

EXHIBIT

15

DISTINGUISHING LOST PROFITS FROM REASONABLE ROYALTIES[†]

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INTRODUCTION

Patent damages are designed to compensate patentees for their losses, not punish accused infringers or require them to disgorge their profits.¹ The governing statute provides for “damages adequate to compensate for the infringement, but in no event less than a reasonable royalty.”² Courts interpreting this provision have divided patent damages into two groups—lost profits, available to patent owners who would have made sales in the absence of infringement, and reasonable royalties, a fallback remedy for everyone else.³ Traditionally, patentees want to prove lost profits because only that measure captures the monopoly value of excluding competitors from the market. As the statutory language suggests, reasonable royalties exist as a floor or backstop for those who cannot prove that they have lost profits as a result of infringement.⁴ The rationale is that an infringed patent is valuable and could be licensed for a fee

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1. *Pall Corp. v. Micron Separations, Inc.*, 66 F.3d 1211, 1223 (Fed. Cir. 1995). For a general economic analysis of patent damages, see ROGER D. BLAIR & THOMAS F. COTTER, *INTELLECTUAL PROPERTY: ECONOMIC AND LEGAL DIMENSIONS OF RIGHTS AND REMEDIES* 208-62 (2005).

2. 35 U.S.C. § 284 (2006). The statute also provides for treble damages, though case law requires a showing of willfulness before enhancing damages. *In re Seagate Tech.*, 497 F.3d 1360 (Fed. Cir. 2007) (en banc).

3. *See Panduit Corp. v. Stahl Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1157 (6th Cir. 1978) (“When actual damages, e.g., lost profits, cannot be proved, the patent owner is entitled to a reasonable royalty.”).

4. 35 U.S.C. § 284.

even by patent owners who don't employ the patent in the marketplace.

In practice, however, the lines between lost profits and reasonable royalties are blurring. In significant part, this is because courts have insisted on strict standards of proof for entitlement to lost profits. Specifically, patentees must prove demand for the patented product, the absence of noninfringing substitutes, the ability to meet additional demand in the absence of infringement, and the proportion of those sales that represent profits.⁵ This in turn means that many patent owners who have in fact probably lost sales to infringement cannot prove lost profits damages and must fall back on the reasonable royalty measure.⁶ The result is that courts have distorted the reasonable royalty measure in various ways, adding “kickers” to increase damages, artificially raising the reasonable royalty rate, or importing inapposite concepts like the “entire market value rule” in an effort to compensate patent owners whose real remedy probably should have been in the lost profits category.⁷ Unfortunately, Congress is now considering locking one of those distortions—the entire market value rule—into reasonable royalty law.⁸

In Part I, I explain the strict requirements for proving lost profits and give examples of patentees who have failed to meet these requirements. In Part II, I explain how relegating these patentees to reasonable royalties has led to problematic changes in reasonable royalty law. Finally, I suggest in Part III that courts should draw a sharp division between the injury suffered by patentees who compete with infringers and those who do not. Patentees who compete should be entitled to the best estimate of lost profits, even if not all elements of proof are available. Those entitled to a reasonable royalty should get just that—a reasonable award that reflects what a buyer would have been willing to pay to license a valid patent. By distinguishing the two types of harm and the corresponding remedies, courts can end the overcompensation of patent owners in reasonable royalty cases.

5. *Panduit Corp.*, 575 F.2d at 1156.

6. See *infra* notes 29-32 and accompanying text.

7. See *infra* note 34.

8. See *infra* note 72 and accompanying text.

I. LOSING ENTITLEMENT TO LOST PROFITS

The traditional conception of patent protection is to give patent owners a means of excluding competitors from selling the patented product, thereby increasing their profits and therefore the incentive of putative patent owners to invent. This traditional conception requires exclusivity; the value of a patent is accordingly commensurate with the value of the market or market niche it controls. It explains why the normal remedy for infringement of a patent is an injunction against continued infringement.⁹

Lost profits fit logically within this traditional conception. Giving patentees the profits they would have made absent the infringement effectively puts them in the same position as if they had had an injunction in place all along.¹⁰ To the extent that it doesn't—when a patentee lost market traction early in a growing market and never built market share, for example—the law of lost profits has expanded over time to try to compensate the patent owner for those uses.¹¹

Proving lost profits has not been easy, however. Federal Circuit law requires that the prevailing patentee prove (1) the extent of demand for the patented product, (2) the absence of noninfringing substitutes for that product, (3) the patentee's ability to meet the additional demand by expanding manufacturing capacity, and (4) the extent of profits the patentee would have made.¹² Further, the

9. See Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, 2036 (2007). Ted Sichelman has challenged this view, arguing that giving even manufacturing patent owners the value of exclusivity needlessly overcompensates them. See Ted Sichelman, *Commercializing Patents*, 62 STAN. L. REV. (forthcoming 2009).

10. The Supreme Court has described this as the purpose of patent damages. *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 507 (1964) (“[T]hat question [is] primarily: had the Infringer not infringed, what would Patent Holder-Licensee have made?”); *Yale Lock Mfg. Co. v. Sargent*, 117 U.S. 536, 552 (1886) (stating that a patentee's damages are “the difference between his pecuniary condition after the infringement, and what his condition would have been if the infringement had not occurred”); John W. Schlicher, *Measuring Patent Damages by the Market Value of Inventions: The Grain Processing, Rite-Hite, and Aro Rules*, 82 J. PAT. & TRADEMARK OFF. SOC'Y 503, 503 (2000).

11. See, e.g., *Lam, Inc. v. Johns-Manville Corp.*, 718 F.2d 1056, 1065 (Fed. Cir. 1983) (awarding lost profits damages based on the patentee's lost ability to grow, and therefore to sell other, unpatented products).

