

ARTICLES

The Misuse of Reasonable Royalty Damages as a Patent Infringement Deterrent

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This Article studies the Federal Circuit's use of excessive reasonable royalty awards as a patent infringement deterrent. I argue against this practice, explaining that, properly viewed in context of the patent system as a whole, distorting the reasonable royalty measure of damages is an unnecessary and ineffective means of ensuring an optimal level of reward for inventors and deterrence for infringers. First, I introduce cases in which the Federal Circuit and other courts following its lead have awarded punitive reasonable royalty awards and explain the Federal Circuit's professed rationale for doing so. Next, I demonstrate that this practice makes little sense, given the number of other powerful deterrents already present in the patent system. I also explain that any additional deterrence-related benefits attributable to excess damages are not realized when courts impose those damages against innocent infringers – a group that likely makes up the lion's share of patent infringers. I further explain that there is good reason to believe that the patent system already overdeters infringement without the added burden of inflated royalties, because accused infringers participating in a competitive market face strong incentives not to challenge patents asserted against them. Finally, I propose several patent reforms for efficiently deterring deliberate copyists, while sparing innocent infringers from that threat.

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I. INTRODUCTION

Psychologists, economists, and biologists agree that humans feel an instinctive need to punish bad actors – to seek revenge against liars, cheats, and free riders – regardless of the deterrent effect such retribution has on future scoundrels.¹ Although we hope the judges who apply society’s laws are capable of rising above such primal desires, are we so sure that judges are different? If U.S. patent law is any indication, the answer is a resounding no. As this Article demonstrates, the proclivity of jurists and jurors toward just-deserts retribution has had a significant impact on the evolution of how U.S. patent law treats those found liable for patent infringement.

This Article documents the striking fact that courts have time and again awarded reasonable royalty damages for patent infringement that rise well

1. See Benedict Carey, *Citizen Enforcers Take Aim at Wall Street*, N.Y. TIMES, Oct. 7, 2008, at D1, available at <http://www.nytimes.com/2008/10/07/health/07iht-punish.1.16744325.html>. For a broader discussion of the psychology of retaliation and forgiveness, see MICHAEL E. MCCULLOUGH, *BEYOND REVENGE: THE EVOLUTION OF THE FORGIVENESS INSTINCT* (2008).

above any objectively “reasonable” level for the apparent purpose of punishing defendants for their infringing conduct.² Numerous cases demonstrate that the Federal Circuit is more than willing to award inflated reasonable royalties – at times enhanced by an order of magnitude or more³ – to ensure that patentees receive what the court deems an appropriate level of recovery, punish infringers, and deter those who might choose to infringe in the future. Although this practice may be commendable in intent⁴ and supported by simple intuitive appeal,⁵ when considered in context of the patent system as a whole, distorting the reasonable royalty measure of damages is a needless (indeed, almost certainly counterproductive) and ineffective means of ensuring an optimal level of reward for inventors and deterrence for infringers.

This Article explores the inflation of reasonable royalty awards and concludes that this practice simply makes no sense in a patent system that already

2. Several commentators have noted, at least in passing, that the Federal Circuit has added a deterrence function to the reasonable royalty measure of damages. See Mark A. Lemley, *Distinguishing Lost Profits from Reasonable Royalties*, 51 William & Mary L. Rev. (forthcoming Nov. 2009) (manuscript at 6-13) [hereinafter *Distinguishing Lost Profits*] (“[T]he Federal Circuit . . . has also approved of discretionary increases in the reasonable royalty designed to avoid undercompensation, and there is reason to believe that courts continue to award relatively high reasonable royalties and to distort the concept of a hypothetical negotiation between willing buyers and willing sellers” (footnotes omitted)); Amy L. Landers, *Let the Games Begin: Incentives to Innovation in the New Economy of Intellectual Property Law*, 46 SANTA CLARA L. REV. 307, 336 (2006) (“Although [35 U.S.C.] § 284 . . . mandates that the reasonable royalty award be that which is ‘adequate to compensate for the infringement,’ some courts have built a deterrence function into the reasonable royalty calculation that permits considerable upward movement from the market value of the use of the invention at the time of infringement.” (footnote omitted)).

3. See *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1555, 1576 (Fed. Cir. 1995) (affirming district court’s award of reasonable royalty, which, according to the dissent, was “[thirty-three] times greater than [the infringer’s] net profit on its entire machine”); *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1379, 1384 (Fed. Cir. 2004) (affirming jury verdict of reasonable royalty more than eleven times greater than technology fee plaintiff charged farmers for license to plant patented soybean seeds and reasonable royalty almost five times greater than fee plaintiff charged for license to plant patented cottonseed). See also *Monsanto Co. v. McFarling*, 488 F.3d 973, 977 (Fed. Cir. 2007) (affirming similar jury verdict of reasonable royalty more than six times greater than technology fee plaintiff charged for license to plant patented soybean seeds).

4. For a discussion of why courts inflate reasonable royalty awards, see *infra* Part II.D.

5. See Carl Shapiro, *Patent Reform: Aligning Reward and Contribution*, in 8 INNOVATION POLICY AND THE ECONOMY 111, 115 (Adam B. Jaffe et al. eds., 2008), available at <http://www.nber.org/chapters/c10778.pdf> (noting that, though incorrect, it is intuitive to assume that the patent system generally undercompensates inventors because “many inventions generate positive externalities, generally known as spillovers” that might not be reflected in patent rewards).

consistently overvalues patent rights compared to their value to society, especially when courts mete out this punishment to innocent and willful infringers alike. Part II explores cases in which the Federal Circuit and other courts following its lead have awarded increased reasonable royalty awards for punitive impact and explains the Federal Circuit's professed rationale for doing so. Part III demonstrates that this practice makes little sense, given the number of other powerful deterrents already present in the patent system. Part IV explains that, to the extent they exist at all, any deterrence-related benefits resulting from excess damages do not materialize when courts impose those damages against innocent infringers – a group that likely makes up the lion's share of patent infringers. Part V argues that, even without the additional burden of inflated damages awards, there is good reason to believe that the patent system already over deters infringement because accused infringers participating in a competitive market face strong incentives not to challenge patents asserted against them. Finally, Part VI outlines proposed patent reforms for efficiently deterring willful copyists, while sparing ordinary, innocent infringers from that threat.

II. DETERRING INFRINGEMENT WITH REASONABLE ROYALTY AWARDS

Although traditional black-letter patent law states that damages for patent infringement are intended only to compensate patent owners, the Federal Circuit has shaped the law of reasonable royalty damages to incorporate an additional deterrent function. This Part introduces cases in which courts have awarded enhanced reasonable royalty awards to deter infringers and explains why courts believe this is necessary.

A. Brief Introduction to Patent Infringement Damages

Section 284 of the United States Patent Act states that a patentee may recover profits lost due to infringement, “but in no event less than a reasonable royalty” for an infringer’s use of the patented invention.⁶ According to the statute, courts should aim to award “damages adequate to compensate” the patentee for losses it sustained as a result of infringement.⁷

This compensation may take the form of lost profits, a reasonable royalty, or a combination thereof.⁸ For many patentees, however, proving lost

6. 35 U.S.C. § 284 (2006). Typically, courts also award injunctive relief under 35 U.S.C. § 283 (2006), prohibiting infringers from continuing their infringing activities for the duration of the patent’s term. This remedy is discussed *infra* at Part III.A.

7. 35 U.S.C. § 284.

8. *See, e.g.,* *Minco, Inc. v. Combustion Eng’g, Inc.*, 95 F.3d 1109, 1119 (Fed. Cir. 1996) (“The Patent Act permits damages awards to encompass both lost profits

profits is not a realistic goal.⁹ To obtain lost profits, a patentee must show (i) consumer demand for a product it sells that is covered by the patent-at-issue,¹⁰ (ii) sufficient marketing and manufacturing capacity to exploit that demand, (iii) an absence of noninfringing substitutes that might satisfy that demand instead, and (iv) the dollar amount of profit that it would have made from additional sales of its product had the infringer's product never entered the market.¹¹

Patentees who cannot establish all prongs of the above test – frequently because they do not sell a product, let alone one covered by their patent – may not recover lost profits. These patent owners may recover as damages only the reasonable royalty for which they could have licensed their patent to the infringer. In setting this reasonable royalty rate, courts attempt to reconstruct the hypothetical bargain that the parties would have negotiated had they willingly tried to do so at the time infringement began.¹² To recreate this “willing licensor-willing licensee” royalty, courts generally rely on fifteen factors set forth in *Georgia-Pacific Corp. v. United States Plywood Corp.*¹³

and a reasonable royalty on that portion of an infringer's sales not included in the lost profit calculation.”).

9. Indeed, Mark Lemley argues that the Federal Circuit's willingness to inflate reasonable royalty awards may be a consequence of this fact. *See Distinguishing Lost Profits, supra* note 2, at 11-12 (arguing that courts often increase reasonable royalty awards to benefit patentees the courts believe should have received – but did not receive – lost profits awards).

10. Although it is generally true that a patentee may obtain lost profits damages only for foregone sales of products covered by the patent-at-issue, this is not *always* the case. Courts have allowed damages for a patentee's lost sales of products that, although not covered by the asserted patent, competed with the infringer's product. *See Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1544-50 (Fed. Cir. 1995) (holding that a patentee is entitled to lost profits damages based on foregone sales of products not covered by the patent-in-suit, but which compete with the infringing product, because such losses are the foreseeable result of infringement); *see also King Instruments Corp. v. Perego*, 65 F.3d 941, 951-53 (Fed. Cir. 1995).

11. *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1156 (6th Cir. 1978).

12. *Id.* at 1157-58 (“A reasonable royalty is an amount which a person, desiring to manufacture and sell a patented article, as a business proposition, would be willing to pay as a royalty and yet be able to make and sell the patented article, in the market, at a reasonable profit.” (quoting *Goodyear Tire & Rubber Co. v. Overman Cushion Tire Co.*, 95 F.2d 978, 984 (6th Cir. 1937))). This *ex post* recreation of the hypothetical bargain that the parties would have struck had they negotiated is essentially a form of restitution-style contract law damages. *See* ROBERT PATRICK MERGES & JOHN FITZGERALD DUFFY, *PATENT LAW & POLICY: CASES & MATERIALS 1077-78 n.2* (3d ed. 2002).

13. 318 F. Supp. 1116, 1120-21 (S.D.N.Y. 1970). The factors are

1. The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty.
2. The rates paid by the licensee for the use of other patents comparable to the patent in

The exercise of reconstructing the parties' hypothetical *ex ante* bargain is, unfortunately, by no means one of careful economic analysis – nor is it undertaken on a level playing field. Instead, it relies upon counterfactual assumptions designed to favor the patentee and ensure adequate compensation. Namely, though ostensibly setting royalty rates at the level parties would have negotiated prior to suit, courts presume that the patent-at-issue is valid and infringed¹⁴ – both facts that were no doubt fiercely contested during litigation and far from clear when infringement began.

suit. 3. The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold. 4. The licensor's established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly. 5. The commercial relationship between the licensor and licensee, such as whether they are competitors in the same territory in the same line of business; or whether they are inventor and promoter. 6. The effect of selling the patented specialty in promoting sales of other products of the licensee; that existing value of the invention to the licensor as a generator of sales of his non-patented items; and the extent of such derivative or conveyed sales. 7. The duration of the patent and the term of the license. 8. The established profitability of the product made under the patent; its commercial success; and its current popularity. 9. The utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results. 10. The nature of the patented invention; the character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention. 11. The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use. 12. The portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions. 13. The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer. 14. The opinion testimony of qualified experts. 15. The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount which a prudent licensee – who desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented invention – would have been willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been acceptable by a prudent patentee who was willing to grant a license.

Id. at 1120.

14. See *St. Clair Intellectual Prop. Consultants, Inc. v. Canon, Inc.*, No. Civ.A. 03-241 JJF, 2004 WL 2213562, at *3 (D.Del. Sept. 28, 2004) (“Cases clearly accept that the hypothetical negotiation for calculating a reasonable royalty is based on the

B. Patent Damages as Pecuniary Compensation

Given that the Patent Act expressly calls for patent damages that are “adequate to compensate for the infringement,”¹⁵ it should come as no surprise that patent law traditionally provides that the core purpose of reasonable royalty damages is to *compensate* the patentee by awarding as damages a royalty fee approximating the true market value of a license to practice the patented invention.

More than 120 years ago, the U.S. Supreme Court defined patent damages as “the difference between [the patentee’s] pecuniary condition after the infringement, and what his condition would have been if infringement had not occurred.”¹⁶ Only a few years later, the Court explicitly stressed the compensatory nature of patent damages and rejected the notion that damages awarded under the Patent Act should function to punish infringers: “[patent damages] have been defined by this Court as ‘compensation for the pecuniary loss he (the patentee) has suffered from the infringement, *without regard to the question whether the defendant has gained or lost by his unlawful acts.*’”¹⁷

When infringement does not divert sales from the patentee (for example, because the patentee does not sell a product), the patentee’s pecuniary loss is

assumption that the patent was valid and infringed.”); DONALD S. CHISUM, CHISUM ON PATENTS § 20.03 (7th ed. 2006) (“The [hypothetical reasonable royalty] negotiation is based on the assumption that the patent was valid.”). There is good reason to believe that this presumption is necessary to avoid undercompensating patentees. See discussion *infra* Part II.B; ROGER D. BLAIR & THOMAS F. COTTER, INTELLECTUAL PROPERTY: ECONOMIC AND LEGAL DIMENSIONS OF RIGHTS AND REMEDIES 229-30 (2005) (“The presumption [that the patent-at-issue is valid in the hypothetical negotiation] nevertheless makes economic sense, because an award that reflected the parties’ uncertainty at the time of the hypothetical negotiations in effect would require the plaintiff to bear the risk of uncertainty twice: first, at the time of those negotiations, and second when deciding whether to proceed to trial.”); Mark A. Lemley & Ragesh K. Tangri, *Ending Patent Law’s Willfulness Game*, 18 BERKELEY TECH. L.J. 1085, 1109-12 (2003); see also *infra* note 142 and accompanying text.

