant's later activities and those of its competitors. Such a judgment can benefit others if it results in claim interpretations that make the patent less likely to be infringed. But in general, the benefits of a noninfringement judgment are local to the defendant in that case, making noninfringement an "individualized" defense.¹⁴⁹

As others have recognized, this means that a successful invalidity defense is a public good.¹⁵⁰ Any competitor can make use of the technology claimed in an invalid patent without infringing the patent, and the use by one competitor cannot prevent other competitors from simultaneously using the technology.¹⁵¹ And just as participants in a market economy tend to produce fewer public goods because they cannot internalize all of their benefits, in the aggregate, defendants choosing between defenses will make fewer invalidity arguments because the benefits will flow both to the defendants themselves and to their competitors. This has two distinct effects: all else being equal, a defendant might prefer to win with a noninfringement defense than

¹⁴⁹ See *id.*

¹⁵⁰ See Rochelle Cooper Dreyfuss & Lawrence S. Pope, *Dethroning Lear? Incentives to Innovate After MedImmune*, 24 BERKELEY TECH. L.J. 971, 1001 n.121 (2009) ("[*Blonder-Tongue*] discourages suit because it puts the challenger at a competitive disadvantage with respect to everyone else in the field of the invention: that party must pay the full litigation cost of invalidating the patent while its competitors enjoy the outcome for free. As a result, there is an incentive to hold back, to wait and see whether someone else will do the hard work of putting the invention into the public domain."); Farrell & Merges, *supra* note 62, at 952 ("[T]he *Blonder-Tongue* decision makes successful challenge a 'public good' among multiple infringers."); Mark A. Lemley & Carl Shapiro, *Probabilistic Patents*, 19 J. ECON. PERSP. 75, 88–90 (2005) ("Invalidating the patent is a public good that benefits consumers of widgets, but not any one widget manufacturer or even widget manufacturers collectively."); Miller, *supra* note 88, at 677–95 (observing that "*Blonder-Tongue* changed patent invalidity judgments from private to public goods"); Parchomovsky & Stein, *supra* note 5 (manuscript at 4–5); Michael Risch, *Patent Challenges and Royalty Inflation*, 85 IND. L.J. 1003, 1022 (2010) ("If invalidation of bad patents is a public good, then one would expect fewer challenges than are socially optimal, because the challenger faces all of the cost and risk but only reaps some of the benefits."); Thomas, *supra* note 88, at 334 (observing that *Blonder-Tongue* means that "a potential opponent [of a patent holder] cannot appropriate the benefits of a successful charge of patent invalidity to itself," and thus that "the benefits of a successful charge of patent invalidity became nonexcludable"); Sumida, *supra* note 88, at 853–57 (modeling the error costs from sequential patent litigation under the *Blonder-Tongue* rule); Thomas Chen, Note, *Patent Claim Construction: An Appeal for Chevron Deference*, 94 VA. L. REV. 1165, 1202 (2008) (observing that patent challengers' "patent invalidation efforts would not accrue solely to them but would also extend to any other potentially infringing competitors"); *infra* notes 151, 153.

¹⁵¹ In economics terms, an invalidity judgment is both nonexcludable and nonrivalrous. This does not necessarily mean, by the way, that competitors are entirely free to use the technology claimed in the invalid patent. It is often the case that multiple patents apply to a particular technology, and even if one patent has been invalidated, others may prevent, or impose a cost upon, competitors. See, e.g., Shapiro, *supra* note 13, at 119.

with an invalidity defense¹⁵² and might prefer to settle than to win with an invalidity defense. In both cases, the preferred outcome avoids conveying a gift to competitors.¹⁵³

The comparative advantage from winning a noninfringement judgment instead of an invalidity judgment can be quite substantial. The pharmaceutical industry provides a particularly clear example. Drugs can be protected by several kinds of patents, such as patents on active ingredients, patents on formulations for combining active ingredients with inactive ingredients to form finished drugs, and patents on processes by which drugs are made. Under the Hatch-Waxman Act, a company that develops a new drug must declare to the FDA a list of every patent protecting the drug or its use.¹⁵⁴ A competitor that wants to sell a generic version of the drug cannot do so until those patents expire unless it can show that the patents are invalid or not infringed by the proposed generic drug.¹⁵⁵ And a potential generic competitor may be far better off proving noninfringement than invalidity. If it proves that the proposed generic version of the drug does not infringe the patent (for instance, because it is made by a different process or it uses a different formulation), it may become the only generic competitor in the market.¹⁵⁶ If it proves that the patent is

¹⁵² Of course, all else is often not equal; a defendant might consider an invalidity judgment more valuable than a noninfringement judgment if, for example, it would better insulate later products from a new infringement lawsuit or if it would lead a patent holder to be more likely to settle on favorable terms.

¹⁵³ The classic problem of public goods is that they will be produced less than is socially optimal, not that they will be produced less than some competing good (here, noninfringement judgments). See, e.g., William H. Oakland, *Theory of Public Goods*, in 2 HANDBOOK OF PUBLIC ECONOMICS 485, 485 (Alan J. Auerbach & Martin Feldstein eds., 1987) ("Public goods are of particular relevance to public policy because they tend to be inefficiently provided by private arrangements such as the market mechanism."). The socially optimal output level for invalidity judgments is less clear than that of many public goods, however, since although their consumption is nonrivalrous, invalidity judgments may have externalities stemming from their effects on innovation incentives. But the same economic qualities that generally lead public goods to be underproduced also lead to the narrower conclusion that invalidity judgments may be underproduced relative to noninfringement judgments since the two lead to different outcomes (i.e., are consumed differently).

¹⁵⁴ See generally 21 U.S.C. § 355(b) (2006 & Supp. V 2011) (governing the filing requirements for new drugs).

¹⁵⁵ See generally *id.* § 355(j)(2)(A)(vii) (governing the filing requirements for abbreviated new drug applications). Technically, the potential generic-drug maker must only certify that the patent is expired (or will expire) or that it is invalid or not infringed by the proposed generic drug. That declaration acts as a technical act of patent infringement; the patent holder then has forty-five days to file a patent lawsuit, automatically blocking approval of the generic drug for thirty months or until the patent case is decided. See *id.* § 355(j)(5)(B)(iii).

¹⁵⁶ It is not as strange as it may seem to say that a proposed generic drug would not infringe a (valid) patent on the name-brand drug, even for a patent that covers the drug or its formulation, instead of a manufacturing method that could differ between competitors. Under the Hatch-Waxman Act, a generic competitor must prove that its proposed generic

invalid, on the other hand, other generic makers become free to enter. As economic theory predicts, duopoly and competition give dramatically different prices: an FDA study found that when a single generic drug competes with the brand-name drug, the generic drug costs 94% of what the brand-name drug costs, but when just two generic drugs compete with the brand-name drug, the ratio falls to 52%.¹⁵⁷ And the ratio keeps falling as the number of generic competitors increases: with more than five generic competitors, generic drugs cost on average less than 30% as much as brand-name drugs.¹⁵⁸ A generic competitor that wins on noninfringement, then, may get substantially higher prices for its generic drug than it would if it had won on invalidity.