12. See, e.g., *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1156 (6th

cases require sophisticated economic analysis of the interrelationship between price and demand. For instance, claims of price erosion must be discounted to the extent that the higher prices a patentee could have charged absent competition would have driven away some consumers.¹³ The cases also require inquiry into how the patentee would divide sales with other companies in the market that were either licensed or selling noninfringing goods.¹⁴

Courts take these requirements seriously and quite often reject claims for lost profits. To begin, it should be obvious that patentees cannot possibly meet these requirements unless they participate in the market in direct competition with the infringer.¹⁵ However, even competitors often have trouble demonstrating entitlement to lost profits. Sometimes this is because they actually didn't lose any profits, because, for example, purchasers didn't value the patented technology at all and would happily have switched to noninfringing substitutes.¹⁶ Other times it is because the patentee itself couldn't

Cir. 1978). The Federal Circuit has adopted this framework as the predominant, though not exclusive, way to analyze lost profits. *Gyromat Corp. v. Champion Spark Plug Co.*, 735 F.2d 549 (Fed. Cir. 1984).

13. *See, e.g.*, *Crystal Semiconductor Corp. v. Tritech Microelectronics Int'l, Inc.*, 246 F.3d 1336, 1357-61 (Fed. Cir. 2001).

14. There are a number of ways that courts assess this, including expert testimony, the testimony of the infringer's customers as to what they would have done absent infringement, and a presumption that, when the patentee competes with noninfringing alternatives, the patentee and the competitors would split the infringer's sales. *See State Indus., Inc. v. Morflo Indus., Inc.*, 883 F.2d 1573, 1578 (Fed. Cir. 1989) (applying this market share rule).

15. *BIC Leisure Prods., Inc. v. Windsurfing Int'l, Inc.*, 1 F.3d 1214, 1219 (Fed. Cir. 1993) (reversing an award of lost profits because the patentee and the infringer did not compete); *cf. Del Mar Avionics, Inc. v. Quinton Instrument Co.*, 836 F.2d 1320, 1326 (Fed. Cir. 1987) (describing it as a "general rule" that patentees producing the patented item are entitled to lost profits damages); John E. Dubiansky, *An Analysis for the Valuation of Venture Capital-Funded Startup Firm Patents*, 12 B.U. J. SCI. & TECH. L. 170, 177 (2006) ("In the licensing context, however, the patent owner is not engaged in an enterprise which utilizes the patent. Consequentially, the owner has no profits to have lost, and is only eligible to receive a reasonable royalty.").

16. *See, e.g.*, *Grain Processing Corp. v. Am. Maize Prods. Co.*, 185 F.3d 1341, 1349-50 (Fed. Cir. 1999) (rejecting lost profits claim because evidence showed that patentee would not have made sales; infringers would have switched almost immediately to an equally-good, noninfringing alternative); *Slimfold Mfg. Co. v. Kinkead Indus., Inc.*, 932 F.2d 1453, 1458-59 (Fed. Cir. 1991); *cf. Micro Chem., Inc. v. Lextron, Inc.*, 318 F.3d 1119, 1123-24 (Fed. Cir. 2003) (rejecting a claim for the availability of easy design-arounds when the evidence suggested the design-around would not have been straightforward at the time of infringement). *But see Zygo Corp. v. Wyko Corp.*, 79 F.3d 1563, 1571 (Fed. Cir. 1996) (seeming to set a flat rule preventing consideration of noninfringing substitutes not actually on the market at the time of

have manufactured the products and therefore lost the sales.¹⁷ Still other cases involve more technical failures of proof, for example a failure to adequately segregate profits from costs or a lack of economic sophistication in analyzing market demand and its elasticity.¹⁸

A dramatic example is the foundational case on patent damages, *Panduit v. Stahlin*.¹⁹ In the opinion authored by Judge Markey, later Chief Judge of the Federal Circuit, the court held that the patentee had proven demand for the patented product, an absence of noninfringing substitutes, and the ability to exploit demand and therefore make sales.²⁰ Nonetheless, the court held that the patentee was not entitled to lost profits because it did not adequately separate profits from costs.²¹ There was no dispute that Panduit accounted for variable costs or that it tried to exclude fixed costs as well.²² But expert witnesses disagreed about the correct way

infringement).

Hausman et al. suggest that considering noninfringing substitutes unfairly gives the infringer the benefit of a free option to infringe or not. Jerry A. Hausman et al., *Patent Damages and Real Options: How Judicial Characterization of Noninfringing Alternatives Reduces Incentives to Innovate*, 22 BERKELEY TECH. L.J. 825, 845-46 (2007). To the contrary, the option comes at a price—the payment of the greater of lost profits, if proven, or a reasonable royalty. Cases like *Grain Processing* eliminate what otherwise would have been an overcharge—the ability of the patentee to recover in damages profits it would not have made in fact—rendering lost profits damages more consistent with their compensatory purpose. Unfortunately, the Federal Circuit has not been clear in its application of the *Grain Processing* rule. See, e.g., *Mars, Inc. v. Coin Acceptors, Inc.*, 527 F.3d 1359, 1372-73 (Fed. Cir. 2008) (rejecting *Grain Processing* in a reasonable royalty case).

17. See, e.g., *Datascope Corp. v. SMEC, Inc.*, 879 F.2d 820, 826-27 (Fed. Cir. 1989) (rejecting lost profits claim because there was no evidence that the patentee would in fact have devoted resources to meeting the demand for the infringer's product). A strict application of this rule would overlook the ability of the patentee to license others to meet that demand. Cf. *Yarway Corp. v. Eur-Control USA*, 775 F.2d 268, 276-77 (Fed. Cir. 1985) (permitting evidence of subcontracting to a sister company).

18. See, e.g., *Kaufman Co. v. Lantech, Inc.*, 926 F.2d 1136, 1144 (Fed. Cir. 1991) (rejecting claim for convoyed sales, in part because the patentee did not present evidence of projected profits from those sales); *Slimfold*, 932 F.2d at 1458 (affirming refusal to award lost profits that were estimated on a market-share basis despite evidence that the patentee competed with others in the market in which the infringer participated); *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1156-57 (6th Cir. 1978) (refusing to award lost profits because patentee failed to account properly for fixed costs to be deducted from profits).

19. 575 F.2d at 1152.

20. *Id.* at 1156.