15. 35 U.S.C. § 284 (2006). See also CHISUM, *supra* note 14, at § 20.01 (“The goal of the law of monetary relief for patent infringement is to provide full compensation to the owner of a patent.”). This is not to say that the Patent Act provides no mechanism for deterrence. Indeed, several provisions of the Patent Act were designed specifically to deter infringers. These deterrents are discussed *infra* at Part III.A.

16. *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 507 (1964) (quoting *Yale Lock Mfg. Co. v. Sargent*, 117 U.S. 536, 552 (1886)). See also CHISUM, *supra* note 14, at § 20.01 (“The primary award should be the best approximation of the amount necessary to restore the owner to the financial position he would have enjoyed had the infringer not engaged in unauthorized acts in violation of the owner’s exclusive patent rights.”).

17. *Aro*, 377 U.S. at 507 (quoting *Coupe v. Royer*, 155 U.S. 565, 582 (1895)) (emphasis added).

limited to the royalty fee that it could have reasonably charged the infringer for a license to use the patent-at-issue. Reconstruction of that royalty amount as determined by the market value of the patented invention, then, is the traditional sine qua non of calculating reasonable royalty damages.¹⁸

C. *Inflation of the Reasonable Royalty Measure of Damages*

Courts nevertheless appear to be routinely dissatisfied with the royalty rates that simple economic evidence shows the parties would have agreed to in a negotiation prior to infringement. In such situations, courts have often awarded grossly inflated royalty rates, implicitly rejecting Supreme Court and previously well-established Federal Circuit precedent setting forth a strictly compensatory reasonable royalty formulation.

This practice is perhaps best embodied by a recent line of cases between Monsanto and farmers who purchased Monsanto's patented seeds. In *Monsanto Co. v. McFarling*, the Federal Circuit affirmed a jury award of reasonable royalty damages more than six times the licensing fee the patentee, Monsanto, consistently charged for use of the patented invention.¹⁹ In that case,

18. In fact, the *Georgia-Pacific* factors are essentially economic considerations designed to aid courts in determining the amount the patentee could and would have charged the infringer for use of the patented invention. See generally Landers, *supra* note 2, at 325-28.

Absent holdup (and ignoring for the moment the possibility that the patent-at-issue might be invalid, unenforceable, or not infringed), we would expect parties negotiating a royalty to divide the surplus created by the patented invention. See Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, 1999-2000 (2007) [hereinafter *Patent Holdup and Royalty Stacking*] (developing a numerical model for "a benchmark level for the royalty rate, i.e., the royalty rate that would be reasonable and expected in the ideal patent system without any element of holdup"). Mathematically, a freely negotiated royalty is represented by the equation $B*V$, where V represents the value of the patented invention to the infringing firm and B represents the relative bargaining power between the parties. *Id.* at 1996-97. For example, if a patented invention improves the efficiency of a manufacturing process, resulting in a cost savings of \$10 per unit above the next best non-infringing alternative (i.e., $V = \$10$), and the patentee and accused infringer bargain from positions of equal power (i.e., $B = 0.5$), we would expect the parties to reach a royalty of \$5 per unit (i.e., $0.5*\$10 = \5), evenly dividing the infringer's gains from using the patented invention. See *Hanson v. Alpine Valley Ski Area, Inc.*, 718 F.2d 1075, 1081 (Fed. Cir. 1983) (affirming royalty award calculated as one-third of the cost savings attributable to the patented invention).

19. *Monsanto Co. v. McFarling (McFarling III)*, 488 F.3d 973, 977-81 (Fed. Cir. 2007). *McFarling* appealed to the Federal Circuit three times. See *id.*; *Monsanto Co. v. McFarling (McFarling II)*, 363 F.3d 1336 (Fed. Cir. 2004); *Monsanto Co. v. McFarling (McFarling I)*, 302 F.3d 1291 (Fed. Cir. 2002). The case finally ended when the U.S. Supreme Court denied *McFarling's* petition for certiorari from the Federal Circuit's decision in *McFarling III*. *McFarling v. Monsanto Co.*, 128 S. Ct. 871 (2008).

Monsanto brought suit against a Mississippi farmer who purchased (and later saved and replanted) genetically modified seeds that grow into herbicide resistant crops.²⁰ Monsanto sold its patented seeds through distributors and required purchasers to sign a “Technology Agreement,” which licensed two patents Monsanto owned covering the genetic modification.²¹ This agreement limited use of the purchased seeds to a single growing season.²² It also required buyers to pay Monsanto a \$6.50 per bag “Technology Fee” to license the patents and to pay the seed distributor another fee of between \$19 and \$22 per bag.²³ When the jury returned a damages verdict in Monsanto’s favor of \$40 per bag – more than six times the license fee Monsanto consistently charged farmers²⁴ and, indeed, 140% of the total purchase price of the seeds – McFarling appealed.²⁵ The Federal Circuit affirmed, reasoning that evidence in the record showed that using Monsanto’s seeds saved farmers between \$31 and \$61 per bag and, therefore, it was not unreasonable for the jury to conclude that a farmer would be willing to pay a royalty of \$40 per bag.²⁶ The court stressed that limiting damages to Monsanto’s customary

On virtually identical facts, the Federal Circuit affirmed an even larger jury verdict in *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1382-84 (Fed. Cir. 2004). In *Ralph*, the jury awarded reasonable royalty damages of more than eleven times the licensing fee Monsanto charged at the time to plant modified soybean seeds (e.g., a royalty of \$55.04 per bag replanted in 1999 when Monsanto’s Technology Agreement called for a \$5.00 license fee) and an award of almost five times the licensing fee for modified cottonseed (e.g., a royalty of \$548.00 per bag replanted in 1999 when Monsanto’s Technology Agreement called for a \$112.80 license fee). *Id.* at 1379. To make matters worse, the district court also trebled the total amount of patent infringement damages for willful infringement. *Id.* at 1379.

20. *McFarling III*, 488 F.3d at 976.

21. *Id.* Monsanto owns two patents, U.S. Patent Nos. 5,633,435 and 5,352,605, that cover the genetic modification of these seeds. *Id.* The modified plants resist glyphosphate herbicide, a characteristic that allows farmers to spray an entire field with herbicide to efficiently eliminate weeds without harming the resistant crops. *Id.*

22. *Id.*

23. *Id.*

24. Petition for Writ of Certiorari at *12, *McFarling v. Monsanto Co.*, No. 07-241, 2007 WL 2406828 (U.S. Aug. 22, 2007) (“Every soybean farmer who planted Monsanto’s genetically modified soybeans – more than 90% of the soybean farmers in the country – paid Monsanto the same \$6.50-per-bag Technology Fee for those rights.” (internal citation omitted)).

25. *McFarling III*, 488 F.3d at 977.

26. *Id.* at 981. Ironically, although the Federal Circuit affirmed the district court’s \$375,000 reasonable royalty award in *McFarling III*, three years earlier in *McFarling II* the Federal Circuit vacated the district court’s parallel award of \$780,000 in damages for breach of contract as “grossly disproportionate to the loss that Monsanto actually suffered in loss of technology fees due to McFarling’s replanting of saved seeds.” *Monsanto Co. v. McFarling (McFarling II)*, 363 F.3d 1336, 1345 n.2 (Fed. Cir. 2004). The court went so far as to state that Monsanto’s argument that a multiplier was necessary to prevent McFarling from “gain[ing] a competitive

license fee – and, apparently, even to the entire retail purchase price of the seed – “would create a windfall for infringers like McFarling” who “would have a huge advantage over other farmers who took the standard . . . license.”²⁷

In doing so, however, the Federal Circuit engaged in just the sort of reasoning the Supreme Court has consistently rejected. The Federal Circuit failed to focus on particularly compelling evidence of “the pecuniary loss he (the patentee) has suffered from the infringement”²⁸ – i.e., the unpaid Technology Fee²⁹ – and instead justified the large reasonable royalty award on the sort of evidence the Supreme Court held the Patent Act mandated courts ignore – “whether the defendant has gained or lost by his unlawful acts.”³⁰ This sort of reasoning – stressing that infringers must not be permitted to benefit from their infringement – sounds squarely in deterrence, not compensation for actual pecuniary loss.

Nor is this an isolated example. The Federal Circuit has, in fact, affirmed damages awards that contain far more flagrant enhancements aimed at boosting the reasonable royalty measure of damages. In *Maxwell v. J. Baker, Inc.*, the Federal Circuit approved a jury verdict of almost double what, strangely enough, the jury itself found to be a reasonable royalty.³¹ In that case, the jury awarded reasonable royalty damages of over \$1.5 million (a \$0.05 per pair royalty applied to thirty-one million infringing pairs of shoes) for infringement of a patented system for fastening two mated shoes together to prevent their separation before sale.³² In response to special interrogatories the district court included in the jury charge, the jury went on to award an *additional* \$1.5 million in damages after finding that the patentee was injured by that amount “in excess of the amount of a reasonable royalty.”³³ In an apparent change of heart for a court that held just three months before in *Mahurkar v. C.R. Bard, Inc.* that it was an abuse of discretion for a district court

advantage in the marketplace” was “inimical to the compensatory nature of contract remedies: it sounds in deterrence, not compensation, and therefore suggests that the multiplier is in the nature of a penalty clause rather than a liquidated damages clause.” *Id.* at 1351.

27. *McFarling III*, 488 F.3d at 980.

28. *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 507 (1964) (quoting *Yale Lock Mfg. Co. v. Sargent*, 117 U.S. 536, 552 (1886)).

29. In the court’s view, this also included the fee paid to the seed distributors, which the court considered to be a portion of Monsanto’s license fee that the company allocated to the distributors. *McFarling III*, 488 F.3d at 979-80. Yet, even combining the two fees, the jury’s award of \$40 per bag exceeds the \$28.50 maximum per bag total “license” Monsanto charged by over 40%.

30. *Coupe v. Royer*, 155 U.S. 565, 582 (1895).

31. 86 F.3d 1098, 1108-11 (Fed. Cir. 1996).

32. *Id.* at 1101-02, 1108.

33. *Id.* at 1109 (quoting the district court’s jury charge).

to award “additional damages or a ‘kicker’ on top of a reasonable royalty,”³⁴ the *J. Baker* court affirmed the use of an additional jury instruction seemingly designed to provide the jury with the opportunity to do just that. Hinting at the importance of other, non-compensatory functions of patent damages, the court reasoned that a finder of fact calculating a reasonable royalty should consider not only a hypothetical negotiation between the parties but also “other factors that might warrant higher damages.”³⁵ Accordingly, the court held, it was not an abuse of discretion for the district court to instruct the jury to award in two separate amounts – “first . . . the royalty that two willing parties would negotiate . . . [and] second . . . the increase in the damages . . . based on other relevant factors” – what courts had previously instructed jurors to consolidate into a single damages award.³⁶

Courts have also awarded inflated royalties as equitable relief for post-verdict infringement in cases where a permanent injunction was not warranted or did issue but was stayed pending appeal. For example, though it declined to issue a permanent injunction, the district court in *Paice LLC v. Toyota Motor Corp.* imposed an ongoing royalty for Toyota’s post-verdict infringement almost four times greater than the reasonable royalty the jury awarded at trial for pre-verdict infringement.³⁷ Suggesting it was motivated by deterrence-related concerns, the *Paice* court stressed that “[a]nything less

34. 79 F.3d 1572, 1580-81 (Fed. Cir. 1996) (holding that the district court abused its discretion by adding an additional 9% “Pandaui kicker” – apparently designed to offset the patentee’s litigation expenses – on top of a 25.88% reasonable royalty award following a bench trial on damages).

35. *J. Baker*, 86 F.3d at 1109.

36. *Id.* at 1110. When the same patentee later brought suit against another shoe manufacturer, the Central District of California – following the Federal Circuit’s lead in *J. Baker* – approved a jury award of a \$0.06 per pair “reasonable royalty” plus “additional damage[s]” of \$0.15 per pair. *Maxwell v. Angel-etts of Cal.*, No. CV9910516DT(AJWX), 2001 WL 34133507, at *2 (C.D. Cal. July 9, 2001). In denying the defendant’s motion for judgment as a matter of law on damages, the court explained that “[i]n *Maxwell v. J. Baker*, the Federal Circuit explained that the factfinder must consider evidence of ‘additional factors’ to assist in the determination of adequate compensation.” *Id.* at *8. The court held that the jury’s award of additional damages was justified to “protect[] against . . . blatant misappropriation of patented inventions” – a practice which in this case “contributed to industry-wide lack of respect for Maxwell’s patent.” *Id.* at *9. The court further enhanced the patentee’s award by doubling her damages for willful infringement and awarding attorneys’ fees. *Id.* at *25-26.

37. 609 F. Supp. 2d 620, 624-31 (E.D. Tex. 2009) (awarding an ongoing royalty of \$98 per vehicle for post-verdict infringement, even though the jury awarded a reasonable royalty of only \$25 per vehicle for pre-verdict infringement).

would be manifestly unjust” because “Toyota is an adjudged infringer who chooses to continue infringing.”³⁸

In larger context, the cases described above are part of an ongoing trend in patent law nudging the reasonable royalty formulation further and further away from the traditional willing licensor-willing licensee negotiation and, therefore, from representing the market value of the patented invention. Despite traditional principles to the contrary, courts have increasingly held that, in setting reasonable royalties, finders of fact are not bound by the economic realities of the marketplace. For example, courts have long held that “established” royalties for the patent-at-issue – that is, uniform royalty amounts collected prior to infringement from “such a number of persons as to indicate a general acquiescence in its reasonableness”³⁹ – generally control in setting reasonable royalty damages.⁴⁰ After all, absent changed circumstances, no prospective licensee would offer to pay a royalty greater than the standard royalty the patentee requested from all its licensees. Nonetheless, courts now frequently stray upward from established, industry-wide licensing practices, holding that such royalties “do not necessarily establish a ceiling for the royalty that may be assessed after an infringement trial.”⁴¹ In *Bio-Rad Laboratories, Inc. v. Nicolet Instrument Corp.*, the Federal Circuit noted that “the industry royalty rate runs from three to ten percent of sales” yet affirmed the jury’s award of a reasonable royalty “approach[ing] one third of the selling price” of the accused product.⁴² Similarly, in *Bott v. Four Star Corp.*, the

38. *Id.* at 630. Though vacating the specific award at issue, the Federal Circuit implicitly approved the imposition of enhanced royalty rates for post-verdict infringement in *Amado v. Microsoft Corp.* 517 F.3d 1353, 1361-62 (Fed. Cir. 2008).