C. What About Settlement?

Though it is not exactly a trade-off or asymmetry between invalidity and noninfringement, the proportion of patent cases that settle is another stumbling block to courts invalidating bad patents. Very few patent lawsuits make it to final judgment; most are dismissed along the way, usually pursuant to settlements between the parties. One study found, for example, that 66% of patent cases in a sample ended in settlements or probable settlements.¹⁵⁹ In contrast, in the same sample, only 13% of cases ended in summary judgments, judgments after jury trials, judgments as a matter of law, or dismissals with prejudice.¹⁶⁰

drug is bioequivalent to the name-brand drug. *Id.* § 355(j)(2)(A)(iv); *see also id.* § 355(j)(8)(B) (defining bioequivalence). But generic drugs can and do have differences in their inactive ingredients, and those differences can cause the active ingredients to be released and absorbed at different rates. Those differences are normally small enough not to matter, but for drugs with a narrow therapeutic index—a narrow window between the amount of the drug necessary to be effective and the amount that would be toxic—they can be significant. *See, e.g.,* Michelle Hottinger & Bryan A. Liang, *Deficiencies of the FDA in Evaluating Generic Formulations: Addressing Narrow Therapeutic Index Drugs*, 38 AM. J.L. & MED. 667, 689 (2012) (“The current [bioequivalence] range accepted by the FDA may be inappropriate for [narrow therapeutic index] drugs. The FDA employs a [bioequivalence] range to accommodate nearly all drugs, which makes the range wide for [narrow therapeutic index] drugs. This ‘one-size-fits-all’ approach is dangerous and costly for patients who take [narrow therapeutic index] drugs.”); Lesley Alderman, *A New Disquiet About Generic Drugs*, N.Y. TIMES, Dec. 19, 2009, at B6 (reporting concerns that some generic drugs do not work as well as their name-brand counterparts).

¹⁵⁷ Ctr. for Drug Evaluation & Research, *Generic Competition and Drug Prices*, U.S. Food & Drug Admin., <http://www.fda.gov/AboutFDA/CentersOffices/OfficeofMedicalProductsandTobacco/CDER/ucm129385.htm> (last updated Mar. 1, 2010).

¹⁵⁸ *Id.*

¹⁵⁹ Kesan & Ball, *supra* note 10, at 273–74 (finding that 3370 cases were settled or likely settled in a sample of 5071 cases for which outcomes were known).

¹⁶⁰ *Id.* (finding 656 cases in those categories). The remainder were voluntarily dismissed; dismissed without prejudice; dismissed for lack of jurisdiction, want of prosecution, or arbitration; or decided by default judgments. Some of these categories, of course, may also reflect settlements.

Settlements of patent lawsuits wreak havoc in ways they do not in other areas of the law. Patent cases are not unique, of course, in having high settlement rates; the same is true for most civil litigation.¹⁶¹ Patent settlements have collateral consequences, however, that are absent in most other areas of the law since a patent decision affects more than the litigants to the case. Settlements allow patent holders to avoid invalidity judgments and thus to continue to hold out the threat of infringement litigation even with patents that are unlikely to survive a judicial decision.¹⁶² Since an invalidity judgment would free others to practice the patented invention, an outcome that cannot happen if the case is settled, patent settlements represent more than just a compromise between plaintiff and defendant. Instead, they transform an infringement lawsuit into an option of sorts: since a plaintiff can almost always settle a case (even if it means accepting very low damages), a plaintiff can file a lawsuit, try to extract the upside of a favorable judgment or substantial settlement, and avoid the most significant downside if the case does not go well.¹⁶³

Settlements do not completely immunize patent holders from the effects of weak patents since the strength of a patent undoubtedly affects the size of the payment a patent holder can obtain in settlement. If defendants perceive a patent to be weak—if, for instance, they know of specific prior art likely to invalidate the patent—then they will not be willing to pay as much to settle a patent lawsuit; likewise, if a patent holder perceives a patent to be weak, it will be more willing to accept a small settlement to avoid a likely invalidity judgment. Still, we should remain skeptical of patent settlements for a few reasons. First, the information and timing advantages discussed above mean that de-

¹⁶¹ For example, one study found that around 60% of final terminations in federal civil cases were due to settlement. Gillian K. Hadfield, *Where Have All the Trials Gone? Settlements, Nontrial Adjudications, and Statistical Artifacts in the Changing Disposition of Federal Civil Cases*, 1 J. EMPIRICAL LEGAL STUD. 705, 732 (2004) (reporting data from 2000). Reliable data in this area turns out to be hard to come by. See Stephen B. Burbank, *Keeping Our Ambition Under Control: The Limits of Data and Inference in Searching for the Causes and Consequences of Vanishing Trials in Federal Court*, 1 J. EMPIRICAL LEGAL STUD. 571 (2004) (describing numerous difficulties in analyzing data on case outcomes).

¹⁶² See Megan M. La Belle, *Against Settlement of (Some) Patent Cases*, 67 VAND. L. REV. (forthcoming 2014) (manuscript at 16–17), available at <http://ssrn.com/abstract=2252849>.

¹⁶³ Indeed, patent holders have even more power to pursue the upside of significant damages while avoiding the downside of invalidity thanks to so-called *Super Sack* covenants not to sue, which allow patent holders to defeat jurisdiction by unilaterally promising not to enforce patent rights. See *Super Sack Mfg. Corp. v. Chase Packaging Corp.*, 57 F.3d 1054, 1059–60 (Fed. Cir. 1995), *abrogated in part by* *MedImmune, Inc. v. Genentech, Inc.*, 549 U.S. 118 (2007). Since a patent holder can always grant such a covenant after a case has been filed, *Super Sack* covenants increase patent holders' ability to file lawsuits and pursue damages while avoiding invalidity. The Supreme Court recently endorsed such covenants. See *Already, LLC v. Nike, Inc.*, 133 S. Ct. 721, 732 (2013) (holding that a unilateral grant of such a covenant not to sue after litigation is underway can render a case moot and thus divest a federal court of jurisdiction).

defendants will often lack information about the strengths and weaknesses of patents asserted against them.¹⁶⁴ Even a weak patent, then, can sometimes be used to obtain large settlements, or many settlements, since many defendants may not know that the patent is weak.¹⁶⁵ And second, because patent litigation is so expensive, even the nuisance value of settling a weak patent lawsuit to avoid litigation costs can be in the millions of dollars.¹⁶⁶ But weak patents and patents with opaque validity information are precisely the patents that we should most want courts to invalidate since those are the patents most likely to be used for rent seeking without contributing meaningfully to the state of the art.

D. What About the Merits?

It may seem that all this is much ado about nothing, that patent defendants will make the arguments that are most likely to win in any particular case. Even if defendants are forced to choose between invalidity and noninfringement, that may not lead to distortions if defendants just pursue whichever defense is stronger given the law and facts applicable in a particular case. If merits asymmetries swamp the asymmetries discussed in this Article, then litigation may already produce an optimal level of invalidity judgments. This argument has some force since the success rates of invalidity and noninfringement defenses seem to be closely linked to changes in the underlying substantive law. Indeed, as Glynn Lunney has shown, these success rates essentially flipped when the Federal Circuit was created: before 1982, about 75% of successful defenses were based on invalidity or unenforceability, compared to about 25% based on noninfringement; after 1982, about 65% were based on noninfringement, compared to 35% based on invalidity and unenforceability.¹⁶⁷ This shift corresponded to changes in the substantive law, as the Federal Circuit expanded the scope of noninfringement defenses but contracted the scope of inva-

¹⁶⁴ See *supra* Part II.B.2.

¹⁶⁵ And because there are so many overlapping patents in most fields, potential defendants often cannot practically investigate to avoid practicing patents. See *supra* notes 12–13 and accompanying text.

¹⁶⁶ Under the standard model of litigation bargaining, the greater the litigation costs, the more likely settlement is since litigation costs represent the surplus to be obtained by foregoing litigation. See, e.g., William M. Landes, *Sequential Versus Unitary Trials: An Economic Analysis*, 22 J. LEGAL STUD. 99, 106 (1993) (observing “the well-known result . . . that a trial is more likely (given mutual optimism) the smaller the cost of litigation, the greater the degree of mutual optimism, and the greater the expected damages”).