21. *Id.* at 1157.

22. *Id.* at 1156-57.

to account for fixed costs, and the court concluded that because it couldn't be sure what fixed costs to include, it had to reject the lost profits claim altogether in favor of a reasonable royalty.²³

Once a patentee proves entitlement to lost profits, the scope of the resulting award can be quite expansive. Patentees can recoup losses on sales they in fact made if they can prove that they were forced to lower their prices to meet infringing competition.²⁴ They can capture the defendant's sales of unpatented goods that compete with the patented invention.²⁵ They are entitled to capture the value of sales of an entire product based on a single patented component if they can prove that the patented feature is what caused the sale, so that the defendant's infringement garnered a sale that otherwise would have gone to the patentee.²⁶ This is known as the "entire market value rule."²⁷ Patentees are entitled to capture profits based on the sale of "convoyed goods"—goods that are not part of the patented product at all, but that are sold in connection with the patented good and therefore likely would have been sold by the patentee if the patentee rather than the infringer had made the sale of the infringing good. Patentees are even entitled to capture sales by the defendant after the patent has expired, if those sales were made possible by infringing preparatory activity by the defendant during the term of the patent.²⁸

23. *Id.*

24. See *Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1580 (Fed. Cir. 1992) (affirming award of price erosion damages); *Paper Converting Mach. Co. v. Magna-Graphics Corp.*, 745 F.2d 11, 22 (Fed. Cir. 1984) (affirming award of losses based on projected declining marginal cost of producing goods as scale increased). Such price erosion may take place not only in response to actual infringing sales, but also in response to mere offers to sell, because offers to sell are now infringing. For a discussion, see Timothy R. Holbrook, *Liability for the "Threat of a Sale": Assessing Patent Infringement for Offering To Sell an Invention and Implications for the On-Sale Patentability Bar and Other Forms of Infringement*, 43 SANTA CLARA L. REV. 751 (2003).

25. *King Instruments Corp. v. Perego*, 65 F.3d 941, 953 (Fed. Cir. 1995).

26. See, e.g., *State Indus., Inc. v. Mar-Flo Indus., Inc.*, 883 F.2d 1573, 1580 (Fed. Cir. 1989); *TWM Mfg. Co. v. Dura Corp.*, 789 F.2d 895, 901 (Fed. Cir. 1986); *Kori Corp. v. Wilco Marsh Buggies & Draglines, Inc.*, 761 F.2d 649, 656 (Fed. Cir. 1985); *King Instrument Corp. v. Otari Corp.*, 767 F.2d 853, 865 (Fed. Cir. 1985).

27. *State Indus.*, 883 F.2d at 1580.

28. *BIC Leisure Prods. v. Windsurfing Int'l, Inc.*, 687 F. Supp. 134, 137-38 (S.D.N.Y. 1988), *rev'd in part on other grounds*, 1 F.3d 1214 (Fed. Cir. 1993) (permitting recovery for "accelerated [market] reentry" by the infringer after the patent expires).

The effect of these rules is generally salutary: the lost profits doctrine aims to put patentees in the position they would have been in but for the infringement, and the tools the law uses to accomplish this end are quite economically sophisticated. But the high standard of proof means that there are many patentees who are not in fact made whole for the acts of infringement under the lost profits rule.

II. ARE REASONABLE ROYALTIES REASONABLE?

Patentees who cannot prove lost profits, either because they didn't have any lost profits or because they failed to meet the standards of proof, are relegated to a "reasonable royalty" remedy. Reasonable royalties are like lost profits in that both are designed to compensate patentees for their losses. But there the similarity ends. Reasonable royalty law is designed with the nonmanufacturing patentee in mind.²⁹ And what it takes to "make the patentee whole" is very different if the patentee's only interest is in licensing the patent than if the patentee's interest is in excluding competition and maintaining a monopoly price.³⁰ Thus, reasonable royalty case law properly inquires into what the marketplace would actually pay for rights to the technology, bearing in mind that the licensee has to make a profit as well.³¹ By contrast, it is not only possible but common that lost profits will exceed the defendant's gains from infringement.³²

The idea that patent damages tend to be greater in lost profits cases than in reasonable royalty cases makes sense for policy purposes, so long as the reasonable royalty awards go to patentees

29. See Eric E. Bensen & Danielle M. White, *Using Apportionment To Rein in the Georgia-Pacific Factors*, 9 COLUM. SCI. & TECH. L. REV. 1, 22-23 (2008).

30. Accord Amy L. Landers, *Liquid Patents*, 84 DENV. U. L. REV. 199, 253 (2006) (arguing that the damages awarded must take into account the way in which the patentee is harmed, and that manufacturing and nonmanufacturing patent owners are harmed differently).

31. Lemley & Shapiro, *supra* note 9, at 2019.

32. The economic logic of this is straightforward: a patentee with market power will charge a profit-maximizing monopoly price. By contrast, two companies in competition will charge a price lower than the monopoly price, generating less profit to share between them and more consumer surplus. Putting the patentee who faced competition back into the position of receiving a monopoly price requires the infringer to compensate the patentee for the money it has lost to consumer surplus as well as the money it lost to the infringer. Thus, the infringer regularly will have to pay as damages more than it made in profits.

who are not in fact selling products in the market. But if the recipients of reasonable royalty damages are in fact competitors who failed to meet the rigorous requirements of proof of lost profits, the result may be that those patentees are undercompensated by a traditional reasonable royalty approach. Courts have responded to the perceived unfairness of this result³³ by expanding reasonable royalty damages in a variety of ways. First, courts have applied control-of-sales concepts from lost profits to reasonable royalty cases. In its most extreme form, this includes the application of the “entire market value rule” to reasonable royalty cases.³⁴ The term

33. See, e.g., ROBERT P. MERGES & JOHN F. DUFFY, *PATENT LAW AND POLICY* 980 (4th ed. 2007) (suggesting that artificially high reasonable royalties may be justified as a way of “dispens[ing] with” proof of lost profits while adequately compensating patentees who have lost profits). One might question whether this is unfair, given that these plaintiffs, by definition, failed to meet the proof requirements for lost profits. I would distinguish between cases like *Grain Processing*, in which the patentee would not have made the sales at all, and cases in which the patentee probably did lose sales and it is just the measure of those sales or the resulting profits that could not be proven. The former restriction makes sense; the latter deprives patent owners of a return that they would have made absent the infringement. *Accord* Schlicher, *supra* note 10, at 532 (approving of *Grain Processing*).