39. *Rude v. Westcott*, 130 U.S. 152, 165 (1889).

40. *See, e.g., Clark v. Wooster*, 119 U.S. 322, 326 (1886) (“It is a general rule in patent causes that established license fees are the best measure of damages that can be used.”); *Nickson Indus., Inc. v. Rol Mfg. Co.*, 847 F.2d 795, 798 (Fed. Cir. 1988) (“Where an established royalty exists, it will usually be the best measure of what is a ‘reasonable’ royalty.”). In fact, several cases suggest that, if one exists, courts *must* award damages in the amount of an established royalty rather than using the hypothetical negotiation model. *See, e.g., Marvel Specialty Co. v. Bell Hosiery Mills, Inc.*, 386 F.2d 287, 292 (4th Cir. 1967) (holding that evidence of the infringer’s profits had no “relevance to a reasonable royalty [because] [t]here was in this case an established royalty, and inquiry should not have extended beyond it.”); *Trell v. Marlee Elecs. Corp.*, 912 F.2d 1443, 1445 (Fed. Cir. 1990) (“A reasonable royalty ‘may be based upon an established royalty, if there is one, or if not upon a hypothetical royalty resulting from arm’s length negotiations between a willing licensor and a willing licensee.’” (quoting *Hanson v. Alpine Valley Ski Area, Inc.*, 718 F.2d 1075, 1078 (Fed. Cir. 1983))).

41. *Bio-Rad Labs., Inc. v. Nicolet Instrument Corp.*, 739 F.2d 604, 617 (Fed. Cir. 1984) (citing *Tektronix, Inc. v. United States*, 552 F.2d 343, 347 n.5 (Ct. Cl. 1977)), *abrogated in part on other grounds by Markman v. Westview Instruments, Inc.*, 52 F.3d 976 (Fed. Cir. 1995).

42. 739 F.2d at 617.

Eastern District of Michigan, acting as the finder of fact, awarded a reasonable royalty of 5% of sales, rejecting evidence of an established 3% royalty in the industry because, unlike other market participants, the patentee was unwilling to license to the infringer.⁴³

Perhaps even more troubling, the Federal Circuit has stated that reasonable royalties are not capped at the level of an infringer's projected profits. Common sense dictates that no rational party will strike a bargain for more than its expected profits from the deal.⁴⁴ Federal Circuit precedent once recognized this, holding that it "is implicit" that a reasonable royalty will leave the infringer with a reasonable profit⁴⁵ and that to suggest otherwise would be "absurd."⁴⁶ However, under recent Federal Circuit precedent, this is no long-

43. 229 U.S.P.Q. 241, 247-48 (E.D. Mich. 1985) (cited with approval by the Federal Circuit in *Fromson v. W. Litho Plate & Supply Co.*, 853 F.2d 1568, 1575 n.11 (Fed. Cir. 1988), *overruled on other grounds by* *Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.*, 383 F.3d 1331 (Fed. Cir. 2004)), *aff'd in part, rev'd in part*, 807 F.2d 1567. If its punitive intent was not already clear, the court also ominously stated that, were it not also awarding lost profits on other sales, "the rate would be substantially higher." *Bott*, 229 U.S.P.Q. at 248.

44. This is not to say that an infringer's *actual* profits should cap reasonable royalty damages, see *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1577 (Fed. Cir. 1995) (Nies, J., dissenting) ("[An infringer] is not guaranteed a profit, of course, but anticipated profit is a factor in hypothetical negotiations."), though they may be quite probative of the infringer's expectations, see *id.* (arguing that evidence of both parties actual net profits – 6-10% for the patentee and 2.3% for infringer – should have negated the district court's finding "that the dock equipment industry is so lucrative that net profits in the 50-75[%] range could be anticipated"). To be sure, a licensee's actual profits may differ considerably from the profits it projected at the time it negotiated the license.

45. *Hanson v. Alpine Valley Ski Area, Inc.*, 718 F.2d 1075, 1081 (Fed. Cir. 1983) (quoting *Square Liner 360°, Inc. v. Chisum*, 691 F.2d 362, 377 (8th Cir. 1982)); see also *Tektronix, Inc. v. United States*, 552 F.2d 343, 349 (Ct. Cl. 1977) ("[S]tart with the infringer's selling price, deduct its costs in order to find its gross profit, then allocate to the infringer its normal profit, and then end up with the residual share of the gross profit which can be assigned to the patentee as its royalty."); *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1157-58 (6th Cir. 1978) ("A reasonable royalty is an amount which a person, desiring to manufacture and sell a patented article, as a business proposition, would be willing to pay as a royalty and yet be able to make and sell the patented article, in the market, at a reasonable profit." (quoting *Goodyear Tire & Rubber Co. v. Overman Cushion Tire Co.*, 95 F.2d 978, 984 (6th Cir. 1937)); *TWM Mfg. Co. v. Dura Corp.*, 789 F.2d 895, 899 (Fed. Cir. 1986) (affirming reasonable royalty calculated to leave the infringer with an anticipated profit equal to "the industry standard net profit").

46. *Lindemann Maschinenfabrik GmbH v. Am. Hoist & Derrick Co.*, 895 F.2d 1403, 1408 (Fed. Cir. 1990) (stating that the patentee's expert's "opinion that [the infringer] 'would agree to pay a royalty in excess of what it expected to make in profit' was, in light of all the evidence in this case, absurd."); see also *Rite-Hite*, 56 F.3d at 1577 (Nies, J., dissenting) ("It is simply beyond reality to infer that the manage-

er the law. In *Golight, Inc. v. Wal-Mart Stores, Inc.*, the court affirmed the district court's assessment of a reasonable royalty of \$31.80 per infringing unit despite proof that the infringer forecast a mere \$8 per unit profit, holding that "[t]here is no rule that a royalty be no higher than the infringer's net profit margin."⁴⁷ Likewise, in *Rite-Hite Corp. v. Kelley Co.*, an en banc Federal Circuit affirmed a reasonable royalty award that Judge Nies noted in his dissent was "more than the price of [one of the patentee's products], more than 75 percent of the average net sale price of [the infringer's product], and 33 times greater than [the infringer's] net profit on its entire machine."⁴⁸

Indeed, Lemley and Shapiro's empirical analysis of reasonable royalties awarded between 1984 and 2005 bears out that in practice court-awarded royalties have, on average, exceeded the profit margin across all industries by 5% of sales.⁴⁹ As a result, reasonable royalty damages have become so lucra-

ment of [the infringer] would have negotiated a royalty which, it was evident at the time, would destroy their business and jobs.").

47. 355 F.3d 1327, 1338 (Fed. Cir. 2004) (quoting *State Indus., Inc. v. Mor-Flo Indus., Inc.*, 883 F.2d 1573, 1580 (Fed. Cir. 1989)). In *Mor-Flo*, the Federal Circuit affirmed a reasonable royalty of 3% of sales despite evidence that the infringer's actual net profit margin was 2.1% during the seventeen months prior to the issuance of the patent-at-issue. 883 F.2d at 1576. The *Mor-Flo* court did not, however, hold that reasonable royalty damages could exceed the infringer's anticipated profits at the time of infringement. In fact, the language used in the *Mor-Flo* opinion implicitly supports placing such a cap on damages: "The determination of a reasonable royalty, however, is based not on the infringer's profit margin, but on what a willing licensor and licensee would bargain for at hypothetical negotiations on the date infringement started" – an amount that would not exceed the net present value of the infringer's expected future profits. *Id.* at 1580. Instead, the court reasoned, given that the patented invention covered an expanding and proven line of products and that the infringer also profited from collateral sales, that the infringer would have projected future net profitability exceeding its then-current profit margin on infringing products alone. *Id.* at 1580-81; see also *Rite-Hite*, 56 F.3d at 1577 (Nies, J., dissenting) ("Although this court has sanctioned royalty awards that exceeded the infringer's actual net profits, we have done so only when there was evidence that the infringer actually anticipated greater net profits.").

In *Golight*, the Federal Circuit took the additional step of holding that a reasonable royalty can exceed even an infringer's profits as forecast at the time of infringement. 355 F.3d at 1338 (\$8 per unit was the infringer's "profit forecast for the product" (emphasis added)). The court neither acknowledged that it was extending the law nor attempted to distinguish its holdings to the contrary in cases such as *Lindemann* and *Hanson*. See *id.* It instead reasoned that the infringer's profit forecast merely showed what the infringer "might have preferred to pay, which is not the test for damages." *Golight*, 355 F.3d at 1338 (citing *Rite-Hite*, 56 F.3d at 1555).

48. 56 F.3d at 1576 (Nies, J., dissenting).

49. *Patent Holdup and Royalty Stacking*, *supra* note 18, at 2034-35 (analyzing all reasonable royalty damages awards reported in Westlaw between 1982 and February 2005 that could be calculated as a percentage of the sale price of infringing units).

tive that patentees who are otherwise perfectly capable of proving lost profits frequently choose to pursue royalties in hopes of a bigger payday.⁵⁰

D. Heads-I-Win, Tails-You-Lose: Reasonable Royalties as an Infringement Deterrent

Why have courts increasingly abandoned what were once established principles, firmly rooted in pecuniary compensation, in favor of punishing infringers with damages awards far greater than prevailing license rates in the industry and much more than the “reasonable” royalty the infringer would have agreed to pay in a hypothetical negotiation? According to the Federal Circuit and other courts following suit, they do so to deter infringement – that is, to arm patentees with a figurative stick to encourage potential infringers to license their patent.⁵¹

Lemley and Shapiro found that reasonable royalty rates averaged 13.1% of sales during their study period – well above the average profit margin of just 8.3%. *Id.*

50. *Distinguishing Lost Profits*, *supra* note 2, at 12-13.

51. Although the Federal Circuit’s reasons for awarding inflated royalties consistently sound in deterrence, the court rarely says so directly and strives to characterize deterrence-based enhancement as “additional” compensation. Perhaps no quote captures the inherent tension in this line of thought, which both downplays and yet purports to honor the market value of the patented invention, as well as the following one:

[T]he Patent Act creates an incentive for innovation. The economic rewards during the period of exclusivity are the carrot. The patent owner expends resources in expectation of receiving this reward. Upon grant of the patent, the only limitation on the size of the carrot should be the dictates of the marketplace. Section 284 attempts to ensure this result [i.e., a reward set according to the dictates of the marketplace] by deterring infringers and recouping market value lost when deterrence fails.

King Instruments Corp. v. Perego, 65 F.3d 941, 950 (Fed. Cir. 1995).

At times, there also appears to be an equitable component to courts’ decisions to award inflated damages. Some courts have justified large royalty awards, in part, by stating that “[t]he willing licensee/licensor approach must be flexibly applied as a ‘device in [the] aid of justice.’” *TWM Mfg. Co. v. Dura Corp.*, 789 F.2d 895, 900 (Fed. Cir. 1986) (quoting *Cincinnati Car Co. v. N.Y. Rapid Transit Corp.*, 66 F.2d 592, 595 (2d Cir. 1933)). *See also* *Maxwell v. Angel-etts of Cal.*, No. CV9910516DT(AJWX), 2001 WL 34133507, at *9 (C.D. Cal. July 9, 2001) (“[A]dditional compensation above the ‘willing parties’ reasonable royalty is required if the inventor is to have substantial justice.”). This line of reasoning appeals not only to the economics of deterrence but also to broader notions of “fairness” by defending discretionary increases in damages as a means to achieve “justice” by punishing bad actors – generally large companies that blatantly copied the inventions of small, non-manufacturing patentees. *See id.* (noting that the infringer’s “actions contributed to industry-wide lack of respect for [the individual, non-manufacturing patentee’s] patent, crippling licensing efforts and creating additional damages”); *Fromson v. W. Litho Plate & Supply Co.*, 853 F.2d 1568, 1574 (Fed. Cir. 1988) (explaining that the

When affirming inflated awards, the Federal Circuit has repeatedly expressed fear that, absent considerable upward movement from royalties calculated according to the traditional willing licensor-willing licensee negotiation model, rational actors will have a strong incentive to infringe when faced with the choice to either license the patent or misappropriate the technology.⁵² Referring to this as a “heads-I-win, tails-you-lose”⁵³ or “can’t-lose”⁵⁴ position for potential infringers, the Federal Circuit argues that if infringers face nothing more than paying damages after litigation in the same royalty amount they would have had to pay to license the patent-at-issue in the market, potential infringers will rationally choose to infringe and take their chances in court.⁵⁵

Although this argument is correct in principle – that is, a rational actor will of course choose to incur an uncertain future cost of at most \$X over a certain \$X cost now – it is founded on a naively simplistic conception of patent law that ignores virtually every other incentive to potential infringers.

hypothetical willing licensee-willing licensor model for setting reasonable royalties is “problematic as a mechanism for doing justice to individual, non-manufacturing patentees”), *overruled on other grounds* by *Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.*, 383 F.3d 1331 (Fed. Cir. 2004). However, as I discuss *infra* at Part III.A, the Patent Act already provides a built-in mechanism for penalizing blatant, “willful” infringers – especially those who attempt to take advantage of smaller patentees – with up to treble damages.