¹⁶⁷ Glynn S. Lunney, Jr., *Patent Law, the Federal Circuit, and the Supreme Court: A Quiet Revolution*, 11 SUP. CT. ECON. REV. 1, 14–15 (2004); see also Glynn S. Lunney, Jr. & Christian T. Johnson, *Not So Obvious After All: Patent Law’s Nonobviousness Requirement, KSR, and the Fear of Hindsight Bias*, 47 GA. L. REV. 41, 72–75 (2012) (updating study after the Supreme Court’s decision in *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007)).

lidity defenses.¹⁶⁸ It would not be terribly surprising, then, if defendants switched their focus from invalidity to noninfringement in view of these changes in the two defenses' strengths.¹⁶⁹

Though it is surely the case that differences in their merits will weigh heavily on an accused infringer's choice between defenses, there are nevertheless at least three reasons to think that other factors play an important role.

First, patent claims are ambiguous enough, or difficult enough to interpret, that in many cases both defenses are plausible and efforts put into one defense can substitute for efforts put into the other.¹⁷⁰ In these cases, accused infringers can effectively decide which defense will be more plausible. Scholars have long lamented the difficulty and uncertainty involved in construing patent claims, with the Federal Circuit reversing nearly half of the claim constructions it reviews.¹⁷¹ This gives parties leeway to argue strategically for and to obtain their own preferred claim constructions.¹⁷² And different claim constructions will favor invalidity or noninfringement arguments.¹⁷³ This effect can be substantial: the difference between a broad claim construction and a narrow one can be the difference between a strong invalidity defense and a nonexistent one, and the inverse is equally true. As a result, then, of the indeterminacy of claim language, defendants have a substantial ability not only to decide which defense to pursue but often also to decide which defense will have merit or will be easiest and cheapest to win.

This does not mean that every defendant is free to choose between invalidity and noninfringement; in many cases, it is surely correct to say that one defense is so much stronger than the other that litigation and doctrinal asymmetries have little effect. But neither is it correct to say that there is always one clearly superior defense. The range of potential claim constructions is broad enough in many cases that a patent defendant has significant room to maneuver. Accordingly, the trade-offs and asymmetries between invalidity and noninfringement can have an effect on the margin in surprisingly many cases.

¹⁶⁸ Lunney, *supra* note 167, at 2.

¹⁶⁹ If courts are more attractive venues for noninfringement arguments, then defendants can also choose to pursue invalidity arguments in other venues, such as reexamination by the PTO. See *supra* notes 83–84 and accompanying text.

¹⁷⁰ See Burk & Lemley, *supra* note 53, at 46–52.

¹⁷¹ See, e.g., Schwartz, *supra* note 36, at 234–37, 259–60.

¹⁷² Attorneys have significant agenda-setting power in litigation, and they can affect not only the arguments that courts consider but also the likelihood that courts will reach specific outcomes. See, e.g., Kevin T. McGuire, *Repeat Players in the Supreme Court: The Role of Experienced Lawyers in Litigation Success*, 57 J. POL. 187, 188–89 (1995).

¹⁷³ See *supra* Part II.A.1.

Second, there is evidence that patent defendants care about the effects of their judgments on the post-judgment marketplace. Generic pharmaceuticals, which I described above,¹⁷⁴ provide an obvious example since the price difference between duopoly (one possible result of a noninfringement verdict) and competition (the likely result of an invalidity verdict) is so substantial. But we also see signs in other industries. One famous example comes in the case of the Dutch electronics company Philips N.V. and patent holder Gilbert Hyatt, who held dozens of patents for electronic components. Mr. Hyatt's patents—including one patent on the basic concept of a microprocessor—were greeted with skepticism by the electronics industry when they were first granted.¹⁷⁵ Regardless, Mr. Hyatt filed patent lawsuits against numerous electronics manufacturers, and in 1991 Mr. Hyatt settled with Philips. The Philips settlement had one striking feature: Philips agreed to partner with Mr. Hyatt to license the rest of the industry, with Philips getting a cut of Mr. Hyatt's future licensing revenue.¹⁷⁶

Philips was one of Mr. Hyatt's early targets, and it had substantial reason to think that many of Mr. Hyatt's patents—including the microprocessor patent—were invalid. Other companies, like Intel and Texas Instruments, had done pioneering work to develop the first microprocessors well before the priority date claimed in Mr. Hyatt's patents. Indeed, the PTO later invalidated Mr. Hyatt's patent in an interference proceeding, finding that Mr. Hyatt had not reduced his invention to practice—a core patentability requirement—until years after another inventor did so.¹⁷⁷ Yet rather than rely on these invalidity arguments, Philips licensed Mr. Hyatt's patents and agreed to become his partner. Perhaps Philips just believed Mr. Hyatt's patents were valid or wanted to avoid the downside risk of a judgment of infringement.¹⁷⁸ But another explanation is that Philips wanted to avoid conveying a gift to its competitors. Indeed, by helping Mr. Hyatt license his patents in return for part of the revenue, Philips imposed a tax on the rest of the electronics industry—a tax that it estimated could be in the range of \$100 million.¹⁷⁹

¹⁷⁴ See *supra* text accompanying notes 154–58.

¹⁷⁵ Andrew Pollack, *Inventor Finds Ally in Philips*, N.Y. TIMES, NOV. 7, 1991, at D4. As the *Times* reported, the microprocessor “patent was awarded 20 years after Mr. Hyatt applied for it, and he had never brought his idea to practice and was not considered to have played any important role in the subsequent development of the electronics industry.” *Id.*

¹⁷⁶ *Id.*

¹⁷⁷ See *Hyatt v. Boone*, 146 F.3d 1348, 1357 (Fed. Cir. 1998) (affirming the decision of the PTO's Board of Patent Appeals and Interferences).

¹⁷⁸ See generally Farrell & Merges, *supra* note 62, at 948–60 (discussing various ways in which incentives skew outcomes in patent litigation).

¹⁷⁹ Pollack, *supra* note 175 (quoting a Philips employee as saying that a total licensing revenue of \$100 million “is quite possible” (internal quotation marks omitted)).

The Philips-Hyatt joint-licensing scheme is not unique; litigants settling patent disputes have devised several similar structures, including cross-licensing agreements, patent pools, and other joint ventures.¹⁸⁰ What these structures all have in common is that they are all means by which patent holders and accused infringers can share the benefits of the patent monopoly. But such deals only make sense if both sides bring something to the table. Patentees, of course, contribute their patent rights. Although accused infringers do sometimes make substantive contributions to such ventures—including their own patents or other technical or business expertise—they can also contribute by forgoing their opportunity to invalidate the patent holder's patents.¹⁸¹

The third reason to think that non-merits factors play an important role in a defendant's choice of defense is that even if a defendant were to choose between defenses based solely on their merits, those merits do not exist in a vacuum. The relative strengths of invalidity and noninfringement defenses are products not only of the facts in a particular case but of the procedural and substantive rules that apply in the case and the results of each defense. Rules like the presumption of validity and the requirement in many courts that the defendant provide invalidity contentions relatively early in the litigation can make it harder or easier to succeed on a defense, changing that defense's merits. The outcome of a successful defense also affects its strength, all else being equal, since parties will invest more to obtain a more favorable outcome. A defendant might prefer an invalidity judgment, for example, because it would prevent the patent holder from asserting the patent against future products, while a noninfringement judgment applies only to the specific products litigated in the case. Accordingly, it is impossible to separate the merits of a defense from the pre-judgment rules and post-judgment outcomes of that defense.