It is worth noting that the patentee in *Grain Processing* might have been able to make the infringing sales by cutting the price on all its goods so that its profit margin was less than the 3 percent cost differential between the patented invention and the noninfringing substitute. See Hausman et al., *supra* note 16, at 846-47. Given the small difference there, it seems doubtful that doing so would have been net profitable for the patentee. But patentees should certainly have the opportunity to prove that they would have cut their prices across the board to price a less efficient competitor out of the market, and to recover any lost profits (net of the reduced profits on sales they made anyway) such a strategy would have generated.

34. The Federal Circuit endorsed this expansion in *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1549 (Fed. Cir. 1995) (en banc) (“[C]ourts have applied a formulation known as the ‘entire market value rule’ to determine whether such components should be included in the damage computation, whether for reasonable royalty purposes ... or for lost profits purposes.”). The reference to reasonable royalties was dictum there, though, since *Rite-Hite* itself involved lost profits. Ironically, it is not clear that the Federal Circuit had applied the entire market value rule to decide a reasonable royalty case before this statement in *Rite-Hite*. The case *Rite-Hite* relied on, *Marconi Wireless Telegraph Co. v. United States*, 99 Ct. Cl. 1 (Ct. Cl. 1942), *aff’d in part and vacated in part*, 320 U.S. 1 (1943), certainly did not do so; that case involved an accounting for profits (no longer available under the law since 1946) for the infringing reconstruction of previously sold radios, and in any event Marconi actively participated in the market. But courts have since relied on that language to import the concept into reasonable royalty cases. See, e.g., *Bose Corp. v. JBL, Inc.*, 274 F.3d 1354, 1361 (Fed. Cir. 2001); *Tec Air, Inc. v. Denso Mfg. Mich., Inc.*, 192 F.3d 1353, 1362 (Fed. Cir. 1999); *Fonar Corp. v. Gen. Elec. Co.*, 107 F.3d 1543, 1552 (Fed. Cir. 1997). And the Federal Circuit in *Lucent v. Gateway* said that the entire market value rule applied to reasonable royalty cases, though a review of the opinion suggests that the court actually confused the entire market value rule with the question of the royalty base. *Lucent Techs., Inc. v. Gateway, Inc.*,

“entire market value rule” is a misnomer. As Brian Love has observed, it is effectively *never* the case that the patent is responsible for all of the value of a product.³⁵ Most commonly, other patents also contribute to the defendant’s product.³⁶ Even if there are no other relevant patents, the defendant’s know-how, materials, and marketing efforts almost always contribute some value, and usually the most significant part of the value of an infringing product.³⁷ The entire market value rule nonetheless makes a certain amount of sense in lost profits cases because, if most of the value of the defendant’s product is attributable to the patentee’s technology, it is reasonable to conclude that, but for the infringement, the defendant’s customers would have bought the product from the plaintiff instead.³⁸ In such a case, while the defendant almost certainly contributed some value to the ultimate product, it would not have made the sale of that product at all but for the infringement. Instead, the plaintiff would have made the sale and so the plaintiff would have captured whatever incidental value was due to noninfringing attributes. So the entire market value rule is really a presumption that if *most* of the market value comes from the patent, a practicing patentee would have been able to capture the entire value by making the sale.³⁹

The logic of the entire market value rule breaks down in reasonable royalty cases, however, because we’re no longer talking about the defendant taking a sale away from the plaintiff. Instead, the

580 F.3d 1301 (Fed. Cir. 2009). On the entire market value rule in lost profits cases, see 7 DONALD S. CHISUM, *PATENT LAW* § 20.03[1][c][iii] (2007).

35. See Brian J. Love, Note, *Patentee Overcompensation and the Entire Market Value Rule*, 60 STAN. L. REV. 263, 278 (2007); see also Bensen & White, *supra* note 29, at 4 (observing that a real-world negotiation would result in the parties splitting only profits attributable to the infringement); Christopher A. Harkins, *Fending Off Paper Patents and Patent Trolls: A Novel “Cold Fusion” Defense Because Changing Times Demand It*, 17 ALB. L.J. SCI. & TECH. 407, 449 (2007) (same).

36. See David W. Opdenbeck, *Patent Damages Reform and the Shape of Patent Law*, 89 B.U. L. REV. 127, 186 (2009).

37. See Bensen & White, *supra* note 29, at 32.

38. See Love, *supra* note 35, at 275-76.

39. Even then, the plaintiff has not truly contributed the entire market value of the product. Other patentees still must be paid, and if the patentee would have made the sale of the whole product but for the infringement, it is the patentee who would have had to pay them. So even an entire market value rule should deduct from the award the costs of making the product, including the costs of paying royalties to other patentees.

question is how to compensate the nonpracticing patentee for the value of the patented technology. But since there is always at least some value to the defendant's product not attributable to the patent, any application of the entire market value rule in a reasonable royalty setting necessarily overcompensates the patent owner by giving it value not in fact attributable to the patent.⁴⁰ One way to see this is to recognize that if the patentee has truly contributed the entire market value of the technology, no other contribution to the product should be valued at all. On this theory, if a patentee wins an entire market value rule case, no other patentee should be able to recover any damages based on the sale of the same product. But of course, that is not the law.⁴¹ It seems probable that the doctrinal creep of the entire market value rule into reasonable royalty cases came about because of patent plaintiffs who really had unsuccessful lost profits cases.⁴²

40. See Lemley & Shapiro, *supra* note 9, at 2024. The Supreme Court stated the issue a century ago in terms that seem to foreclose application of the entire market value rule in reasonable royalty cases: "In so far as the profits from the infringing sales were attributable to the patented improvements they belonged to the plaintiff, and in so far as they were due to other parts or features they belonged to the defendants." *Dowagiac Mfg. Co. v. Minn. Moline Plow Co.*, 235 U.S. 641, 646 (1915); *accord* *Yale Lock Mfg. Co. v. Sargent*, 117 U.S. 536, 552-53 (1886).