52. See *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1109 (Fed. Cir. 1996); *King Instruments*, 65 F.3d at 951; *Fromson*, 853 F.2d at 1574-75; *TWM Mfg.*, 789 F.2d at 900; *Stickle v. Heublein, Inc.*, 716 F.2d 1550, 1563 (Fed. Cir. 1983); *Angel-etts of Cal.*, 2001 WL 34133507, at *9.

53. *Stickle*, 716 F.2d at 1563 (“[W]e would add that the trial court may award an amount of damages greater than a reasonable royalty so that the award is ‘adequate to compensate for the infringement’ . . . [T]he infringer would have nothing to lose, and everything to gain if he could count on paying only the normal, routine royalty non-infringers might have paid. As said by this court in another context, the infringer would be in a ‘heads-I-win, tails-you-lose’ position.” (quoting *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1158 (6th Cir. 1978))).

54. *J. Baker*, 86 F.3d at 1109 (“[T]he use of a willing licensee-willing licensor model for determining damages ‘risks creation of the perception that blatant, blind appropriation of inventions patented by individual, nonmanufacturing inventors is the profitable, can’t lose course.’” (quoting *Fromson*, 853 F.2d at 1575)).

55. See, e.g., cases cited *supra* notes 53-54; see also Lemley & Tangri, *supra* note 14, at 1111 (“The fact that damages in many patent cases will be limited to a reasonable royalty creates problems of deterrence. Specifically, it may under-deter willful infringers. A reasonable royalty is the amount an accused infringer would have had to pay the patentee to license the patent in the first place. In the absence of treble damages for willful infringement, if a company knows that retroactively paying a reasonable royalty is the worst that will happen if it is found to infringe, it may be more willing take its chances in court.”). See also Landers, *supra* note 2, at 336-38; Richard T. Rapp & Phillip A. Beutel, *Patent Damages: Updated Rules on the Road to Economic Rationality*, 572 PRACTISING L. INST. 865, 867-68 (1999).

The next Part of this Article shows that, to the extent they are even aware of adverse patent rights, potential infringers face considerable pressure to avoid and quickly resolve patent disputes.

III. THE RATIONAL INFRINGEMENT MYTH

The Federal Circuit's "heads-I-win, tails-you-lose" model is accurate only if we take for granted that an infringer actually faces no litigation outcome more harrowing than paying damages in the amount it would have cost to license the invention *ex ante* in the marketplace. For a litany of reasons, this assumption could not be further from the truth. This Part shows that, even without deterrence-based enhancements, a potential infringer's expected cost of infringing far exceeds the royalty it could negotiate in the marketplace because a patentee who successfully proves infringement will almost certainly be entitled to remedies with a collective monetary value far exceeding the market value of the patented invention.

A. The Willfulness Doctrine and Others Exist to Deter Blatant Infringers

The most striking reason why the Federal Circuit's "heads-I-win, tails-you-lose" model is flawed is that patent law already incorporates several deterrents specifically designed to discourage blatant infringement. The most notable example is found in section 284 of the Patent Act, which expressly authorizes courts to award up to treble damages for patent infringement.⁵⁶ Though the statute fails to specify how to exercise this discretion to enhance damages, courts routinely multiply damages to punish particularly blatant, or "willful," acts of infringement under what is known as the "willfulness doctrine."⁵⁷

While many factors may come into play when determining whether an infringer's actions merit enhanced damages for willfulness, courts primarily consider (i) "whether the infringer deliberately copied" the patented invention and (ii) "whether the infringer . . . formed a good-faith belief that [the patent] was invalid or . . . not infringed."⁵⁸ Accordingly, a prospective infringer in

56. 35 U.S.C. § 284 (2006) ("[T]he court may increase the damages up to three times the amount found or assessed.").

57. *See, e.g., In re Seagate Tech., LLC*, 497 F.3d 1360, 1371 (Fed. Cir. 2007) ("[T]o establish willful infringement, a patentee must show by clear and convincing evidence that the infringer acted despite an objectively high likelihood that its actions constituted infringement of a valid patent."); *Mathis v. Spears*, 857 F.2d 749, 754 (Fed. Cir. 1988) ("Provisions for increased damages . . . are available as deterrents to blatant, blind, willful infringement of valid patents.").

58. *See, e.g., Read Corp. v. Portec, Inc.*, 970 F.2d 816, 826-27 (Fed. Cir. 1992) (listing factors courts consider when applying the willfulness doctrine) (quoting *Bott v. Four Star Corp.*, 807 F.2d 1567, 1572 (Fed. Cir. 1986)).

the Federal Circuit's so-called "can't-lose" position – i.e., an infringer making the deliberate decision to misappropriate patented technology and force litigation rather than paying for an ex ante license – would almost certainly qualify as a willful infringer and face up to treble damages if sued by the scorned patentee. In other words, to make the rational-infringement decision the Federal Circuit fears market-level reasonable royalties will facilitate, an infringer must both be aware of the patentee's rights and, nevertheless, choose to disregard those rights and deliberately misappropriate the patented invention. By virtue of these facts, the "rational" infringer now faces the very real possibility of paying not merely a reasonable royalty but three times that amount.⁵⁹ The prospect of exemplary damages, then, renders this so-called "rational" infringement irrational and the Federal Circuit's "can't-lose" scenario internally inconsistent.⁶⁰

59. In fact, in many of the cases where courts award inflated reasonable royalty damages, courts *also award enhanced damages under the willfulness doctrine*. See, e.g., *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1379, 1385 (Fed. Cir. 2004) (affirming district court's award of treble damages under the willfulness doctrine, even though reasonable royalty damages were already many times larger than patentee's lost "Technology Fee"); *Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1338-39 (Fed. Cir. 2004) (affirming district court's finding of willfulness in addition to its award of reasonable royalty damages several times larger than the accused infringer's projected profits); *Maxwell v. Angel-etts of Cal.*, No. CV9910516DT(AJWX), 2001 WL 34133507, at *12-25 (C.D. Cal. July 9, 2001) (doubling award for willfulness, even though "compensatory" damages amount already incorporated "additional damages" more than twice as large as the "reasonable royalty" awarded by the jury).

60. Furthermore, it is worth noting that, in addition to deterring those making a conscious decision to infringe and force litigation, the willfulness doctrine addresses the same equitable concerns underlying inflated reasonable royalty awards. See *supra* note 51. In several cases, courts have taken into consideration factors such as the parties' relative sizes and financial conditions when determining how much to enhance damages. See, e.g., *Portec*, 970 F.2d at 827 ("[O]ther circumstances which courts appropriately have considered, particularly in deciding on the extent of enhancement, are . . . Defendant's size and financial condition."); *St. Regis Paper Co. v. Winchester Carton Corp.*, 410 F. Supp. 1304, 1309 (D. Mass. 1976) ("This is an appropriate case to award double damages. If defendant were the giant and plaintiff the small independent, I would make it treble, and if the Court of Appeals should think my distinction inappropriate, then the award should be treble rather than single.").

Why the Federal Circuit fails to channel its ire at infringers through the willfulness doctrine rather than inflated reasonable royalties is anyone's guess. One possibility is that courts find the willfulness doctrine too narrow or inflexible to be a sufficient deterrent, cf. Eric C. Wrzesinski, Comment, *Breaking the Law to Break into the Black: Patent Infringement as a Business Strategy*, 11 MARQ. INTELL. PROP. L. REV. 193, 206 (2007) (arguing that U.S. patent law does not go far enough to protect patentees from willful infringement), though it is certainly far from true that only the most culpable infringers are subjected to paying enhanced damages. See *Patent Holdup and Royalty Stacking*, *supra* note 18, at 2037 ("[A]n infringement can be deemed willful under current law even if the defendant developed its product independently

In addition, patent law provides a number of other provisions that, like the willfulness doctrine, courts may use to punish infringers. For example, under section 283 of the Patent Act, courts may – and do quite frequently once infringement is established – grant injunctions prohibiting infringers from practicing the patented invention.⁶¹ The prospect of being put out of business – and losing much or all of the value of investments not readily diverted to other productive uses – may, in many cases, be the most powerful infringement deterrent of all. Together with a high probability of issuance after losing on the merits,⁶² the thought of watching one’s fixed investments sit unused – at least prior to successfully bargaining back the right to practice the invention from a position of extreme disadvantage (more on this below) – serves as a substantial deterrent to infringement, even to those infringers who believe they can avoid exemplary damages.⁶³

and without knowledge of the plaintiff’s patent.”). Even if this is the case, however, it is no justification for shifting deterrence to an ill-suited area like reasonable royalty law. As discussed *infra* at Part VI, the proper solution is to reform willfulness law in an effort to provide optimal deterrence.

61. 35 U.S.C. § 283 (2006). Preliminary injunctions are also sometimes available in patent litigation but are quite rare. See generally *Smith Int’l, Inc. v. Hughes Tool Co.*, 718 F.2d 1573, 1578 (Fed. Cir. 1983) (“[C]ourts have over the years developed a reluctance to resort to preliminary injunctions in patent infringement cases, and have constructed a rather strict standard for the granting of this form of equitable relief.”). Generally, a preliminary injunction may be defeated simply by raising a good faith challenge to the patentee’s infringement claims or to the asserted patent’s validity. See *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1350-51 (Fed. Cir. 2001) (“If BN raises a substantial question concerning either infringement or validity, i.e., asserts an infringement or invalidity defense that the patentee cannot prove ‘lacks substantial merit,’ the preliminary injunction should not issue.”). As discussed further *infra*, neither is particularly difficult to challenge. See *infra* note 70 (noting that litigated patents are invalidated 46% of the time and that only about 25% of patent suits are successful).

62. This likelihood may be somewhat on the decline in light of the Supreme Court’s recent decision in *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006), at least when the patentee and infringer are not competitors. See John M. Golden, “*Patent Trolls*” and *Patent Remedies*, 85 TEX. L. REV. 2111, 2113 (2007) (“Since the Supreme Court issued its opinion in *eBay*, district courts appear to have consistently denied permanent injunctions in cases where an infringer has contested the patent holder’s request for such relief and the infringer and patent holder were not competitors”); Paul Janicke, *Patent Litigation Remedies: Some Statistical Observations*, at 28 (finding that, post-*eBay*, the rate of denial of permanent injunctions rose from 16% to 25%), http://www.patentmatter.com/issue/Patent_Litigation_Remedies-Janicke.ppt#1 (last visited on Sept. 5, 2009).

63. See *Patent Holdup and Royalty Stacking*, *supra* note 18, at 1993 (“[T]he threat of an injunction can enable a patent holder to negotiate royalties far in excess of the patent holder’s true economic contribution.”); Lemley & Tangri, *supra* note 14, at 1112 (“The risk of being shut down by an injunction that will render a defendant’s manufacturing investments useless may be a powerful reason not to infringe.”). On

Further – in addition to the obvious deterrent of having to pay one’s own defense costs – the Patent Act provides that courts may award prevailing parties reasonable attorneys’ fees “in exceptional cases.”⁶⁴ Like enhanced damages for willful infringement, attorneys’ fees awards exist for the specific purpose of “deter[ing] . . . blatant, blind, willful infringement of valid patents.”⁶⁵ In practice, such awards can become quite substantial. Indeed, in patent cases of even relatively modest size, attorneys’ fees for each litigant generally reach seven figures.⁶⁶ Accordingly, even a relatively small chance of incurring such a large cost can have a substantial effect on a potential infringer’s decision-making.⁶⁷

B. Reasonable Royalties Already Incorporate a Premium

The Federal Circuit’s “heads-I-win, tails-you-lose” model also fails to acknowledge that reasonable royalties awarded by even the most market-conscious courts generally exceed those negotiated in the marketplace for a number of reasons. Even ignoring patent law’s built-in deterrents and litigation costs, the expected value of court-awarded royalties alone will place pressure on accused infringers to eschew litigation and negotiate a settlement *ex ante*. As mentioned above, black-letter law ensures that royalty awards are

the other hand, the deterrent effect of a permanent injunction is virtually non-existent when the patent-at-issue is nearing the end of its term and will likely expire before the patentee can file suit and prove infringement. *See* Lemley & Tangri, *supra* note 14, at 1112.

64. 35 U.S.C. § 285 (2006).

65. *Mathis v. Spears*, 857 F.2d 749, 754 (Fed. Cir. 1988). *See also* *Machinery Corp. of Am. v. Gullfiber AB*, 774 F.2d 467, 472 (Fed. Cir. 1985) (“It is not contemplated that the recovery of attorney’s fees will become an ordinary thing in patent suits, but the discretion given the court in this respect, in addition to the present discretion to award triple damages, will discourage infringement of a patent by anyone thinking that all he would be required to pay if he loses the suit would be a royalty.” (quoting S. REP. NO. 1503 (1946))).

66. AM. INTELL. PROP. LAW ASS’N, REPORT OF ECONOMIC SURVEY 2007, at 25-26 (reporting that the cost of patent litigation can reach \$3 million per litigant even if the case never goes to trial).