¹⁸⁰ See, e.g., Carl Shapiro, *Antitrust Limits to Patent Settlements*, 34 RAND J. ECON. 391, 392 (2003) (stating that these types of arrangements may all be viewed as settlements of patent disputes).

¹⁸¹ A particularly naked form of such deals comes in pharmaceutical reverse-payment settlements, in which a patent-holding drug company and a potential generic competitor settle a patent case with (1) the potential competitor agreeing not to enter the market until the patent expires and (2) the patent holder making a (frequently large) money payment to the potential competitor. Since a valid patent that covered the generic drug would prevent the potential competitor from launching its drug until the patent expires, the simplest explanation for the reverse payment is that it is paying the potential competitor not to challenge the patent holder's monopoly by arguing invalidity or noninfringement, or, equivalently, to delay its entry if the patent were found invalid or not infringed. Such concerns led the Supreme Court to hold that reverse-payment settlements are subject to antitrust scrutiny. See *FTC v. Actavis, Inc.*, 133 S. Ct. 2223, 2227 (2013).

III THREE REFORMS

This Part proposes three reforms that would help restore the balance between invalidity and noninfringement and make litigation a better tool for invalidating bad patents.

Since this imbalance is a product of the trade-offs and asymmetries between invalidity and noninfringement, efforts to level the playing field between invalidity and noninfringement should work to eliminate or counteract one or more of these trade-offs and asymmetries. Yet some of these trade-offs and asymmetries cannot easily be changed, or should not be changed, because they exist for good reasons. The three proposals in this Part would make it easier or more advantageous for defendants to argue invalidity and for courts to decide invalidity claims, without producing significant adverse side effects.

A. Eliminate the Elevated Burden of Proof for Invalidity

One useful reform would be to eliminate the elevated burden of proof that applies to invalidity, which is perhaps the most striking doctrinal asymmetry between invalidity and noninfringement. That burden, which stems from the statutory presumption that a patent is valid unless proved otherwise, makes it relatively more difficult to win an invalidity defense than a noninfringement defense even if the two defenses would otherwise have similar merits.¹⁸² Scholars and others have long argued that this elevated burden of proof should be eliminated, at least when the invalidity case rests on prior art that the patent examiner did not consider, since the policies underlying it seem inconsistent with the modern reality of patent examination.¹⁸³

This Article provides a different justification for eliminating the elevated burden of proof for invalidity, one that does not depend on patent examiners' expertise or the quality of their review. Instead, eliminating the elevated burden of proof for invalidity would help level the playing field for defendants choosing between noninfringement and invalidity defenses. It would not completely eliminate the difference between the two defenses since the burden of proving inva-

¹⁸² See *supra* Part II.B.1.

¹⁸³ See *supra* note 128. To be sure, this view is not unanimous; many patent holders and practitioners have argued that eliminating the elevated burden of proof for invalidity would unduly weaken patent rights and the incentives to innovate. See generally *Microsoft v. i4i Limited Partnership*, SCOTUSBLOG, <http://www.scotusblog.com/case-files/cases/microsoft-v-i4i-limited-partnership/> (last visited Sept. 29, 2013) (linking to numerous amicus briefs in support of the elevated burden of proof for validity). These arguments have generally been rejected by legal scholars. Notably, of the twenty-four amicus briefs filed in *Microsoft v. i4i*, 131 S. Ct. 2238 (2011), in support of a elevated burden of proof for invalidity, none were filed by legal scholars. See *id.*

lidity would presumably still be on the defendant, while the burden of proving infringement is on the patent holder. But both issues would be decided by a preponderance of the evidence, making it easier for a defendant to focus on an invalidity defense.¹⁸⁴

B. Permit Defendants to Bifurcate Patent Litigation

Another useful reform would be to enact rules giving defendants the option to bifurcate patent cases, deferring infringement litigation until after the court has reached a final decision on validity. Such a bifurcation rule would have three main effects. First, it would eliminate the trial-narrative trade-off. Second, it would have indirect effects on other trade-offs and asymmetries, helping to counter the trade-off stemming from resource constraints and the litigation-phase asymmetries stemming from information and timing advantages.¹⁸⁵ And third, it would make it more likely that courts would decide inva-

¹⁸⁴ One could argue that if patent examiners were more reliable determiners of patent validity, there would be less need for litigation to invalidate patents and so less need to level the playing field by eliminating the elevated burden of proof. Even if that were the case, though, an invalid patent that made it through the examination system would be all the more harmful since the public would assume that most or all patents are valid and the invalid patent's holder would be able to extract correspondingly greater rents. And it is unlikely patent examiners will ever be able to approach 100% accuracy in determining validity since the task of judging whether complex technologies are new or not is necessarily difficult.

¹⁸⁵ Such a rule would standardize an area of practice that has previously been quite heterogeneous, with judges exercising their case-management discretion in many different ways. Some authorities argue that because invalidity is an affirmative defense, it should only be decided after the claim for relief—patent infringement—has been decided in a way that makes it necessary to consider the defense. Others respond that courts should consider validity first because leaving validity undecided, as would happen if a court does not find infringement, inevitably leaves some invalid patents in force. See generally 6 CHISUM, *supra* note 113, § 19.02[1] (discussing the opposing views on the order in which courts should decide issues of validity and infringement). Both ordered sequences are common, as is simultaneous litigation of both invalidity and noninfringement; the venerable *Chisum on Patents* hedges its bets, opining that “[w]hen both validity and infringement are at issue, the better practice is to consider the question of validity first or concurrently.” *Id.* § 19.02.

A bifurcation rule for patent cases in American courts would not be unique; Germany has long decided validity and infringement in separate proceedings in separate courts. Infringement claims are considered private-law matters and are decided in ordinary civil courts. Invalidity claims, however, are decided by a special patent court, the Bundespatentgericht. See M.A. Smith et al., *Arbitration of Patent Infringement and Validity Issues Worldwide*, 19 HARV. J.L. & TECH. 299, 334 (2006) (observing that the “dual character” of the German patent court “reflects the simultaneously public and private conception of patent validity in Germany”); Sarah R. Wasserman Rajec, *Evaluating Flexibility in International Patent Law*, HASTINGS L.J. (forthcoming) (manuscript at 22 n.83), available at <http://ssrn.com/abstract=2248398>.

lidity and less likely that parties would settle cases before such a decision had been made.¹⁸⁶

The first effect, on trial strategy, is straightforward. One reason that patent litigants focus on a single defense is that it is hard to tell a simple and coherent trial narrative that embraces both invalidity and noninfringement.¹⁸⁷ But if validity and infringement were decided in separate proceedings with separate trials, there would be no need to jettison one defense to maintain a coherent trial narrative.¹⁸⁸

The second effect, on other trade-offs and asymmetries, is more subtle. There is an extensive economic literature on the choice between unitary trials (in which all issues are decided in one trial) and sequential trials (in which a potentially dispositive issue is decided in a first phase and other issues are decided in a later phase or phases). It is difficult to make firm predictions about the effects of each method, though, because results are sensitive to the particular assumptions chosen and because many of the assumptions chosen are unlikely to hold in patent litigation.¹⁸⁹ Still, we can make some preliminary observations about the effects on litigation costs and information and timing advantages.