41. To be sure, this problem affects application of the entire market value rule in lost profits cases as well. But it is one thing to impose this disadvantage on a defendant in order to adequately compensate a plaintiff who has in fact lost profits; it is quite another to make a defendant pay too much in the aggregate in order to provide an unearned windfall to a reasonable royalty plaintiff. As noted above, the best solution in lost profits cases is to deem royalties on other patents a cost and therefore deduct it from the profits that the patentee would have made.

Doug Lichtman has suggested that the royalty stacking problem will be a self-limiting one, because companies can't afford to pay more than the entire value of their product, and if aggregate royalties get too high they will simply stop making the product. Douglas Lichtman, *Patent Holdouts and the Standard-Setting Process*, PROGRESS & FREEDOM FOUND. ACAD. ADVISORY COUNCIL BULL. 1.3 (2006), available at <http://www.pff.org/issues-pubs/ip/bulletins/bulletin1.3patent.pdf>. But even if this were true in a hypothetical world of immediate, perfect information, it is unlikely to be of much help in the real world, where damages awards are calculated years or decades later, and where juries do not learn of the other contributions to the success of the product or, worse, are prohibited by the entire market value rule from taking them into account.

42. The first explicit reference to the use of the entire market value rule in reasonable royalty cases came in *Rite-Hite*, a lost profits case. *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1549 (Fed. Cir. 1995) (en banc). *Rite-Hite* relied in turn on *State Industries*, which did not in fact apply the entire market value rule and which was, in any event, also a lost profits case. *State Indus., Inc. v. Mar-Flo Indus., Inc.*, 833 F.2d 1573 (Fed. Cir. 1989). The Federal Circuit

Even in cases that don't apply the entire market value rule, courts have applied the reasonable royalty statute with insufficient sensitivity to the importance of noninfringing components to the value of the overall product. Indeed, the Federal Circuit has even imported the concept of "convoyed sales" of noninfringing 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.⁴³ This approach 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.

While the *Georgia-Pacific* factors include several that require the consideration of the value of those noninfringing components,⁴⁴ in fact for a variety of reasons those components are undervalued.⁴⁵ Most notably, in *Fromson v. Western Litho Plate & Supply*, the Federal Circuit simply rejected the very idea that a patentee's remedy should be apportioned based on the share of the value of the overall product the patentee contributed.⁴⁶ The district court quite reasonably had concluded that the parties would have set a royalty rate based on the proportion of the value of the defendant's product that was "attributable to the invention."⁴⁷ The Federal Circuit reversed and required that the award take the form of a percentage of the defendant's entire product sales, even if that exceeded the

did not apply the doctrine in a reasonable royalty case until after dictum in *Rite-Hite* suggested that the doctrine already applied in those cases. For a discussion of the evolution of the reasonable royalty cases in the Supreme Court before the creation of the Federal Circuit, see Bensen & White, *supra* note 29, at 22-27. For a history of the apportionment principle in patent cases, see Eric E. Bensen, *Apportionment of Lost Profits in Contemporary Patent Damages Cases*, 10 VA. J.L. & TECH. 8, 23-45 (2005).

43. See, e.g., *TWM Mfg. Co. v. Dura Corp.*, 789 F.2d 895, 901 (Fed. Cir. 1986); *Trans-World Mfg. Corp. v. Al Nyman & Sons, Inc.*, 750 F.2d 1552, 1568 (Fed. Cir. 1984).

44. *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970).

45. For a detailed discussion of various reasons for this undervaluation, see, for example, *Lemley & Shapiro, supra* note 9, at 2023-35.

46. 853 F.2d 1568 (Fed. Cir. 1988).

47. *Id.* at 1570.

total profit the defendant made on the product.⁴⁸ Ignoring the other components that contribute to defendant's sales, as *Fromson* appears to require, is intellectually indefensible.⁴⁹ Not surprisingly, this approach has led to reasonable royalty rates that are decidedly unreasonable, and indeed that often exceed the defendant's total profit on a product even when that product was composed primarily of noninfringing components.⁵⁰

Finally, and most dramatically, courts have occasionally simply increased the reasonable royalty award because they fear that it undercompensated a plaintiff that should in fact have received lost profits. *Panduit* is the most notable example.⁵¹ In that case, discussed in Part I, the court affirmed the district court's rejection of plaintiff's lost-profits theory for hypertechnical reasons.⁵² Having done so, it proceeded to excoriate the district court for applying the normal reasonable royalty rules. Instead, the appellate court re-imported many of the concepts of lost profits, reasoning that the defendant would not have been able to make the sales at all but for the infringement, and therefore the plaintiff was entitled to damages that far exceeded the 60 percent of defendant's profit that the district court had awarded as a reasonable royalty.⁵³ Although the Federal Circuit has rejected the express use of "kickers" to compensate patentees for attorney's fees,⁵⁴ the court also has approved discretionary increases in the reasonable royalty designed to avoid undercompensation, which amounts to much the same thing.⁵⁵ Courts have expressly rejected reasonable royalty numbers

48. *Id.* at 1577-78.

49. It is also historically indefensible, as Bensen and White have demonstrated. See Bensen & White, *supra* note 29, at 22-27.

50. See Lemley & Shapiro, *supra* note 9, at 2032 (studying reasonable royalty determinations and finding an average royalty rate of 13.1 percent).

By contrast, some cases suggest that *Fromson* is wrong and that apportionment is permissible. See, e.g., *Riles v. Shell Exploration & Prod. Co.*, 298 F.3d 1302, 1312-13 (Fed. Cir. 2002). The Federal Circuit seemed to endorse apportionment of damages in its most recent decision on the issue. *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301 (Fed. Cir. 2009).