67. *But cf.* *Golden*, *supra* note 62, at 2133 (arguing that the effect of an accused infringer’s litigation costs on the accused infringer is overstated because the same costs, although likely much smaller in magnitude for patent infringement plaintiffs, also pressure patentees to settle prematurely). Courts may also award prejudgment and post-judgment interest on damages to ensure that victorious patentees recover at least an approximation of the net present value of the royalty they lost years ago. 28 U.S.C. § 1961 (2006); *Gen. Motors Corp. v. Devex Corp.*, 461 U.S. 648, 657 (1983) (“[P]rejudgment interest should ordinarily be awarded absent some justification for withholding such an award . . .”). In addition, courts will ordinarily award costs (other than attorneys’ fees) to the prevailing party in any civil litigation as a matter of course. FED. R. CIV. P. 54(d)(1).

naturally inflated by requiring courts to assume that the patent-at-issue is valid and infringed when attempting to reconstruct royalty negotiations after the fact.⁶⁸ In the real world, of course, no prospective licensee would ever make this assumption. As even the Federal Circuit will admit, patents are at best probabilistic rights: “[a]n honest opinion [as to the validity and scope of a patent] is more likely to speak of probabilities than certainties.”⁶⁹ Indeed, statistics show that litigated patents are invalidated almost half the time, and, ultimately, only about a quarter of patent claims end in victory for the patentee.⁷⁰ Accordingly, an ex post assumption of validity and infringement heavily favors the patentee, given that, left to their own devices in the marketplace, we would expect parties to negotiate a royalty discounted by the likelihood that the patent-at-issue might be invalidated or found not infringed if litigation ensues.⁷¹

Furthermore, even when courts fastidiously attempt to reverse-engineer market rates, there is good reason to believe that the royalties they award will

68. See *supra* note 14 and accompanying text.

69. *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 829 n.9 (Fed. Cir. 1992). Mark A. Lemley & Carl Shapiro, *Probabilistic Patents*, J. ECON. PERSP., Spring 2005, at 75, available at <http://www.atypon-link.com/AEAP/doi/pdf/10.1257/0895330054048650> [hereinafter *Probabilistic Patents*] (explaining that patent rights are properly viewed as “probabilistic rights”).

70. See John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185, 205, 208 tbl.1 (1998) (finding that approximately 46% of patents litigated to a final determination (appeal, trial, or summary judgment) are invalidated); Paul M. Janicke & LiLan Ren, *Who Wins Patent Infringement Cases?*, 34 AIPLA Q.J. 1, 8 tbl.1 (2006) (finding that, in cases including an appeal to the Federal Circuit, patentees ultimately succeed in proving infringement only 24.4% of the time); see also Kimberly A. Moore, *Judges, Juries and Patent Cases – An Empirical Peek Inside the Black Box*, 99 MICH. L. REV. 365, 385-86 (2000) (finding that patentees lose 42% of the time at trial); ARON LEVKO ET AL., PRICEWATERHOUSECOOPERS, A CLOSER LOOK, PATENT LITIGATION STUDY: DAMAGES AWARDS, SUCCESS RATE AND TIME-TO-TRIAL 8-10 & charts 5A, 5B, 5C, 6 & 7A (2008), available at http://www.pwc.com/en_US/us/forensic-services/assets/2008_patent_litigation_study.pdf (finding that, between 1995 and 2007, patentees won summary judgment or at trial only 37% of the time).

71. Expanding on the Lemley-Shapiro benchmark royalty model introduced *supra*, the royalty we would expect parties to negotiate ex ante, taking into account uncertainty as to the validity and scope of the patent-at-issue, is given by the equation $B \cdot \Theta \cdot V$, where $\Theta \leftarrow [0,1]$ represents the probability the patent is valid, enforceable, and infringed. See *Patent Holdup and Royalty Stacking*, *supra* note 18, at 1999-2000; see also Lemley & Tangri, *supra* note 14, at 1111 n.76 (“Ex ante royalty negotiations will take into account the possibility that a patent will be held invalid or not infringed. A royalty agreement over a valid, infringed patent will tend to produce a significantly higher royalty rate.”). Returning to the example introduced *supra* in note 18 (i.e., where $V = \$10$ and $B = 0.5$), if the parties estimate there is only a 40% chance that the patent-at-issue is valid and infringed (i.e., $\Theta = .4$), we would expect them to negotiate a royalty of \$2 per unit (i.e., $B \cdot \Theta \cdot V = 0.5 \cdot 0.4 \cdot \$10 = \$2$).

exceed market-level rates despite their best intentions. As Lemley and Shapiro note, when courts look to the market for guidance, circularity ensures inflated royalties.⁷² Because rates negotiated in the marketplace reflect what recovery a patentee might achieve through litigation, so long as the industry-wide expected value of litigation reflects (among other premiums) courts' willingness to award punitive enhancements, rates freely negotiated between private parties in the shadow of litigation will reflect that premium too. Accordingly, even if a court looks to industry licensing rates for guidance, the bargained-for royalties it will consider already incorporate a premium based on the potential that patentees might receive inflated awards in litigation.⁷³ In short, past awards influence current license negotiations, which influence future awards and so on, each iteration magnifying the premium inherent in previous "generations" of negotiated and awarded royalties.

Further, the inflationary effect of this circularity is accelerated by the fact that publicly available royalty information contains a disproportionate number of large payments. Public data on license agreements is skewed because private settlements of patent disputes are generally kept confidential unless they are large enough to have a "material" effect on either party's financial condition and thus require disclosure under SEC Rule 10b-5.⁷⁴ Therefore, because larger settlements are more likely to be material, they are more likely to be disclosed and, thus, also more likely to be included in royalty data relied upon by expert witnesses⁷⁵ and courts. As a result, it is predominantly the largest negotiated royalties that influence future damages awards.

72. *Patent Holdup and Royalty Stacking*, *supra* note 18, at 2022.

73. *Id.* ("Since negotiated royalties reflect a premium based on holdup, so will be reasonable royalties awarded by the court."). Although Lemley and Shapiro approach circularity from the opposite viewpoint – i.e., the possibility that patentees' ability to extract excessive royalties in the marketplace will be reflected in court-awarded royalties and consequently in subsequent negotiated royalties (and so on) – the principle applies with equal force starting with excessive judicial awards, which will be reflected in negotiated royalties going forward (and so on).

74. *Id.* at 2022, 2030 & n.83. Thus, experts testifying about damages negotiated in the marketplace can only opine on royalties exceeding this cut-off. *See id.*

75. Landers notes that expert testimony on damages is already suspect because district courts do very little to filter out unreliable economic evidence. *See* Landers, *supra* note 2, at 331 ("[T]here is a significant risk that fact-finders are deciding royalty questions based on patent valuation evidence that lacks a credible basis."). Ironically, courts generally will not exclude damages theories as unsound unless they depart significantly from the so-called "rule of thumb," which suggests that reasonable royalties should hover around 25% of the infringer's pre-tax profits – a baseline that itself is arbitrary and not rooted in economic theory. *See id.* at 332-35.

C. Patent Holdup

Opportunities for “patent holdup” – i.e., the opportunistic use of patent rights to extract above-benchmark compensation – also cast doubt on the Federal Circuit’s “heads-I-win, tails-you-lose” model by encouraging accused infringers to settle quickly at premium rates rather than roll the dice in court and face what could be catastrophic results.⁷⁶ One source of holdup power is patent law doctrines that occasionally allow a patentee to extract compensation for infringers’ use of technology the patentee did not invent.

Doctrines like the “entire market value rule” and the “convoyed sales” doctrine, which import lost-profits-style market exclusion remedies into reasonable royalty analysis, overcompensate patent owners by allowing them to earn a royalty on value they did not create.⁷⁷ Under the entire market value rule, a patentee can recover damages based on the value of an entire complex product, even though its patent covers only one of that product’s components, if the patentee can establish that one practicing the invention could reasonably anticipate selling the unpatented and patented components together.⁷⁸ A patentee can extend its patent rights even further under the “convoyed sales” doctrine, which allows a patentee to sweep spare parts and other items sold

76. For an overview of current literature on holdup opportunities in the patent system, see Thomas F. Cotter, *Patent Holdup, Patent Remedies, and Antitrust Responses*, 34 J. CORP. L. 1151, 1151 nn.3-4 (2009).

77. *Distinguishing Lost Profits*, *supra* note 2, at 10 (“[T]he Federal Circuit has even imported the concept of ‘convoyed sales’ of non-infringing goods to the reasonable royalty context, suggesting that a reasonable royalty must include some compensation to the patentee for the value the defendant obtained from sales of unpatented goods that would likely have been sold alongside the patented ones. This suffers from the same flaw as the application of the entire market value rule – it attributes the value of unpatented technologies to the patent owner in circumstances in which the patent owner would not have made sales of those technologies, and therefore in which the infringer would have had to pay to develop or acquire the technology from somewhere else.”). See also Brian J. Love, Note, *Patentee Overcompensation and the Entire Market Value Rule*, 60 STAN. L. REV. 263, 276-77 (2007) (showing that the entire market value rule is frequently applied to award patentees royalties on unpatented components that have value independent of the patented invention).

78. *Distinguishing Lost Profits*, *supra* note 2, at 6. The entire market value rule allows a patentee to include in its royalty base any component of a complex infringing product that (i) functions together with the patented invention as part of a single “functional unit,” *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1550 (Fed. Cir. 1995), and (ii) the patentee or its licensee could reasonably anticipate selling along with the patented invention, *Paper Converting Mach. Co. v. Magna-Graphics Corp.*, 745 F.2d 11, 23 (Fed. Cir. 1984). Recently introduced patent reform legislation would, if enacted, codify the entire market value rule and allow a patentee to base its damages on the value of an entire infringing product provided its patent is “the predominant basis for market demand for [that] infringing product or process.” S. 515, 111th Cong. §§ 1(a), 4(a) (2009) (“Patent Reform Act of 2009”).

along with the infringing product into the damages base on which the applicable royalty rate will apply.⁷⁹ A manufacturer selling a complex product – such as a personal computer – that may incorporate hundreds or even thousands of individually patentable components, and moreover may be sold with any number of related products, can hardly negotiate on equal footing with a patentee armed with the potential right to collect royalty damages on the infringer's total package – RAM, ROM, chip, keyboard, monitor, and all.⁸⁰

As suggested above, permanent injunctions also provide patentees with the power to extract above-market settlements, especially in situations where the accused infringer has made significant design-specific investments. With a permanent injunction, a patent owner can totally shut down a defendant's infringing operations.⁸¹ This threat can be quite powerful when an accused infringer has incurred substantial costs that are specifically related to the patented invention and not easily redeployed to other noninfringing uses. When negotiating a royalty against such an accused infringer, we would expect the patent owner to bargain from a particularly strong position by virtue of its potential right to shut down the accused infringer's business, rendering its invention-specific investments worthless.⁸²

In industries requiring significant up-front investment, the threat of an injunction is quite potent: after an investment of “\$3 billion in a new semiconductor fab or \$800 million in developing . . . a new drug,” an infringer “can hardly be expected to throw those product-specific investments away every time the company is confronted with one of the more than two million patents currently in force in the United States.”⁸³ The holdup power of permanent injunctions is particularly acute when a patentee accuses technology

79. *Distinguishing Lost Profits*, *supra* note 2, at 6. Courts use various terminology for these items, including “collateral” and “derivative” sales. *See, e.g.*, *Carborundum Co. v. Molten Metal Equip. Innovations, Inc.*, 72 F.3d 872, 881 n.8 (Fed. Cir. 1995) (“The expression ‘convoyed sales’ should preferably be limited to sales made simultaneously with a basic item; the spare parts here should best be called ‘derivative sales.’”); *TWM Mfg. Co. v. Dura Corp.*, 789 F.2d 895, 901 (Fed. Cir. 1986) (“Where a hypothetical licensee would have anticipated an increase in sales of *collateral unpatented items* because of the patented device, the patentee should be compensated accordingly.” (emphasis added)). Other courts simply consolidate convoyed sales with the entire market value rule. *See King Instruments Corp. v. Perego*, 65 F.3d 941, 956 (Fed. Cir. 1995) (“When a patentee either seeks damages on an entire machine where its patent covers only a patented component or seeks damages for lost sales of unpatented goods sold along with a patented device (‘convoyed’ sales), a patentee must satisfy the entire market value rule . . .”).

80. *See Love*, *supra* note 77, at 284-89 (examining personal computers as a case study under the entire market value rule).

81. *See, e.g.*, *Lemley & Tangri*, *supra* note 14, at 1112.

82. *Id.*

83. *Id.* 14 at 1117.

essential to an industry-wide standard.⁸⁴ When standards have become popular and are expected by customers, a patent owner asserting rights covering that standard can holdup an entire industry of firms, each of which have little choice but to negotiate with the patentee because the market will not accept a noninfringing alternative.⁸⁵

Opportunities for holdup are especially troubling because patent prosecution rules make it surprisingly simple for patentees to capture products and standards introduced into the market well after their patent application was filed – a practice known as “submarine patent[ing].”⁸⁶ Essentially, any savvy patentee can file an application with a broad disclosure and patiently lie in wait until a competitor introduces a successful product or a standard-setting organization adopts a standard falling within the scope of the patent’s specification.⁸⁷ The patentee can then file a continuation application and prosecute new claims targeting those products.⁸⁸ The Federal Circuit has even embraced the practice, stating that

there is nothing improper, illegal or inequitable in filing a patent application for the purpose of obtaining a right to exclude a known

84. See Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting*, in 1 INNOVATION POLICY AND THE ECONOMY 119, 136 (Adam B. Jaffe et al. eds., 2001), available at <http://www.nber.org/books/jaff01-1> [hereinafter *Navigating the Patent Thicket*] (“If the standard becomes popular, each such patent can confer significant market power on its owner, and the standard itself is subject to hold-up if these patent holders are not somehow obligated to license their patents on reasonable terms.”).

85. The formation of standard-setting organizations (“SSO”) reduces the risk of this sort of industry-wide holdup by requiring market participants to agree to license any relevant patents they may have on “reasonable terms” before they are allowed to adopt the standard. *Id.* Nevertheless, SSO formation creates its own opportunities for strategic behavior: “patent holders [can] assert that at least some of their patents are not in fact essential, but perhaps merely extremely helpful, in complying with the standard” and thus “can in principle either refuse to license its patent to others (especially once the standard has become established, and perhaps for a patent that issued after the standard is established) or seek something more than ‘fair and reasonable’ royalties.” *Id.* at 147 n.25.

86. *Probabilistic Patents*, *supra* note 69, at 78 n.2.

87. *Id.* at 78 (“If the applicant is dissatisfied with the claims allowed by the patent examiner, the applicant can file a continuation application even after receiving a patent and thus continue to seek a patent with broader claims. . . . Applicants are even allowed to amend their applications to capture products that are appearing in the market, so long as they (arguably) stay within the bounds of the invention described in the initial application, which can be broad and rather vague.” (internal citation omitted)). See generally Mark A. Lemley & Kimberly A. Moore, *Ending Abuse of Patent Continuations*, 84 B.U. L. REV. 63 (2004) [hereinafter *Ending Abuse*] (discussing the abuse of continuation applications and noting that over half of all litigated patents issue from continuation applications).