On litigation costs, a bifurcation rule could help counteract resource constraints by deferring the cost of infringement litigation to a second litigation phase that may never occur. Such a rule would not completely eliminate the resource constraints that lead many litigants to focus on just one defense; patent litigants would still have limited litigation budgets, and litigating infringement and validity would still have costs that are largely separate. Indeed, such a rule might increase the cost of some patent cases since the expenses that do apply to both invalidity and noninfringement litigation would now be separated across two phases. But it would also put off many costs associated only with infringement litigation—including particularly expensive costs like infringement experts and discovery about the defendant's product—until the second phase, if one ever becomes nec-

¹⁸⁶ In this result, the bifurcation rule would introduce a new asymmetry between invalidity and noninfringement, counteracting the existing trade-offs and asymmetries, rather than reducing or eliminating those existing trade-offs and asymmetries.

¹⁸⁷ See *supra* Part II.A.2.

¹⁸⁸ It may seem odd to discuss trials of validity issues since patent validity is a question of law. Several forms of patent invalidity, however, turn on underlying factual questions, such as the content and scope of the prior art. Jury trials of invalidity issues are thus relatively common. See, e.g., 2 CHISUM, *supra* note 113, § 5.04[3].

¹⁸⁹ See BAIRD ET AL., *supra* note 130, at 251–60; Chen et al., *supra* note 130, at 250–53; Landes, *supra* note 166, at 115–24; Kathryn E. Spier, *Litigation, Economics of*, in 5 THE NEW PALGRAVE DICTIONARY OF ECONOMICS 162, 164 (Steven N. Durlauf & Lawrence E. Blume eds., 2d ed. 2008); Jef P. De Mot, Barbara Luppi & Francesco Parisi, *Are Sequential Trials Really Better than Unitary Trials?* (Minn. Legal Studies Research Paper No. 12-38, 2012), available at <http://ssrn.com/abstract=2139787>.

essary. This would allow defendants with limited litigation budgets to focus on invalidity without spending simultaneously on a noninfringement case that could be much more expensive. In the aggregate, a bifurcation rule should reduce the average cost of a patent case so long as the reduction in cost from cases in which patents are found invalid (so that infringement litigation never becomes necessary) outweighs the diseconomies of bifurcation.¹⁹⁰

A bifurcation rule likewise would not eliminate information and timing advantages, but it could mitigate them. Just as a bifurcation rule would let litigants defer spending on noninfringement arguments, it would allow them to focus their limited attention on developing the evidence needed for an invalidity defense.¹⁹¹ It would also help if courts, or rule drafters, were careful to give the parties enough time to develop their invalidity arguments.

The third effect of a bifurcation rule would be to make settlements less likely before a court has decided invalidity. This would happen even if overall settlement numbers remained high. This might be the most significant effect of a bifurcation rule, and it follows from the effects on resource constraints and information and timing advantages discussed above. Settlement of a lawsuit is most likely when litigation costs are high, when parties have identical information about the likelihood of success, and when parties have the same understandings about that likelihood.¹⁹² A bifurcation rule disrupts each of these drivers of settlement, at least until after validity is decided. When the infringement phase of a case is deferred, expected litigation costs will be reduced, narrowing the range of settlements both sides will find acceptable. Likewise, when the infringement phase is deferred, the parties will lack information during the invalidity phase about the strength of the infringement case, leading to greater optimism and asymmetrical expectations of success

¹⁹⁰ See Landes, *supra* note 166, at 116–19. In patent litigation, the cost reduction from bifurcation should outweigh the increased costs from diseconomies, for at least two reasons. First, many cases will be disposed of in the invalidity phase, suggesting that the gains from bifurcation could be relatively large. And second, since many of the costs of invalidity and noninfringement do not overlap, the diseconomies could be relatively small.

¹⁹¹ If I am right that patent holders are often better equipped than accused infringers to litigate invalidity issues, then deciding invalidity first is a counterintuitive remedy. Yet if information and timing advantages outweigh the benefits of bifurcation, then defendants can simply decline to invoke the bifurcation option. I expect, though, that the benefits of being able to defer infringement issues will be large enough to make bifurcation worthwhile in most cases.

¹⁹² This is so because high litigation costs mean that the surplus to be gained from settlement is greater, *see supra* note 166, and because asymmetric information and optimism make it harder for parties to agree on a settlement amount that improves on each party's expected outcome from litigation. For general overviews, see Amy Farmer & Paul Pecorino, *Dispute Resolution*, in 2 THE NEW PALGRAVE DICTIONARY OF ECONOMICS, *supra* note 189, at 500; Spier, *supra* note 189.

and thus to fewer settlements before invalidity is decided. Since fewer cases will be settled during the first phase, courts should decide invalidity challenges in more cases and thus hold more patents invalid.¹⁹³

While it is only a partial solution, the advantage to litigants from a bifurcation rule should not be minimized. Patent lawsuits are complex affairs with many moving parts. It is not unusual for a defense team to have lawyers working on areas as diverse as understanding the accused technology; analyzing the asserted patents and their prosecution histories; working with engineers from the defendant company; working with invalidity and noninfringement experts; analyzing prior art; analyzing documents from and deposing the inventor; analyzing documents from and deposing witnesses from the plaintiff company; and working on a whole set of remedy issues, including working with experts and conducting fact discovery to make arguments about damages and a potential injunction. Splitting a case into two parts would cut the number of simultaneous moving parts by more than half since infringement and remedy issues would be deferred, leading to a far more manageable coordination problem. This, in turn, would make it much easier for defendants to do the research into the prior art and the asserted patents' prosecution histories necessary to present an invalidity defense.

The main objection to a bifurcation rule is likely to be that it will just make patent litigation slower and less efficient. This objection has some force since patent litigation is already a notoriously time-consuming process.¹⁹⁴ It is possible, though, that a bifurcation rule would reduce the average length and complexity of a patent case because many cases would never need to reach the infringement phase. Indeed, several studies have found that almost half of patents litigated to a final determination are ultimately invalidated by courts.¹⁹⁵

¹⁹³ Courts sometimes vacate rulings after a case settles, usually at the request of the parties. *E.g.*, Brice Dumais, Baker Botts LLP, *Vacating a Judgment or Order as Part of Post-Trial Settlement—Potentially Attractive, But Not Guaranteed to Work*, 7 INTELL. PROP. REP. (July 2010), available at http://www.bakerbotts.com/file_upload/2010JulyIPReport.htm. The Supreme Court has disallowed the practice, at least when an appeals court is asked to vacate the ruling under review. *See U.S. Bancorp Mortg. Co. v. Bonner Mall P'ship*, 513 U.S. 18, 29 (1994). If my bifurcation proposal were implemented, courts would need to likewise refuse such requests lest patent holders "buy out" invalidity findings in later settlement agreements.

¹⁹⁴ The median patent case takes more than thirty months to reach trial, and almost 20% of cases take more than four years to reach trial. PRICEWATERHOUSECOOPERS LLP, 2012 PATENT LITIGATION STUDY 20–21 (2012), available at http://www.pwc.com/en_US/us/forensic-services/publications/assets/2012-patent-litigation-study.pdf.

¹⁹⁵ *See Allison & Lemley*, *supra* note 6, at 205–06 & n.52 (finding an invalidity rate of 46% and summarizing prior studies). *But see Meurer*, *supra* note 130, at 89 (showing, in a formal model of patent settlement behavior, that the percentage of patents ultimately invalidated by a court is unrelated to the probability that a patent is invalid before settlement).

C. Allow a Successful Patent Challenger to Recover from Other Beneficiaries of an Invalidity Judgment

Finally, another useful reform would be to create a way for accused infringers who successfully challenge and invalidate patents in litigation to recover some of the value they create by eliminating an invalid patent. I propose to do so by creating a new cause of action for an accounting, which would permit a party that invalidates a patent to recover from industry competitors that otherwise would have been susceptible to a claim for infringing that patent. This would help eliminate the asymmetry in outcomes between successful invalidity and noninfringement defenses.