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

52. *Id.* at 1156-57.

53. *Id.* at 1158-64.

54. *Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1580 (Fed. Cir. 1996) (holding that no "kicker" is permissible on top of the reasonable royalty to compensate for attorney's fees or litigation expenses; patentee must prove case is exceptional to recover such expenses).

55. See, e.g., *Maxwell v. J. Baker*, 86 F.3d 1098, 1109-10 (Fed. Cir. 1996) (affirming award

because they felt that those numbers would undercompensate a plaintiff who was in fact a competitor.⁵⁶ 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, in part to compensate plaintiffs who, in a perfect world, would have been able to prove entitlement to lost profits.⁵⁷

These distortions to reasonable royalty case law are problematic. While in theory a reasonable royalty approach could properly compensate nonpracticing patent owners, Carl Shapiro and I have offered both reasons and evidence demonstrating that, in practice, the reasonable royalty approach systematically overcompensates patent owners in component industries.⁵⁸ Indeed the situation has gotten so bad that some patentees who *can* prove lost profits elect instead to seek a “reasonable” royalty that is far in excess both of what the parties would have negotiated and of the actual losses the patentee suffered.⁵⁹ And the Federal Circuit has rejected the perfectly sensible idea that a hypothetical negotiation between willing buyers and sellers is one that would in fact leave the buyer with some profit.⁶⁰ By importing compensation concepts from lost

of \$1.5 million additional damages on top of reasonable royalty award); *King Instruments Corp. v. Perego*, 65 F.3d 941, 951 n.6 (Fed. Cir. 1995) (discussing “discretionary increases”); *Stickle v. Heublein, Inc.*, 716 F.2d 1550, 1563 (Fed. Cir. 1983) (allowing for “an increase in the reasonable royalty determined by the court”); *Maxwell v. Angel-Etts*, No. CV 9910516DT, 2001 WL 34133507, at *8-9 (C.D. Cal. July 9, 2001) (approving jury’s additional award of damages beyond reasonable royalty damages).

56. *Mars, Inc. v. Coin Acceptors, Inc.*, 527 F.3d 1359, 1374 (Fed. Cir. 2008).

57. *See supra* note 33.

58. Lemley & Shapiro, *supra* note 9, at 2023-25.

59. *See, e.g., Mars*, 527 F.3d at 1374 (holding that reasonable royalty rate could exceed what defendants would have been able to pay and still make a profit); *Monsanto Co. v. McFarling*, 488 F.3d 973, 978-81 (Fed. Cir. 2007) (awarding reasonable royalty damages of more than six times Monsanto’s lost profits); *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1384 (Fed. Cir. 2004) (approving a royalty that far exceeded the defendant’s profit from infringement); *Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1338 (Fed. Cir. 2004) (upholding a reasonable royalty that exceeded the infringer’s profits from the product). For a discussion of this issue, see, for example, Amy L. Landers, *Let the Games Begin: Incentives to Innovation in the New Economy of Intellectual Property Law*, 46 SANTA CLARA L. REV. 307 (2006). The reader should be aware that I represented McFarling in *Monsanto Co. v. McFarling*.

60. *See Ralph*, 382 F.3d at 1383 (rejecting infringer’s argument that a “reasonable royalty deduced through a hypothetical negotiation process can never be set so high that no rational self-interested wealth-maximizing infringer acting ex ante would have ever agreed to it”); *cf.*

profits into the reasonable royalty context without importing the strict elements of proof, these courts have turned the reasonable royalty from a floor on patent damages designed to avoid undercompensation into a windfall that overcompensates patentees.

At least some, perhaps most, of that overcompensation can be traced to efforts in cases like *Panduit* to compensate practicing patent owners who should be entitled to lost profits damages.⁶¹ There is no other possible explanation for giving a patentee a royalty based on convoyed sales, for example. And the problem threatens to get worse, not better: the House of Representatives is currently attempting to solve one of the problems I have identified—the fact that modern courts ignore the contributions of nonpatented technologies and refuse to apportion damages—while cementing into the statute an equally serious problem—the misapplication of the entire market value rule in reasonable royalty cases.⁶² If manufacturing patent owners can capture the entire market value of a technology based on their invention of a single component, that overcompensation will encourage too much patent litigation by nonpracticing entities, exacerbate the already-serious problem of royalty stacking, and discourage the sale of products that incorporate many components.

But there is some reason for optimism. The *Lucent v. Gateway* decision may signal an important step towards the use of apportionment. While the court in that case held that a patentee of a minor software feature could use the entire royalty base for Microsoft Windows,⁶³ the royalty rate had to factor in the minor nature of the

Mars, 527 F.3d at 1373 (rejecting as “wrong as a matter of law” the idea that the reasonable royalty will be limited by the noninfringing alternatives available to the infringer); *Parker-Hannifin Corp. v. Champion Labs.*, No. 1:06-CV-2616, 2008 WL 3166318, at *7-8 (N.D. Ohio Aug. 4, 2008) (same).

61. See *supra* notes 19-23 and accompanying text.

62. See H.R. 1908, 110th Cong. (2007). By contrast, the Senate version, S. 515, would require neither apportionment nor the entire market value rule. The fate of patent reform legislation was unclear at this writing.

63. Inexplicably, the Federal Circuit referred to this royalty base issue as the entire market value rule. *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1336 (Fed. Cir. 2009). As the text makes clear, the two questions are distinct. The entire market value rule involves an effort to lay claim to components of a product the patentee didn’t invent, but which the patentee might have been able to sell along with the patented component. The royalty base question comes up in every royalty case, whether or not the entire market value rule applies.

patentee's contribution.⁶⁴ By rejecting a jury verdict that did not clearly apportion damages, the Federal Circuit has made it harder for patent plaintiffs to use large royalty bases to produce inflated awards. But it remains to be seen whether district courts will be able and willing to serve as gatekeepers, excluding weak damages evidence and reversing unsupported jury verdicts.