88. *Ending Abuse*, *supra* note 87, at 64.

competitor's product from the market; nor is it in any manner improper to amend or insert claims intended to cover a competitor's product the applicant's attorney has learned about during the prosecution of a patent application.⁸⁹

IV. INNOCENT INFRINGERS CANNOT BE DETERRED

Now that we have seen that the patent system incorporates a number of deterrents that ensure infringers will not have an incentive to misappropriate patent rights, one question remains: is it possible that the patent system nevertheless benefits from the additional deterrence provided by inflated damages awards? This Part shows that, even if additional deterrence would be beneficial, royalty premiums are an ineffective means for providing that deterrence because reasonable royalty law applies to all infringers, innocent and blatant alike.

A. Ignorance Is No Defense – But Should Be

It goes without saying that, regardless of the punishment imposed, it is impossible to deter someone who does not know he or she is committing a wrongful act.⁹⁰ Likewise, no matter what remedies a patentee might win in litigation, the patent system will never be able to deter infringers who are unaware they are using patented technology.⁹¹

In fact, there is good reason to believe that truly innocent infringers should face no damages whatsoever – let alone enhanced damages. Starting from the premise that patentees should be rewarded with some share of the

89. *Kingsdown Med. Consultants, Ltd. v. Hollister, Inc.*, 863 F.2d 867, 874 (Fed. Cir. 1988) (en banc).

90. To be sure, punishment might incentivize individuals to learn what acts the punishing authority deems wrongful. After all, it is a “venerable principle that ignorance of the law generally is no defense.” *Ratzlaf v. United States*, 510 U.S. 135, 135-36 (1994). But this principle applies only to the extent that the scope of what is wrongful is, in fact, discernable and available for public consumption. *See, e.g., Papachristou v. City of Jacksonville*, 405 U.S. 156, 162 (1972) (holding that a traditional vagrancy law was “void for vagueness”). As discussed *infra*, determining the scope of patent rights is virtually impossible because patent disclosures are incredibly difficult to interpret.

91. Judge Nies recognized this, stating in dissent on more than one occasion, “An infringement, like a trespass, may be committed unknowingly. In such situations, the amount of damages manifestly can have no effect to deter an *unknowing* infringer.” *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1574 (Fed. Cir. 1995) (Nies, J. dissenting); *see also King Instruments Corp. v. Perego*, 65 F.3d 941, 959 (Fed. Cir. 1995) (Nies, J. dissenting) (“In any event, where infringement is innocent as here, the amount of damages cannot operate as a ‘deterrent,’ except as a brake to legitimate challenges to a charge of infringement.”).

benefit their inventions confer on technology users,⁹² it follows that patentees should not be permitted to recover damages from those who independently invent the same technology. When two inventors make the same discovery independent of the efforts of one another, “each inventor’s social contribution . . . is nil: the invention would have been available to society even if [one] inventor had not discovered the invention.”⁹³ Therefore, the appropriate reward for the patent-holding inventor equals the value he or she contributed to the non-patent holder: nil.

Accordingly, to avoid stifling the innovative efforts of good faith inventors, any deterrence scheme must, at a minimum, differentiate between innocent and deliberate infringement. Courts that deter with enhanced royalties fail to make this distinction. Unlike exemplary damages awarded under the willfulness doctrine, which apply only to those who blatantly misappropriate another’s patented invention,⁹⁴ reasonable royalty damages fall on all infringers – innocents and pirates alike.⁹⁵ When courts levy inflated royalties, they set precedent opening the door for enhanced awards against infringers of all stripes.

92. See, e.g., *Patent Holdup and Royalty Stacking*, *supra* note 18, at 1999-2000 (defining benchmark-level compensation as a division of the value created by the patented invention).

93. *Patent Reform*, *supra* note 5, at 116; see also Mark A. Lemley & Carl Shapiro, Reply, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 2163, 2166 (2007) (“[P]atent holders are generally overrewarded in situations where other parties independently achieve the same (or a similar) invention at roughly the same time . . . [because] the patent holder’s social contribution does not include use of the patented invention by the party that independently achieved the same invention.”); Landers, *supra* note 2, at 371 (“Arguably, deterrence damages should not be awarded at all where infringement is truly innocent, based on the Federal Circuit’s rule that ‘royalties, like lost profits are compensatory damages, not punitive.’ Deterrence damages where an infringer could not possibly be aware that its conduct is wrongful appears [sic] to impose unwarranted costs on an infringer.” (quoting *Integra Lifesciences I, Ltd. v. Merk KGaA*, 331 F.3d 860, 870 (Fed. Cir. 2003), *rev’d on other grounds*, *Merck KGaA v. Integra Lifesciences I, Ltd.*, 545 U.S. 193 (2005))).

94. See *Gustafson, Inc. v. Intersystems Indus. Prods., Inc.*, 897 F.2d 508, 511 (Fed. Cir. 1990) (“[A] party cannot be found to have ‘willfully’ infringed a patent of which the party had no knowledge.”).

95. This would not be the case if U.S. patent law included an independent invention defense. See, e.g., Carl Shapiro, *Prior User Rights*, AM. ECON. REV., May 2006, at 92, 92 [hereinafter *Prior Use Rights*] (arguing in favor of an independent invention defense); Samson Vermont, *Independent Invention as a Defense to Patent Infringement*, 105 MICH. L. REV. 475 (2006) (arguing in favor of an independent invention defense). *But cf.* Mark A. Lemley, *Should Patent Infringement Require Proof of Copying?*, 105 MICH. L. REV. 1525, 1527-32 (2007) [hereinafter *Proof of Copying?*] (expressing some concern about independent invention as a total defense to infringement).

B. *Most Infringement Is Innocent Infringement*

Furthermore, innocent infringement is anything but rare. Indeed, there is good reason to believe that the lion's share of infringement is innocent – at least as a practical matter.

1. No One Reads Patents – And for Good Reason

First, contrary to the ideals upon which the patent system is founded,⁹⁶ savvy players in the technology world do not read patents.⁹⁷ In fact, the patent system virtually ensures that the potential costs associated with reading patents far outweigh the benefits.⁹⁸ Knowledge of a patent exposes a patent reader to the possibility of paying exemplary damages under the willfulness doctrine should that patent ever be asserted against it in court. To avoid becoming a willful infringer, the reader “must spend tens of thousands of dollars to obtain an opinion, then forego some or possibly all of its attorney-client privilege with respect to the evaluation of the patent (and possibly with

96. At its core, the patent system is a trade-off encouraging inventors to share their inventions with the public, rather than conceal them as trade secrets, in exchange for the exclusive right to practice the invention for a fixed period of time. *See, e.g., Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 736 (2002) (“[E]xclusive patent rights are given in exchange for disclosing the invention to the public.”). This balance between public benefit and private reward is undermined when patents fail to carry out their disclosure function. *See Lemley & Tangri, supra* note 14, at 1100 (“Although patent policy presumes that the public learns from patents, the willfulness game creates a strong incentive not to read patents.”).

97. *See* Mark A. Lemley, *Ignoring Patents*, 2008 MICH. ST. L. REV. 19, 21-22 [hereinafter *Ignoring Patents*] (noting that companies generally ignore patents in all stages of product development: when conducting research and design, when filing their own patents, when launching new products, and even after receiving initial cease-and-desist letters from patent owners). There are, of course, some notable exceptions. Jack Kilby, co-inventor of the integrated circuit, is said to have read every new patent issued during many years of his career. T.R. REID, *THE CHIP: HOW TWO AMERICANS INVENTED THE MICROCHIP AND LAUNCHED A REVOLUTION* 65 (Random House 2001) (1985).

98. Very little empirical evidence exists relating to patent readership. In a 2003 Intellectual Property Owners Association survey of sixty-six senior corporate IP managers, only 35% of respondents reported that they “always do a patent search before initiating any R&D or product development effort[.]” and only 26% of respondents reported ever deciding to abandon promising technology because of adverse patent rights. IAIN M. COCKBURN & REBECCA HENDERSON, *SURVEY RESULTS FROM THE 2003 INTELLECTUAL PROPERTY OWNERS ASSOCIATION SURVEY ON STRATEGIC MANAGEMENT OF INTELLECTUAL PROPERTY* D.2, F.6 (Oct. 2003), available at <http://www.ipo.org/AM/Template.cfm?Section=Home&Template=/CM/ContentDisplay.cfm&ContentID=22949>.

respect to the eventual litigation concerning it, too).”⁹⁹ It is not surprising, then, that on the advice of their patent counsel, companies regularly instruct their scientists and engineers not to read patents.¹⁰⁰ Further, the sheer number of patents issued each year alone would make the task of identifying and digesting relevant patents nothing short of Herculean. Each year, over 150,000 patents issue, and over 450,000 new applications are filed.¹⁰¹ To monitor every new patent that might cover some aspect of its products, a potential infringer would have to review at least the many thousands of patents issued in its industry each year, not to mention all such patents that issued from applications filed in the previous twenty years.¹⁰²

In exchange for this substantial cost, a company is likely to get very little value from a patent monitoring program. Ultimately, only about 1.5% of all patents are ever asserted in litigation, and approximately half of the patents litigated to a final determination are found invalid.¹⁰³ Also, between

99. Lemley & Tangri, *supra* note 14, at 1100.

100. *See id.* at 1100-01 (footnote omitted) (“[I]n-house patent counsel and many outside lawyers regularly advise their clients not to read patents if there is any way to avoid it. What you do know will certainly harm you, they reason, so it is generally better not to know.”); *see also* FED. TRADE COMM’N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY 29 (2003) (“[F]ear of willfulness charges discourages inventors from reading others’ patents, thereby undermining the disclosure function of the patent system.”), *available at* <http://www2.ftc.gov/os/2003/10/innovationrpt.pdf>; *Ignoring Patents*, *supra* note 97, at 21; *Prior User Rights*, *supra* note 95, at 95 (“The effectiveness of patent disclosures is in doubt, however, especially in industries where scientists and engineers are instructed not to read patents for fear of triggering liability for willful infringement.”).

101. In 2008, the PTO issued 154,699 new utility patents, U.S. PATENT & TRADEMARK OFFICE, PERFORMANCE AND ACCOUNTABILITY REPORT 119, tbl.6 (2008), *available at* <http://www.uspto.gov/web/offices/com/annual/2008/2008annualreport.pdf>, and applicants filed 464,541 new utility patent applications, *id.* at 116, tbl.2; *see also Probabilistic Patents*, *supra* note 69, at 77 (“Inventors file over 350,000 patent applications a year with the U.S. Patent and Trademark Office (PTO), a number that has grown steadily, and spend over \$5 billion a year just on the process of obtaining those patents. The PTO grants nearly 200,000 new patents a year, a number that has roughly doubled over the past 15 years.” (citing statistics from 2003) (citations omitted)).

102. *Cf. Navigating the Patent Thicket*, *supra* note 84, at 125 (“[I]n industries such as semiconductors . . . many thousands of patents are issued each year and manufacturers can potentially infringe on hundreds of patents with a single product.”). For patent applications filed on or after June 8, 1995, the patent term is twenty years from the date of filing. 35 U.S.C. § 154(a)(2) (2006). Patents in force on June 8, 1995, and patents issued from applications pending on that date are entitled to a term of seventeen years from issue or twenty years from filing, whichever is longer. *Id.* § 154(c)(1).

103. *Probabilistic Patents*, *supra* note 69, at 79 (“Only 1.5 percent of all patents are ever litigated, and only 0.1 percent are litigated to trial . . .”). *See supra* note 70 and accompanying text.

55% and 67% of all issued patents prematurely lapse into the public domain for failure to pay PTO maintenance fees.¹⁰⁴ Accordingly, the likelihood that a company will be accused of infringing any given patent is quite low, and, therefore, the expected value of the future injury averted by reading that patent is likewise miniscule.¹⁰⁵ Furthermore, even if a company believed it had the logistical capacity to review all relevant patents in hopes of avoiding infringement, it is unlikely the company would be able to say with any certainty whether it infringes most relevant patents.¹⁰⁶ It is extraordinarily difficult to decipher the meaning of patent claims.¹⁰⁷ The scope of patent claims is almost always fiercely contested between parties in patent litigation,¹⁰⁸ and, even after the court issues a claim construction ruling, the “doctrine of equivalents” sometimes permits patent claims to expand beyond their literal

104. *Probabilistic Patents*, *supra* note 69, at 80.

105. As immortalized in Judge Learned Hand’s “Hand Test” for determining the standard of care in tort law, a rational actor will only take a precaution if the magnitude of the harm averted (discounted by its likelihood of occurring) exceeds the burden of taking the precaution. *See United States v. Carroll Towing Co.*, 159 F.2d 169, 173 (2d Cir. 1947) (“[I]f the probability [of inflicting some injury] be called P; the injury, L; and the burden [of preventing the injury] B; liability depends upon whether B is less than L multiplied by P: i.e., whether $B < PL$.”). In the patent infringement context, this calculus is especially skewed against taking precaution (i.e., reading patents) because the cost of monitoring for infringement risks includes not only the labor cost associated with searching for and reading patents but also the risk of becoming a willful infringer by virtue of having read the patent in the first place.

106. To be sure, companies might be motivated to review patents by a desire to learn something new and useful, rather than solely by a desire to avoid infringement. The arguments that follow seriously undermine the informational value of patents in both respects – as a means of conveying new ideas and as a means of delineating the scope of those ideas.