Several scholars have proposed similar bounty systems to overcome the public-good nature of invalidity judgments and reward successful challenges to patents' validity.¹⁹⁶ These bounty systems would essentially pay for successful invalidity challenges, counteracting (but not eliminating) the asymmetrical incentives to argue invalidity and noninfringement. While these bounty systems would help strengthen an accused infringer's incentive to rely on an invalidity defense instead of noninfringement, they have two significant limitations. First, most of the proposals rely on the holder of the invalid patent to pay the bounty.¹⁹⁷ Many patent plaintiffs, however, are judgment-proof, and this is especially true for the nonpracticing entities (or "patent trolls") that bring many patent-infringement claims.¹⁹⁸ And second, they would still leave a defendant's competitors in a position to capture a windfall, benefiting from a patent being invalidated without having to undertake the effort or risk of attempting to invalidate the patent. Although a large-enough bounty could make up for this shortcoming, simple fee shifting and similar bounties would not do the job.

¹⁹⁶ See Kesan, *supra* note 78, at 787–97 (proposing a "one-way, pro-defendant, fee-shifting system" when patent claims are invalidated based on specific kinds of prior art (footnote omitted)); Michael J. Meurer, *Controlling Opportunistic and Anti-Competitive Intellectual Property Litigation*, 44 B.C. L. REV. 509, 535–38 (2003) (proposing fee shifting to discourage "opportunistic" patent litigation); Miller, *supra* note 88, at 704–30 (proposing that a patent's holder be required to pay a bounty to a successful challenger of that patent); Thomas, *supra* note 88, at 340–47 (proposing that the PTO pay patent bounties to members of the public who provide information leading patent applications to be rejected); Yelderman, *supra* note 78, at 45–48.

¹⁹⁷ John Thomas has proposed instead that the PTO pay bounties. Thomas, *supra* note 88, at 340–47. Though this would avoid the problem of judgment-proof patent holders, it would require potential bounty collectors to come forward far earlier, well before it becomes clear that a patent poses a realistic litigation threat. Miller, *supra* note 88, at 698 (arguing that "the patent examination stage is too early a time to award a bounty"). It would also likely pay bounties that are too small to change incentives meaningfully.

¹⁹⁸ See, e.g., Sara Jeruss, Robin Feldman & Joshua Walker, *The America Invents Act 500: Effects of Patent Monetization Entities on US Litigation*, 11 DUKE L. & TECH. REV. 357, 361 (2012) (finding that nearly 40% of patent cases in 2012 were filed by nonpracticing entities).

The proposed cause of action for an accounting would provide a bounty that would be paid instead by the most direct beneficiaries of an invalidity judgment: the businesses and individuals, typically competitors of the successful patent challenger, who would otherwise be vulnerable to a claim for infringing that patent. These businesses and individuals benefit directly from an invalidity judgment because they can no longer be sued for infringing the patent or, if they have previously licensed the patent, would no longer have to pay royalties for that patent.¹⁹⁹ By transferring this benefit to the party that successfully challenged the patent, the accounting action would eliminate the asymmetry in outcomes between successful invalidity and noninfringement defenses while reducing the benefit to a defendant's direct competitors from an invalidity judgment.

Probably the closest analog to my proposed cause of action is a proposal by Gideon Parchomovsky and Alex Stein under which an intellectual-property defendant raising a "class" or "general" defense could implead other potential defendants to join the fight.²⁰⁰ For instance, a defendant in a patent-infringement case that wants to argue invalidity could implead competitors that might also be targets for the same patent; the defendants could then share resources to fight the patent. Under the proposal, an impleaded defendant could decline to join the litigation but would be bound in later litigation by an unsuccessful outcome on the defense. If the defense succeeded, the impleaded defendant would have to reimburse the original defendant for a share of the cost of the successful defense.²⁰¹

Like my proposed accounting action, the Parchomovsky–Stein proposal would help reduce the collective-action problem of litigating invalidity. It would do so by reducing the cost of an invalidity defense, either by splitting the cost across multiple coordinating defendants or by reimbursing a defendant for a successful defense. It is not clear, however, that just reducing the cost of litigating invalidity would go far enough to make invalidity arguments attractive to litigants since other trade-offs and asymmetries would still weigh against making invalidity arguments. The advantage of an accounting action is that it could provide a litigant who invalidates a patent with a reward commensu-

199 See *Lear, Inc. v. Adkins*, 395 U.S. 653, 673–74 (1969) (holding that a patent license agreement may not be enforced after the licensed patent has been held invalid); JAY DRATLER, JR. & STEPHEN M. MCJOHN, *LICENSING OF INTELLECTUAL PROPERTY* § 2.02[1][a] (2013); Dreyfuss & Pope, *supra* note 150, at 991–1003 (analyzing incentives under the *Lear* rule); Rochelle Cooper Dreyfuss, *Dethroning Lear: Licensee Estoppel and the Incentive to Innovate*, 72 VA. L. REV. 677 (1986) (same). As Michael Risch has pointed out, one side effect of this rule is to inflate the royalties paid by patent licensees. See Risch, *supra* note 150, 1003–04.

200 See Parchomovsky & Stein, *supra* note 5 (manuscript at 29–30).

201 *Id.* (manuscript at 31–33).

rate to the value created by doing so, not just the litigation costs of doing so.

One objection to my proposal is likely to be that it would just create a system of secondary patent-infringement litigation, with a successful defendant turning around and having to prove that its competitors infringe a now-invalid patent. This issue can be avoided, however, by basing liability under the accounting action not on whether one actually would have infringed the now-invalid patent but on whether the patent holder could have stated a plausible claim for patent infringement. Such plausibility standards are common in other areas of the law.²⁰² And such a standard is a better match for the real benefits of an invalidity judgment since an invalid patent imposes a tax not only on those who would infringe but on any party that could plausibly be sued for patent infringement and so would have to pay royalties or incur litigation costs.

Another objection to this proposal may be that it could give a windfall to the first potential challenger when any of several competitors could invalidate the patent. This point has some force: while there is little reason to think that the first defendants to be sued by a patent holder are likely to be in the best position to invalidate the patent, they may be the first with an opportunity to do so and thus to collect under the accounting action. This issue, though, can be avoided by liberalizing the jurisdiction rules for declaratory-judgment claims of patent invalidity.²⁰³ A standing rule for invalidity cases that permitted any potential infringement defendant to challenge a patent's validity would encourage competitors to compete to be the first to invalidate the patent and to collect the resulting bounty, or to team up with competitors to do so. And such a rule would be consistent with the reality that a patent imposes restrictions on behavior with or without an imminent threat of suit.²⁰⁴

²⁰² The Rule 11 standard for sanctionable litigation misconduct provides a good example. See FED. R. CIV. P. 11. Another good example comes in cases deciding whether a liability insurer is obligated to defend a policyholder who has been sued, in which the question is typically not whether the policyholder is liable under one of the grounds covered by the policy but whether the policyholder has been sued for any claim that is potentially covered by the policy. See Steven P. Inman & Robert Kinder, *Securing Insurance Coverage for Patent Infringement Lawsuits Under CGL Insurance Policies Could Save Millions*, INTEL. PROP. TODAY, Mar. 2012, at 13, 13–15.

²⁰³ See *MedImmune, Inc. v. Genentech, Inc.*, 549 U.S. 118 (2007); Walrath, *supra* note 143; see generally David I. Levine & Charles E. Belle, *Declaratory Relief After MedImmune*, 14 LEWIS & CLARK L. REV. 491 (2010) (discussing the impact of *MedImmune*).