III. THE TWO DOMAINS OF PATENT DAMAGES

The purpose of both patent damages rules is ultimately the same—to compensate the inventor for losses attributable to the infringement—but they are directed at fundamentally different types of losses. Lost profits damages compensate patent owners who would have had partial or complete market exclusivity in the absence of infringement.⁶⁵ To make those patent owners whole, defendants must be made to pay in many cases more than they made by infringing, since it is elementary economics that competition results in lower producer surplus than monopoly.⁶⁶ By contrast, reasonable royalty damages are designed to mimic the result that patentees not interested in or able to take advantage of market exclusivity would have achieved if they had been able to bargain with the infringers beforehand.⁶⁷ To avoid encouraging infringement, the reasonable royalty calculus properly skews the damages award upward by making the counterfactual assumption that the bargainers would have known that the patent was both valid and infringed.⁶⁸ But the ultimate aim is not to mimic exclusivity, or to give patentees the full social value of their technology, but instead to set a rate that would have both compensated patentees and allowed users of the technology to make a reasonable profit, taking

64. *Id.* at 1337.

65. *See supra* text accompanying notes 10-11.

66. *See supra* note 32.

67. *See supra* note 31 and accompanying text.

68. *Cf.* Paul M. Janicke & Lilan Ren, 34 *AIPLA Q.J.* 1, 8 (2006) (finding that patentees lose three-quarters of patent cases); Mark A. Lemley & Carl Shapiro, *Probabilistic Patents*, 19 *J. ECON. PERSP.* 75, 79-83 (2005) (noting the probabilistic nature of patent rights in practice).

into account the other patents they must license and the other costs they must incur to sell the product.⁶⁹

Unlike market exclusivity claims, patentees whose injury is in lost licensing revenue have no legitimate claim that they would have made or controlled the sale of unpatented components of the defendant's product or of conveyed sales of related products. Their compensation should be based on the value that the patented invention actually contributes as a proportion of the defendant's product, taking into account the other patents, know-how, raw materials, and labor that also contribute to the value of that product and the existence of possible alternatives to the patented technology. Thus, a truly reasonable royalty is one that bases the patentee's damages on the merits of the incremental contribution of the patent.⁷⁰ The distortions I described in Part II occur because courts want to give patentees in the first category damages adequate to compensate for the loss of market exclusivity. If lost profits are not available, they import those market exclusivity concepts into reasonable royalty case law.⁷¹

Congress has considered reforming the damages statute in ways that would mandate application of this logical apportionment principle in reasonable royalty cases.⁷² Unfortunately—and surprisingly—that proposed reform has proven controversial, raising objections not just from patent trolls who want to lay claim to a disproportionate share of the defendant's product but also from industry groups such as pharmaceutical companies that in fact have nothing to fear from reasonable royalty reform.⁷³ As a result, the bill

69. Lemley & Shapiro, *supra* note 9, at 2019.

70. Theoretically, that contribution could be zero if the patent is no better than available noninfringing alternatives. See Schlicher, *supra* note 10, at 503, 527-29; cf. Roger D. Blair & Thomas M. Cotter, *Rethinking Patent Damages*, 10 TEX. INTELL. PROP. L.J. 1, 74 (2001) (suggesting achieving the same result by creating a "patent injury" doctrine analogous to the "antitrust injury" doctrine that requires a showing of causation before entitlement to relief); Julie S. Turner, Note, *The Nonmanufacturing Patent Owner: Toward a Theory of Efficient Infringement*, 86 CAL. L. REV. 179, 204 (1998) (arguing that patent owners who are not injured should not be able to sue, and contending that those who do not practice or license their patents have not been injured). In practice, however, courts that find a patent valid and infringed almost always award some royalty.

71. See *supra* note 33 and accompanying text.

72. H.R. 1908, 110th Cong. (2007).

73. *Patent Reform Act of 2007: Hearing on H.R. 1908 Before the Subcomm. on Courts, the Internet, and Intellectual Property of the H. Comm. on the Judiciary*, 110th Cong. 40-41 (2007)

that passed the House in 2007 blended the salutary apportionment ideas with a rule that would compel application of the entire market value rule in reasonable royalty cases.⁷⁴ That outcome may actually be worse than no change at all, because it will give patentees whose only injury is lost licensing revenue an incentive to argue for the value of components they had no hand in inventing or implementing.

Assuming Congress does not act to enshrine the entire market value rule in reasonable royalty cases, the courts have the power to fix the problem with reasonable royalty damages. To do so, courts (or Congress, should it decide to act) should expressly distinguish between damage theories appropriate in lost profits cases and those appropriate in reasonable royalty cases. Patentees whose harm is based on a loss of market exclusivity—those who reasonably could have expected to make additional sales, or sales at a higher price, absent infringement—should be entitled to lost profits damages. Patentees whose harm is lost licensing revenue, but who could not plausibly claim to have lost sales as a result of the infringement, should be entitled to reasonable royalties, but those reasonable royalties should be calculated based on what the market would actually have borne assuming infringement of a valid patent, and should not include “kickers” or the allocation of the entire market value to a patentee who only contributed part of that value.⁷⁵ Enforcing a strict divide between these groups should help to end the distortions of reasonable royalty damages that have contributed to the royalty stacking and patent holdup problems.

To make this strict divide work, courts will need to be more lenient than they have been in requiring proof of lost profits.⁷⁶ I do not mean to suggest that courts should award lost profits to those who have not in fact lost them. It makes sense to require evidence that the patentee would in fact have made sales absent the infringe-

(statement of Kevin Shaver, Chairman of the Board and Chief Executive Officer, Amgen Incorporated).

74. H.R. 1908, 110th Cong. (2007).

75. A return to this approach would be consistent with Supreme Court precedent on the question. *See Seymour v. McCormick*, 57 U.S. (16 How.) 480, 490-91 (1853) (rejecting the idea that a patentee on a component is entitled to royalties equivalent to the inventor of an entire product).