107. *See Read Corp. v. Portec, Inc.*, 970 F.2d 816, 828 (Fed. Cir. 1992) (“[D]etermining when a patented device has been ‘designed around’ enough to avoid infringement is a difficult determination to make. One cannot know for certain that changes are sufficient to avoid infringement until a judge or a jury has made that determination.”); Landers, *supra* note 2, at 341 (“Asking potential infringers to assess whether a particular patent is infringed is complicated because of the difficulty of determining a patent’s scope in advance of a court ruling.”). Burk and Lemley suggest that the current claim construction process is so indeterminate that the United States should consider re-adopting the late nineteenth century practice of treating patent claims as disclosing only the “central” features of the patented invention, rather than delineating the absolute “peripheral” boundaries of the patentee’s rights. Dan L. Burk & Mark A. Lemley, *Fence Posts or Sign Posts? Rethinking Patent Claim Construction*, 157 U. PA. L. REV. 1743 (2009).

108. *Probabilistic Patents*, *supra* note 69, at 85 (“The meaning of patent claim terms – called ‘claim construction’ – is hotly debated in virtually every patent case, and courts have found ambiguity even in such innocuous terms as ‘a,’ ‘or,’ ‘to’ and ‘when.’”).

meaning.¹⁰⁹ Further, and perhaps most telling of all, district courts err in construing claims over a third of the time – at least according to the Federal Circuit.¹¹⁰ If these courts – which construe only a select few claims¹¹¹ and do so with the benefit of extensive (and expensive) briefing, oral argument from the parties, and expert witnesses – cannot get it right, what chance does a potential infringer tasked with monitoring thousands of patents have?

Moreover, even if patent claims were always written in the plainest language, no amount of analysis can protect a company from later-filed submarine claims. As discussed above, continuation applications allow patentees to add new claims to issued patents (provided those claims find support in the initial disclosure) – a practice frequently used to capture new products introduced by competitors.¹¹² There is no limit on the number of continuations a patentee can file, and it is not rare for a savvy patentee to keep a continuation application pending for the full term of its initial patent.¹¹³ Accordingly, no matter how proactive a potential infringer may be or how sure he or she is that her product does not fall within the scope of issued patent claims, the potential infringer can never be sure whether some “patentee has a continuation application waiting in the wings” to capture his or her design.¹¹⁴

109. *Id.* at 85-86; *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 608 (1950) (holding that, even without literal infringement, “a patentee may invoke [the] doctrine [of equivalents] to proceed against the producer of a device ‘if it performs substantially the same function in substantially the same way to obtain the same result.’” (quoting *Sanitary Refrigerator Co. v. Winters*, 280 U.S. 30, 42 (1929))).

110. Kimberly A. Moore, Markman *Eight Years Later: Is Claim Construction More Predictable?*, 9 LEWIS & CLARK L. REV. 231, 233 (2005) (finding that the Federal Circuit reversed 34.5% of district court claim construction rulings appealed between 1996 and 2003). See also Christian A. Chu, *Empirical Analysis of the Federal Circuit’s Claim Construction Trends*, 16 BERKELEY TECH. L.J. 1075, 1104 (2001) (reporting similar numbers); Kimberly A. Moore, *Are District Court Judges Equipped to Resolve Patent Cases?*, 15 HARV. J.L. & TECH. 1, 11 (2001). For more on the difficulties courts face construing patents, see Dan L. Burk & Mark A. Lemley, *Quantum Patent Mechanics*, 9 LEWIS & CLARK L. REV. 29 (2005) and Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839 (1990).

111. In the interest of efficiency, courts can limit the number of claims a patentee may assert in one case. See *Hearing Components, Inc. v. Shure, Inc.*, No. 9:07CV104, 2008 WL 2485426, at *1 (E.D. Tex. June 13, 2008) (limiting the parties to “no more than three (3) representative claims from each patent for claim construction and trial”).

112. *Probabilistic Patents*, *supra* note 69, at 78-79.

113. *Id.* at 78, 81.

114. *Id.* at 82. Indeed, as Lemley and Shapiro note, “some unscrupulous patentees intentionally delay the issuance of their patents to take other firms by surprise, increasing their royalty rates once companies operating in the industry have made irreversible investments.” *Id.*

2. Independent Invention Is the Rule, Not the Exception

In addition to widespread rational ignorance among potential infringers, empirical evidence and the prevalence of near simultaneous invention suggest that truly independent invention, rather than copying, is the norm.¹¹⁵ Patentees accuse defendants of copying their inventions in a mere 11% of patent cases and actually prove that copying occurred only 2% of the time.¹¹⁶ Outside the pharmaceutical and chemical industries, copying allegations are particularly rare. Less than 3% of cases involving computer or software technology include allegations of copying, and less than 1% ultimately lead to proof of copying.¹¹⁷

Moreover, contrary to popular belief, near simultaneous invention is quite common¹¹⁸ – and not just for minor improvements, which require relatively little effort and insight on the inventor's part.¹¹⁹ Many of the most heralded inventions of all time were, in fact, independently invented by multiple competitors at virtually the same time.¹²⁰ Examples include the light bulb (Edison vs. Swan), the telephone (Bell vs. Gray), the integrated circuit (Kilby vs. Noyce),¹²¹ television (Zworykin vs. Farnsworth),¹²² and the laser

115. See Vermont, *supra* note 95, at 479 (“Some historians and philosophers of science believe convergence is the rule rather than the exception.” (citing DAVID LAMB & SUSAN M. EASTON, *MULTIPLE DISCOVERY: THE PATTERN OF SCIENTIFIC PROGRESS* (1984); Robert K. Merton, *Singletons and Multiples in Scientific Discovery: A Chapter in the Sociology of Science*, 105 *PROC. AM. PHIL. SOC'Y* 470 (1961))).

116. Christopher A. Cotropia & Mark A. Lemley, *Copying in Patent Law*, 87 *N.C. L. REV.* 1421, 1424, 1441 (studying “allegations of copying [made in] a sample of 200 patent infringement complaints filed between January 1, 2000 and May 1, 2007, 100 each from . . . the District of Delaware and the Eastern District of Texas” – and a set of 1871 reported patent infringement opinions).

117. *Id.* at 1424.

118. See Vermont, *supra* note 95, at 478 (“Researchers frequently converge on the same idea at roughly the same time.”); Lemley & Tangri, *supra* note 14, at 1121 (“Our anecdotal experience in litigation suggests that a significant number, perhaps even a majority, of all patent cases involve independent development.”).

119. See *Prior User Rights*, *supra* note 95, at 92 (“Independent invention is common for minor technological improvements.”).

120. See Vermont, *supra* note 95, at 478-79.

121. *Id.* at 478-79; *Patent Reform*, *supra* note 5, at 127. See also *Prior User Rights*, *supra* note 95, at 92; REID, *supra* note 97 (documenting the near simultaneous independent invention of the integrated circuit by Jack Kilby (September 1958) and Robert Noyce (January 1959) and the ensuing litigation between Texas Instruments and Fairchild Semiconductor over patent rights to the invention).

122. See SAMUEL HANDEL, *THE ELECTRONIC REVOLUTION* 68-72 (1967) (documenting the 1920s competition between Vladimir Zworykin and Philo T. Farnsworth to perfect black and white television); see also REID, *supra* note 97, at 214-15.

(Gould vs. Townes and Schawlow).¹²³ Even the general theory of relativity – perhaps the single greatest scientific discovery of the last three hundred years (though not patentable subject matter) – was arguably first completed and submitted for publication by German mathematician David Hilbert five days before Albert Einstein submitted his own work on November 25, 1915.¹²⁴ Although you might not find names like Swan, Gray, and Hilbert in many history texts (unrivaled brilliance makes for better storytelling, after all), their forgotten achievements underscore the point that much technological breakthrough is really the inevitable result of long-building inertia, rather than singular strokes of genius.¹²⁵

V. HEADS-I-LOSE, TAILS-YOU-WIN: PATENT CHALLENGES AS PUBLIC GOODS

This Article has shown that inflated royalties make poor deterrents but has so far set aside the question of whether the patent system nevertheless benefits from the marginal deterrence they do provide. So, when it comes to infringement deterrence, is more better? This Part shows that, to the contrary, there is good reason to believe that existing deterrents already go too far.

Good faith patent challenges generate positive externalities. When an accused infringer successfully limits, invalidates, or renders a patent unenforceable in litigation, all market participants benefit because they are free to use the invention without restriction.¹²⁶ This quality of challenging patents,

123. See NICK TAYLOR, *LASER: THE INVENTOR, THE NOBEL LAUREATE, AND THE THIRTY-YEAR PATENT WAR* (2000) (documenting the independent invention of the laser by Gordon Gould (November 1957) and Charles Townes and Arthur Schawlow (February 1958) and ensuing litigation over patent rights to the invention).

Vermont lists even more examples, including “calculus (Newton and Leibniz), the periodic table (Mendeleev and Meyer), the telegraph (Morse, Henry, and Cooke and Wheatstone), [and] the telescope (Hans Lippershey, Drebbel, Fontana, Jansen, Metius, and Galileo – each claiming they invented it in 1608 or 1609).” Vermont, *supra* note 95, at 479. Lemley does as well: “the steamboat, which was patented by different inventors in different states; the airplane, which was first patented by the Wrights but independently developed and significantly improved upon by Glenn Curtis and others; . . . and polypropylene, which was the subject of a 30-year interference between competing inventors.” *Proof of Copying?*, *supra* note 95, at 1528 (footnote omitted).

124. See Leo Corry, Jürgen Renn & John Stachel, *Belated Decision in the Hilbert-Einstein Priority Dispute*, 278 *SCI.* 1270 (1997).

125. Cf. *Patent Reform*, *supra* note 5, at 127 (noting that “in rapidly advancing fields such as information technology and biotechnology, . . . many applied ideas flowing from basic research are ‘in the air’ at any given time”).

126. See *id.* at 119. This is particularly true when competitors have already entered into licenses with a patentee and, thus, are freed from their obligation to pay royalties if the accused rival successfully invalidates the patent-at-issue. See *id.* at 119-20. Even when an infringer loses in litigation, other market participants benefit

however, ensures that patent challenges will be undersupplied in the marketplace.¹²⁷ Patent challenges are public goods¹²⁸ and, like all public goods, are subject to free-riding: the infringer defending against a claim of infringement bears the cost of litigation – attorneys’ fees and, if unsuccessful, damages – but shares the benefit of victory with its competitors and, really, with society as a whole.¹²⁹

Thus, even without deterrents of any kind, accused infringers will naturally tend to license asserted patents, rather than fight them in court.¹³⁰ And

from information generated during the case (e.g., the court’s claim construction order), which serves to clarify the bounds of patentee’s monopoly. *See Probabilistic Patents*, *supra* note 69, at 76.

127. *See Patent Reform*, *supra* note 5, at 119; *Probabilistic Patents*, *supra* note 69, at 88; 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, 958 (2004) (“[A] challenger bears the cost of litigation but its rivals and downstream buyers will capture almost all the benefits of successful challenge . . .”).

128. *See Probabilistic Patents*, *supra* note 69, at 87-88 (providing a mathematical example).

129. In addition to benefiting consumers as a whole by reducing the cost of existing goods and services, eliminating patents also benefits society by increasing incentives to develop improvements to existing technology. A proliferation of patents in one industry – known as a “patent thicket” – reduces overall innovation and the introduction of new products by requiring those who wish to commercialize new technology to obtain multiple licenses from multiple patent owners. *Navigating the Patent Thicket*, *supra* note 84, at 119-20. Paying the numerous royalties required to enter the market “necessarily reduces the return to new product design and development, and thus can easily be a drag on innovation and commercialization of new technologies.” *Id.* at 124. *See also* Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 843 (1990) (“[A] patent’s social costs should include its potential to reduce competition in the market for improvements to the patented technology.”). Indeed, in some industries there may be so many patents that companies hoping to introduce a new product may (as a practical matter) never be able to license all relevant patent rights from their various owners. *See* Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621 (1998); *Ignoring Patents*, *supra* note 97, at 19-20 (noting that this patent law “anticommons” might be “a particular problem for semiconductor, telecommunications, and software companies, which must aggregate hundreds or thousands of different components to make an integrated product”); Michael A. Heller, *Where Are the Cures? How Patent Gridlock Is Blocking the Development of Lifesaving Drugs*, FORBES, Aug. 11, 2008, at 30 available at <http://www.forbes.com/forbes/2008/0811/030.html>; Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anti-Commons in Biomedical Research*, 280 SCI. 698 (1998).

130. In fact, this is true even when free riding is not a problem. Were potential infringers to take collective action against infringement threats, their ability to pass through to consumers (at least a portion of) uniform royalty costs in the form of high-

because the benefits of patent challenges, but not patent licenses, spill over to others, accused infringers' reluctance to fight back reduces social welfare and increases opportunities for holdup by artificially extending the life of weak and abused patents.¹³¹ Deterrents only serve to exacerbate this problem by increasing the expected cost of patent challenges and thereby making patent challenges even less likely. Accordingly, from an economic standpoint, there is good reason to believe that, in order to achieve an economically efficient level of patent challenges, society should not deter but actually *encourage* potential infringers to defend themselves in good faith against infringement allegations.¹³²

VI. PATENT REFORM MEASURES

So far this Article has shown that, as a method for deterring patent infringement, inflated reasonable royalty awards are both unnecessary – in light of the willfulness doctrine, attorneys' fee awards, permanent injunctions, and many other factors – and poorly targeted, because they fail to differentiate between ordinary, innocent infringers and willful copyists. This Part addresses how patent damages law might be modified to focus an appropriate amount of deterrence where it is needed, while eliminating the threat entirely where it will only do harm. Specifically, this Part proposes that courts adopt a bifurcated damages system designed to deter only deliberate copyists.

A. *Carve Out Ordinary Infringers*

First, when it comes to deterrence, the law of patent damages should strictly differentiate between “ordinary” infringers and blatant copyists. As we have seen, to the extent deterrence has a legitimate role to play in the patent system, the means for creating that deterrence should not burden innocent infringers, who cannot be deterred in the first place. We have also seen that,

er prices would still skew their incentive to litigate. See Farrell & Merges, *supra* note 127, at 953-54.