²⁰⁴ Alternatively or additionally, Parchomovsky and Stein's proposal to permit the voluntary joinder of additional defendants in a patent-infringement suit would give potential invalidators another way to contribute to the effort to invalidate a patent. See Parchomovsky & Stein, *supra* note 5 (manuscript at 29–30); see also Joseph Scott Miller, *Joint Defense or Research Joint Venture? Reassessing the Patent-Challenge-Bloc's Antitrust Status*, 2011 STAN. TECH. L. REV., art. 5, at 2, <http://strl.stanford.edu/pdf/miller-joint-defense.pdf> (proposing

Another objection to this proposal may be that it conflicts with the public policy favoring settlement of private disputes. It is undoubtedly true that an accounting action would give defendants more to gain from refusing to settle, though it does not follow that settlement will become less likely. Instead, one possible outcome is that it could change the relative bargaining positions of plaintiffs and defendants, leading to fewer lawsuits or to settlements that are more favorable to defendants accused of infringement. But even if the accounting action did make settlements less common, that might not be a bad thing. The public policy favoring settlements is motivated by judicial economy, the need to reduce the risk of litigation, and the feeling that privately crafted resolutions are more likely to respond to private litigants' real-world needs.²⁰⁵ But these reasons are less compelling when there is a significant countervailing public interest—such as the need to eliminate invalid patents—in the litigation. Indeed, the Supreme Court has repeatedly recognized that the public interest in free competition, unencumbered by invalid patent monopolies, can overcome traditional equitable considerations.²⁰⁶

A key question when recognizing a new cause of action is the level of damages that would be awarded under that cause of action. Here, the amount a successful patent invalidator should collect is dictated by the goal of eliminating the asymmetry of outcomes between successful invalidity and noninfringement defenses. The upper bound of the award, then, should be the amount competitors would pay in damages to the patent holder—that is, the reasonable royalties or lost profits that competitors would pay if found to infringe the patent.²⁰⁷ Such an award would transfer to the successful patent challenger the full benefit to competitors of invalidating the patent, eliminating the windfall those competitors would obtain from an inva-

“strong-form joint defense agreements among multiple accused infringers” as another approach to overcome the public-good problem in challenges to patent validity).

²⁰⁵ See Stephen McG. Bundy, *The Policy in Favor of Settlement in an Adversary System*, 44 HASTINGS L.J. 1, 37–43 (1992) (discussing the public-interest benefits of settlement); Margaret Meriwether Cordray, *Settlement Agreements and the Supreme Court*, 48 HASTINGS L.J. 9, 35–41 (1996) (“Recognizing the benefits that flow from the private settlement of disputes, the Supreme Court has repeatedly endorsed the policy favoring settlement.”).

²⁰⁶ See *Lear, Inc. v. Adkins*, 395 U.S. 653, 670 (1969) (holding that estoppel does not prevent a patent licensee from challenging the patent's validity, in part because “the equities of the licensor do not weigh very heavily when they are balanced against the important public interest in permitting full and free competition in the use of ideas which are in reality a part of the public domain”); *Pope Mfg. Co. v. Gormully*, 144 U.S. 224, 235 (1892) (similar).

²⁰⁷ See generally *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1349 (Fed. Cir. 1999) (summarizing the legal standards for a patent holder to recover lost profits and a reasonable royalty, the two standard forms of patent damages).

lidity judgment.²⁰⁸ Such an award would be too much, however, because it would not account for the uncertainty in patent-infringement litigation, especially if a successful patent challenger could collect from plausible defendants without proving they would have infringed the now-invalid patent. Accordingly, the award should be adjusted by the likelihood that the patent holder would have prevailed in a hypothetical patent-infringement lawsuit. Although it is hard to tell what fraction of patent-infringement lawsuits would succeed if litigated to a final judgment,²⁰⁹ a reasonable first approximation might be to award one-third of the royalties the patent holder might otherwise collect. This would be large enough to give potential challengers a significant incentive to compete to invalidate patents and to dissuade them from partnering with patent holders,²¹⁰ yet small enough to avoid overcompensating a challenger who invalidates a patent that may not have been infringed by others. And any surplus between the accounting-action award and the actual damages that infringers would pay would redound to consumers.

Although this proposal would help counteract the collective-action problem stemming from the public-good nature of invalidity judgments, it would not completely align a potential challenger's incentive with society's interest in eliminating bad patents. As Joseph Farrell and Robert Merges have recognized, the public-good problem is not the only reason for incomplete incentives to challenge patents; potentially as troublesome is the pass-through problem, under which royalty costs are passed along to consumers.²¹¹ But reducing one problem is better than reducing no problems, and combined, the proposed reforms could significantly reduce the trade-offs and asymmetries that lead to courts invalidating too few patents.

CONCLUSION

Most patent scholars and lawyers agree that there are too many bad patents in force, imposing a tax on creators of valuable goods and services, and that the legal system needs effective mechanisms to eliminate those bad patents. One classic mechanism for invalidating patents is infringement litigation. Yet, as this Article has shown, the patent system makes it harder than necessary for defendants to rely on invalidity defenses and thus for district courts to invalidate bad patents. Through a series of trade-offs and asymmetries between invalid-

²⁰⁸ It would provide the successful challenger a windfall, but that is the whole point—to provide an incentive to challenge a patent's validity.

²⁰⁹ See generally Priest & Klein, *supra* note 64 (discussing the difficulties in making inferences about legal disputes based on litigation outcomes).

²¹⁰ See *supra* notes 175–81 and accompanying text.

²¹¹ Farrell & Merges, *supra* note 62, at 953–55.

ity and noninfringement, defendants are encouraged to focus their efforts on just one defense and usually to make that defense noninfringement. Because of this, defendants challenge, and district courts invalidate, fewer patents than they should; patent holders are able to extract more rents using invalid patents; and more invalid patents restrict the behavior of the public.

Though there is no one perfect solution, a series of reforms could significantly reduce the effect of these trade-offs and asymmetries. Eliminating the elevated burden of proof for invalidity would make it relatively easier for defendants to rely on invalidity defenses. A bifurcation rule requiring district courts to decide validity before infringement would make it easier for litigants to develop coherent trial narratives for both validity and infringement issues while helping them focus their resources on validity issues early in a case. And a new cause of action for an accounting would reduce the collective-action problem posed by the public-good nature of an invalidity judgment.