76. *See supra* notes 12-23 and accompanying text.

ment, if for no other reason than to deter undeserving claimants from alleging that, but for the infringement, their failed companies would in fact have become a market leader. But where the problem is imprecision in calculating lost profits, it is important to keep in mind that the alternative to denying lost profits is a less precise, and more distorted, reasonable royalty measure. Courts too often have been willing to allow technical failures of proof—a lack of detail in separating profits from costs, or insufficiently specifying market demand—to doom a claim for lost profits.⁷⁷ They have also required proof that the patentee itself could have met the market demand, ignoring the prospect that a patentee could grant a territorially or product-limited exclusive license to another firm to pick up the slack.⁷⁸ Courts have imposed these requirements secure in the knowledge that the patentee would still be compensated by reasonable royalties. But under a strict divide approach, a patentee who can show that it is more likely than not that an infringer's sales cut into its own should be entitled to the court's best estimate of the patentee's lost profits. That estimate may not be perfect, but it is likely to be at least as accurate as the alternative reasonable royalty measure⁷⁹ and will avoid distorting the reasonable royalty cases that are not brought by patentees claiming market exclusivity. Fortunately, this need not require a big change in Federal Circuit jurisprudence. There are a number of pre-*Rite Hite* Federal Circuit cases that find lost profits despite the difficulty of calculating profits or the uncertainty of a counterfactual world.⁸⁰

77. See *supra* note 18 and accompanying text.

78. Cf. Stephen M. Maurer & Suzanne Scotchmer, *Profit Neutrality in Licensing: The Boundary Between Antitrust Law and Patent Law*, 8 AM. L. & ECON. REV. 476, 483-86 (2006) (suggesting ways patentees could structure royalties to both participate in the market and license others to fill remaining demand).

79. Indeed, it is somewhat ironic that courts have insisted on strict compliance with the elements of proof of a lost profits claim, given that the reasonable royalty alternative involves at least as much uncertainty and approximation. Cf. *Riles v. Shell Exploration & Prod. Co.*, 298 F.3d 1302, 1311 (Fed. Cir. 2002) (observing that reasonable royalty calculus “necessarily involves some approximation of the market as it would have hypothetically developed absent infringement”).

80. See, e.g., *Standard Havens Prods., Inc. v. Gencor Indus., Inc.*, 953 F.2d 1360, 1372 (Fed. Cir. 1991) (“Evidence that shows a reasonable probability that the patent owner would have made the infringing sales made by the infringer will suffice.... Thus, the patent owner need not prove causation as an absolute certainty.”); *Del Mar Avionics, Inc. v. Quinton Instrument Co.*, 836 F.2d 1320, 1328 (Fed. Cir. 1987) (holding that the district court erred

With manufacturing patent owners and those that have granted exclusive licenses to manufacturing firms more clearly protected under the lost profits prong, the reasonable royalty measure of damages can return to its original role—as a means of ensuring that patentees aren't denied fair compensation for the value they could have demanded in a fair market for a nonexclusive license to their patents.⁸¹ It will also render largely irrelevant the question of whether reasonable royalties can exceed proven lost profits and therefore end the growing practice of patentees opting for a distorted measure of royalties that is greater than the profits they actually lost.

A couple of complications deserve brief mention. First, what should be done with a patentee who does not itself practice the invention, and so could not have made the profits directly, but who has granted an exclusive license to another party that does practice? In my view, a patentee who has granted an exclusive license should stand in the shoes of the exclusive licensee; if the exclusive licensee has lost profits because of infringement, those losses should be compensable in a suit by either or both parties, divided as per the agreement between them.⁸² The decision to manufacture inside or outside a firm is one that should be driven by costs, not by fear of changed legal consequences.⁸³

Second, there are also cases in which a patentee can prove that it would have made some but not all of the defendant's sales. In that case a hybrid award makes sense, with the patentee receiving lost profits on provable losses and a reasonable royalty on other sales. Notably, a licensor in such a situation is likely to be more concerned about the price and quantity licensed, since the licensed goods will compete with its own products. As a result, reasonable royalties in

because it “gave controlling weight to the difficulty of the calculation, and in so doing adopted a measure of damages that was not designed to make whole the injured party”).

81. See *supra* note 31 and accompanying text.

82. The Federal Circuit has treated the two differently for purposes of awarding both lost profits and injunctive relief. See *Mars, Inc. v. Coin Acceptors, Inc.*, 527 F.3d 1359 (Fed. Cir. 2008) (patentee cannot rely on profits lost by a subsidiary); *Voda v. Cordis, Inc.*, 536 F.3d 1311, 1329 (Fed. Cir. 2008).

83. On patents and the nature of the firm, see, for example, Dan L. Burk & Brett McDonnell, *The Goldilocks Hypothesis: Balancing Intellectual Property Rights at the Boundary of the Firm*, 2007 U. ILL. L. REV. 575.

those hybrid cases may more closely approximate lost profits damages.⁸⁴

Finally, there may be circumstances in which a patentee does compete in the market, but is so inefficient that it would make no profits even in the absence of infringement. Such a patentee should not be precluded from obtaining a reasonable royalty from its more efficient competitors in lieu of a lost profits award. The point of my analysis is to separate the theories of harm to patentees, not to suggest that by choosing to practice an entity foregoes the backstop of a reasonable royalty.

CONCLUSION

Patent damages are supposed to compensate patent owners for their losses, putting them back in the world they would have inhabited but for infringement. The lost profits analysis contains sophisticated economic tools to help courts calculate that but-for world. Unfortunately, the perfect has too often been the enemy of the good, relegating a number of lost profits cases to the rather less economically sophisticated analysis of reasonable royalties. Worse, the importation of concepts from lost profits into reasonable royalty analysis, and the fear of undercompensating deserving patent owners that should have been able to prove lost profits, has led to systematic distortions in the reasonable royalty structure that overcompensate nonmanufacturing patent owners. Enforcing a strict separation between the two and easing the burden of proof on lost profits will enable both types of patent damages to serve the compensatory purpose for which they were intended.

84. See Maurer & Scotchmer, *supra* note 78 (arguing that a patentee should be able to maximize profits through partial manufacturing and partial licensing).