131. See generally Joseph Farrell & Carl Shapiro, *How Strong Are Weak Patents?*, 98 AM. ECON. REV. 1347 (2008) (using a game theoretic model to show how weak patents can be used to extract royalties that exceed their social value); 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, 77-95 (2006).

132. See *Stickle v. Heublein, Inc.*, 716 F.2d 1550, 1560 n.7 (Fed. Cir. 1983) (noting that, although patent damages must be sufficient to compensate a patentee, “the public interest requires that there be a real opportunity to test the grants made by the Patent Office, without fear of a ruinous penalty for asserting a position taken in good faith” (quoting R.A. White & L.F. Lynch, *Winning the Last Battle – The Recovery of Actual Damages in Patent Infringement*, PAT. L. ANN. 35, 36 (1970))). Blatant infringers who have no good faith defense are a different story. See *infra* Part VI.B.

at least as a practical matter, the lion's share of infringement is the result of good faith, independent research conducted by individuals and companies unaware of the adverse patent rights of others.¹³³

These ordinary infringers should not have to fear the prospect of paying exemplary damages of any sort, let alone inflated royalties. Instead, consistent with the Patent Act itself and traditional notions of patent damages, ordinary infringers should only be required to *compensate* the patentee on par with the royalty fee the parties would have privately negotiated in the marketplace (or, when relevant, for the profits the patentee lost on sales diverted to the infringer¹³⁴).¹³⁵ In the royalty context, this means allowing ordinary infringers to share the economic gains created by the patented invention. To accomplish this, the Federal Circuit must first turn back the clock on the law of reasonable royalty damages more than twenty years to a time when courts recognized that reasonable royalties must reserve some expectation of profit for the infringer¹³⁶ and mirrored actual practice in the marketplace by honoring established industry royalty rates.¹³⁷ At the very least, courts should initiate efforts to tame large jury awards that are punitive on their face – for example, by prohibiting awards that clearly exceed any reasonable estimate of the profit (or worse yet, total sales price) an infringer expected to make on sales of infringing products.¹³⁸

Awarding damages that merely compensate for ordinary infringement further requires that courts abstain from applying doctrines that substantially increase the pecuniary burden placed on infringers – in particular, permanent

133. This group also includes infringers who, though aware of the patentee's rights, made a good faith effort to design around the patentee's claims. As discussed *supra* at Part IV.B.1, it is virtually impossible to determine the scope of patent claims, and potential infringers always remain vulnerable to later-filed claims in continuation applications.

134. Nothing in this Article is meant to suggest that manufacturing patentees should not be compensated for sales they lose to infringers. For more on the intersection of lost profits and reasonable royalty damages, see *Distinguishing Lost Profits*, *supra* note 2.

135. The patent system might further place near-simultaneous independent inventors – who lack even constructive notice of a patentee's rights – into a third group subject to no damages whatsoever. See *Vermont*, *supra* note 95, at 475 (arguing that the patent system should incorporate an independent invention defense, "provided the independent inventor creates the invention before receiving actual or constructive notice that someone else already created it"). Lemley is not yet convinced and suggests less radical reforms, including reform of the willfulness doctrine. *Proof of Copying?*, *supra* note 95, at 1533. For purposes of this Article, I argue only that ordinary infringers should be spared punitive awards and remain agnostic on the merits of additionally incorporating an independent invention defense.

136. See *supra* notes 44-46 and accompanying text.

137. See *supra* note 40 and accompanying text.

138. See *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1577 (Fed. Cir. 1995) (Nies, J., dissenting).

injunctions and doctrines like the entire market value rule – when patentees are entitled only to reasonable royalty damages. To be sure, permanent injunctions and other market-exclusion remedies like the entire market value rule can serve a legitimate function when the patentee is a market participant losing sales to the infringers.¹³⁹ However, when a patentee does no more than hold intellectual property rights, these remedies serve little purpose other than to keep valuable technology out of society's reach while rewarding the patentee in excess of the true value of its invention.¹⁴⁰ At a minimum, courts should stay the execution of permanent injunctions for a reasonable period of time during which the infringer may design around the asserted patent.¹⁴¹

Nevertheless, I recognize that at least some modicum of inflation is necessary in the ordinary infringement context, if only to level the playing field and prevent a patentee from having to bear the cost of uncertainty in its patent rights twice: once when negotiating with the accused infringer and again at trial.¹⁴² For this reason, any reforms designed to lighten the burden on ordinary infringers should spare the rule requiring courts to assume that the patent-at-issue is valid and infringed when setting a reasonable royalty rate.

139. See *Distinguishing Lost Profits*, *supra* note 2, at 9 (“The logic of the entire market value rule breaks down in reasonable royalty cases . . . because we’re no longer talking about the defendant taking a sale away from the plaintiff.”); *Patent Holdup and Royalty Stacking*, *supra* note 18, at 2036 (“In cases involving significant lost profits, we favor a presumption that the patent holder will be granted a permanent injunction . . . in part for reasons of equity and in part because of the grave difficulties associated with calculating and awarding lost profits on an ongoing basis. Similarly, a patentee who assigns or exclusively licenses its patent to someone who competes significantly against the infringing firm also should ordinarily be entitled to an injunction.”).

140. See Love, *supra* note 77, at 278-80; *Patent Holdup and Royalty Stacking*, *supra* note 18, at 2009-10.

141. See *Patent Holdup and Royalty Stacking*, *supra* note 18, at 2035-39 (making this proposal).

142. If parties bargaining for patent rights know *ex ante* that, if litigation ensues, a court will award damages discounted by the pre-litigation risk that the patent-at-issue might have been invalid, unenforceable, or not infringed, those parties will reach a bargain *doubly* discounted by that risk. See BLAIR & COTTER, *supra* note 14, at 230. Mathematically, if a court’s award A is given by nominal damages amount D discounted by risk Θ (i.e., $A = \Theta * D$), the patentee’s *ex ante* expected recovery from litigation (taking risk Θ into account) is $\Theta * A$, and the accused infringer will settle *ex ante* for an amount S that is no more than the expected cost of litigation (which excluding attorneys’ fees is equal to the patentee’s expected recovery $\Theta * A$), then settlement amount S will be at most nominal damages amount D twice discounted by risk Θ (i.e., $S < \Theta * A = \Theta * (\Theta * D) = \Theta^2 D$).

B. Single Out Blatant Copyists

For bad faith copyists – infringers who are aware of patent rights and make little or no effort to design around those rights – deterrence is in order.¹⁴³ However, such infringers are already subject to exemplary damages under the willfulness doctrine and attorneys’ fee awards (not to mention permanent injunctions prohibiting their use of the patented invention). To the extent these deterrents fail to provide an appropriate level of punishment, patent reform should focus on modifying those doctrines. There is simply no good reason for courts to turn to the reasonable royalty measure of damages to make up the difference. Reasonable royalty precedent is applicable to all infringers, and, regardless of a court’s original intent, it is reasonable to assume that case law approving inflated royalty awards will ultimately be used to extract excessive payments from undeserving, innocent infringers. Moreover, using multiple deterrents unnecessarily complicates what is already a complex and unpredictable system for awarding damages.¹⁴⁴

An ideal system for deterring technology pirates would (i) provide an efficient level of deterrence¹⁴⁵ and (ii) do so in a clear, standardized way that would allow parties to easily assess their potential liability and plan accordingly.¹⁴⁶ As Lemley and Tangri suggest, one way to modify patent law’s built-in deterrents to meet these goals is to merge the willfulness doctrine and attorneys’ fee awards into a single deterrent for punishing those who deliberately copy patented inventions.¹⁴⁷

143. Bad faith patent challenges, which by definition are almost certain to fail, are not likely to produce the positive externalities discussed *supra* at Part V. Instead, such challenges result in little more than the wasteful expenditure of litigation resources.

144. Landers, *supra* note 2, at 307 (comparing the law of patent damages to “a Las Vegas casino”).

145. Achieving an optimal level of deterrence by imposing fines or punitive damages is a well-studied area of the law and economics literature. See, e.g., A. Mitchell Polinsky & Steven Shavell, *Punitive Damages: An Economic Analysis*, 111 HARV. L. REV. 869 (1998).

146. See Landers, *supra* note 2, at 372-73 (stressing the importance of clarity and standardization in crafting reform proposals for patent damages).

147. As currently defined, willfulness is not strictly limited to deliberate copyists (though it once was). See Lemley & Tangri, *supra* note 14, at 1119 (“[B]efore the creation of the Federal Circuit, willful infringement meant deliberate copying, not continued use of an independently created invention.”). For example, because willfulness can attach at any time, a truly independent inventor may become a willful infringer simply by continuing to sell a product after learning that the product might infringe a patent. Lemley and Tangri studied this issue and recommend that willfulness be redefined to attach only at the time a potential infringer adopts a product. *Id.* at 1117-21. Recently introduced patent reform legislation promises to codify the willfulness doctrine and essentially limit it to deliberate copyists – i.e., those infringers who lack an “informed good faith belief that the patent was invalid or unenforceable.”

An efficient level of deterrence is one that ensures deliberate copyists will ultimately find themselves in a worse position for having copied, while also ensuring that patentees do not wind up worse off as a result of the infringer's actions.¹⁴⁸ Thus, merely making the patentee whole in individual cases will not achieve optimal deterrence because copyists will, from time to time, get away with infringement by evading detection altogether or by harming a patentee who for one reason or another is unable to prevail in litigation.¹⁴⁹ Accordingly, the optimal amount of damages to award for willful infringement – i.e., the willfulness penalty (WP) – is given by the equation “WP = ((gains from infringement) x (1/probability of detection)) + 1.”¹⁵⁰

Unfortunately, setting damages at this optimal level is easier said than done. It is unlikely that a court will be able to determine the “probability of detection” with any degree of accuracy in most cases, and the current practice of simply choosing an arbitrary whole number multiplier is even less likely to produce desirable results. The current convention of trebling damages for willfulness essentially incorporates a blanket assumption into willfulness awards that infringement goes undetected two-thirds of the time. Although selecting this rate of detection might approximate optimal deterrence for anti-trust conspiracies (another area of the law authorizing treble damages),¹⁵¹ which by definition are secret agreements engineered to deceive other market participants, using this level of penalty in patent law leads to over deterrence in the vast majority of patent infringement cases, which involve infringing products that (far from being hidden) were aggressively marketed and sold on

ble” and act with “objective recklessness” after receiving specific, written notice from the patentee. S. 515, 111th Cong. § 1(a), 4(a) (2009) (“Patent Reform Act of 2009”). I fully embrace these reforms. My recommendations in this Part assume a willfulness doctrine that applies *strictly* to intentional copyists.

148. Lemley & Tangri, *supra* note 14, at 1123. Lemley and Tangri recognize that their proposal interprets sections 284 and 285 of the Patent Act as authorizing the same remedy but respond that this result is not particularly troubling because the two sections have distinct purposes: section 284 deters blatant infringement, while section 285 deters forcing litigation without a reasonable defense. *Id.* at 1124. I have no problem with this result. Under this interpretation, section 285 exists as a deterrent only in rare instances when an infringer lacks a good faith defense but is not a deliberate copyist.

149. *Id.* at 1123.

150. *Id.*

151. *See* 15 U.S.C. § 15(a) (2006) (Clayton Act § 4); *see also* United States v. Rabinowich, 238 U.S. 78, 88 (1915) (noting that a conspiracy to violate the law “is characterized by secrecy, rendering it difficult of detection, requiring more time for its discovery, and adding to the importance of punishing it when discovered”); United States v. Sasson, 62 F.3d 874, 888 (7th Cir. 1995) (“Because of the secretive character of conspiracies, direct evidence is elusive . . .” (quoting United States v. Perry, 747 F.2d 1165, 1169 (7th Cir. 1984))).

the open market.¹⁵² This excessive deterrence stifles innovation, increases patent holdup, and further undermines the patent system's notice function by discouraging scientists and engineers from reading applications.

Awarding patentees their attorneys' fees for deliberate infringement offers the best of both worlds. It helps ensure that patentees are made whole by offsetting a sizeable cost they would otherwise have to bear, while also providing a material pecuniary deterrent to copying that litigants can estimate thanks to empirical evidence available on fee amounts.¹⁵³ Thus, by making changes to more efficiently utilize existing deterrents, courts can provide the deterrence they feel is necessary without negatively impacting the inventive efforts of good faith inventors – all with the added benefit of simplifying patent damages.

VII. CONCLUSION

The recent history of the reasonable royalty measure of damages is one in which courts have increasingly abandoned compensatory principles in favor of fashioning a catch-all remedy incorporating aspects of lost profits damages and the willfulness penalty. But there are many good reasons why reasonable royalties, lost profits, and willfulness each developed as a distinct doctrine. Not all infringers and patentees are created equal, and thus no single measure of damages can provide an appropriate level of reward in all situations.

Though there is a place for deterrence in the patent system, that place is not reasonable royalty damages. Deterrents like the willfulness doctrine already exist to discourage blatant copying of others' technology, and punitive awards simply do no good when levied against ordinary infringers who already have sufficient incentive to stay far away from patent litigation. Accordingly, courts must resist the urge to use the flexible reasonable royalty standard as an indiscriminate bludgeon and instead make efforts to reform existing deterrents to the extent willful technology copyists escape penalty. The result will be increased efficiency, less uncertainty, and – most importantly – more innovation.

152. See Lemley & Tangri, *supra* note 14, at 1123-24 n.116 (making this point). To be sure, there may be some cases where evidence of deception on the infringer's part warrants additional damages – for example, where the infringed invention is a manufacturing process not easily reverse-engineered from resulting products or where the infringer attempts to pass off its own infringing goods as though they were the patentee's. See *id.*

153. For example, the American Intellectual Property Law Association issues a biennial report on the cost of patent litigation. For the latest report, see AM. INTELL. PROP. LAW ASS'N, REPORT OF ECONOMIC SURVEY 2007.