Readers with comments should address them to:

Professor Roger Allan Ford
raf@uchicago.edu

Chicago Working Papers in Law and Economics
(Second Series)

For a listing of papers 1–600 please go to Working Papers at <http://www.law.uchicago.edu/Lawecon/index.html>

601. David A. Weisbach, Should Environmental Taxes Be Precautionary? June 2012
602. Saul Levmore, Harmonization, Preferences, and the Calculus of Consent in Commercial and Other Law, June 2012
603. David S. Evans, Excessive Litigation by Business Users of Free Platform Services, June 2012
604. Ariel Porat, Mistake under the Common European Sales Law, June 2012
605. Stephen J. Choi, Mitu Gulati, and Eric A. Posner, The Dynamics of Contract Evolution, June 2012
606. Eric A. Posner and David Weisbach, International Paretianism: A Defense, July 2012
607. Eric A. Posner, The Institutional Structure of Immigration Law, July 2012
608. Lior Jacob Strahilevitz, Absolute Preferences *and* Relative Preferences in Property Law, July 2012
609. Eric A. Posner and Alan O. Sykes, International Law and the Limits of Macroeconomic Cooperation, July 2012
610. M. Todd Henderson and Frederick Tung, Reverse Regulatory Arbitrage: An Auction Approach to Regulatory Assignments, August 2012
611. Joseph Isenbergh, Cliff Schmitt, August 2012
612. Tom Ginsburg and James Melton, Does De Jure Judicial Independence Really Matter? A Reevaluation of Explanations for Judicial Independence, August 2012
613. M. Todd Henderson, Voice versus Exit in Health Care Policy, October 2012
614. Gary Becker, François Ewald, and Bernard Harcourt, “Becker on Ewald on Foucault on Becker” American Neoliberalism and Michel Foucault’s 1979 *Birth of Biopolitics* Lectures, October 2012
615. William H. J. Hubbard, Another Look at the Eurobarometer Surveys, October 2012
616. Lee Anne Fennell, Resource Access Costs, October 2012
617. Ariel Porat, Negligence Liability for Non-Negligent Behavior, November 2012
618. William A. Birdthistle and M. Todd Henderson, Becoming the Fifth Branch, November 2012
619. David S. Evans and Elisa V. Mariscal, The Role of Keyword Advertisign in Competition among Rival Brands, November 2012
620. Rosa M. Abrantes-Metz and David S. Evans, Replacing the LIBOR with a Transparent and Reliable Index of interbank Borrowing: Comments on the Wheatley Review of LIBOR Initial Discussion Paper, November 2012
621. Reid Thompson and David Weisbach, Attributes of Ownership, November 2012
622. Eric A. Posner, Balance-of-Powers Arguments and the Structural Constitution, November 2012
623. David S. Evans and Richard Schmalensee, The Antitrust Analysis of Multi-Sided Platform Businesses, December 2012
624. James Melton, Zachary Elkins, Tom Ginsburg, and Kalev Leetaru, On the Interpretability of Law: Lessons from the Decoding of National Constitutions, December 2012
625. Jonathan S. Masur and Eric A. Posner, Unemployment and Regulatory Policy, December 2012
626. David S. Evans, Economics of Vertical Restraints for Multi-Sided Platforms, January 2013
627. David S. Evans, Attention to Rivalry among Online Platforms and Its Implications for Antitrust Analysis, January 2013
628. Omri Ben-Shahar, Arbitration and Access to Justice: Economic Analysis, January 2013
629. M. Todd Henderson, Can Lawyers Stay in the Driver’s Seat?, January 2013
630. Stephen J. Choi, Mitu Gulati, and Eric A. Posner, Altruism Exchanges and the Kidney Shortage, January 2013
631. Randal C. Picker, Access and the Public Domain, February 2013
632. Adam B. Cox and Thomas J. Miles, Policing Immigration, February 2013
633. Anup Malani and Jonathan S. Masur, Raising the Stakes in Patent Cases, February 2013
634. Ariel Porat and Lior Strahilevitz, Personalizing Default Rules and Disclosure with Big Data, February 2013
635. Douglas G. Baird and Anthony J. Casey, Bankruptcy Step Zero, February 2013
636. Oren Bar-Gill and Omri Ben-Shahar, No Contract? March 2013
637. Lior Jacob Strahilevitz, Toward a Positive Theory of Privacy Law, March 2013
638. M. Todd Henderson, Self-Regulation for the Mortgage Industry, March 2013
639. Lisa Bernstein, Merchant Law in a Modern Economy, April 2013
640. Omri Ben-Shahar, Regulation through Boilerplate: An Apologia, April 2013

641. Anthony J. Casey and Andres Sawicki, Copyright in Teams, May 2013
642. William H. J. Hubbard, An Empirical Study of the Effect of *Shady Grove v. Allstate* on Forum Shopping in the New York Courts, May 2013
643. Eric A. Posner and E. Glen Weyl, Quadratic Vote Buying as Efficient Corporate Governance, May 2013
644. Dhammika Dharmapala, Nuno Garoupa, and Richard H. McAdams, Punitive Police? Agency Costs, Law Enforcement, and Criminal Procedure, June 2013
645. Tom Ginsburg, Jonathan S. Masur, and Richard H. McAdams, Libertarian Paternalism, Path Dependence, and Temporary Law, June 2013
646. Stephen M. Bainbridge and M. Todd Henderson, Boards-R-Us: Reconceptualizing Corporate Boards, July 2013
647. Mary Anne Case, Is There a Lingua Franca for the American Legal Academy? July 2013
648. Bernard Harcourt, Beccaria's *On Crimes and Punishments*: A Mirror of the History of the Foundations of Modern Criminal Law, July 2013
649. Christopher Buccafusco and Jonathan S. Masur, Innovation and Incarceration: An Economic Analysis of Criminal Intellectual Property Law, July 2013
650. Rosalind Dixon & Tom Ginsburg, The South African Constitutional Court and Socio-economic Rights as "Insurance Swaps", August 2013
651. Maciej H. Kotowski, David A. Weisbach, and Richard J. Zeckhauser, Audits as Signals, August 2013
652. Elisabeth J. Moyer, Michael D. Woolley, Michael J. Glotter, and David A. Weisbach, Climate Impacts on Economic Growth as Drivers of Uncertainty in the Social Cost of Carbon, August 2013
653. Eric A. Posner and E. Glen Weyl, A Solution to the Collective Action Problem in Corporate Reorganization, September 2013
654. Gary Becker, François Ewald, and Bernard Harcourt, "Becker and Foucault on Crime and Punishment"—A Conversation with Gary Becker, François Ewald, and Bernard Harcourt: The Second Session, September 2013
655. Edward R. Morrison, Arpit Gupta, Lenora M. Olson, Lawrence J. Cook, and Heather Keenan, Health and Financial Fragility: Evidence from Automobile Crashes and Consumer Bankruptcy, October 2013
656. Evidentiary Privileges in International Arbitration, Richard M. Mosk and Tom Ginsburg, October 2013
657. Voting Squared: Quadratic Voting in Democratic Politics, Eric A. Posner and E. Glen Weyl, October 2013
658. The Impact of the U.S. Debit Card Interchange Fee Regulation on Consumer Welfare: An Event Study Analysis, David S. Evans, Howard Chang, and Steven Joyce, October 2013
659. Lee Anne Fennell, Just Enough, October 2013
660. Benefit-Cost Paradigms in Financial Regulation, Eric A. Posner and E. Glen Weyl, October 2013
661. Free at Last? Judicial Discretion and Racial Disparities in Federal Sentencing, Crystal S. Yang, October 2013
662. Have Inter-Judge Sentencing Disparities Increased in an Advisory Guidelines Regime? Evidence from Booker, Crystal S. Yang, October 2013
663. William H. J. Hubbard, A Theory of Pleading, Litigation, and Settlement, November 2013
664. Tom Ginsburg, Nick Foti, and Daniel Rockmore, "We the Peoples": The Global Origins of Constitutional Preambles, November 2013
665. Lee Anne Fennell and Eduardo M. Peñalver, Exactions Creep, December 2013
666. Lee Anne Fennell, Forcings, December 2013
667. Stephen J. Choi, Mitu Gulati, and Eric A. Posner, A Winner's Curse?: Promotions from the Lower Federal Courts, December 2013
668. Jose Antonio Cheibub, Zachary Elkins, and Tom Ginsburg, Beyond Presidentialism and Parliamentarism, December 2013

669. Lisa Bernstein, Trade Usage in the Courts: The Flawed Conceptual and Evidentiary Basis of Article 2's Incorporation Strategy, November 2013
670. Roger Allan Ford, Patent Invalidity versus Noninfringement, December 2013