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LET THE GAMES BEGIN: INCENTIVES TO INNOVATION IN THE NEW ECONOMY OF INTELLECTUAL PROPERTY LAW

Amy L. Landers*

I. INTRODUCTION

Patent litigation is developing a troubling resemblance to a Las Vegas casino. Juries have awarded patentees damage amounts that far exceed the value of a patented invention. At the same time, courts have failed to define standards to align damages with the patentee's harm. As a result, the damages awarded for patent infringement far exceed the amount that the patent is worth. These circumstances create incentives for patentees to "game" the patent system by seeking large damages and settlement jackpots from those accused of infringement. Increasingly, so-called "patent trolls" assert patent infringement allegations, seeking to turn ideas into cold hard cash. All the while, the value of a patent bears an increasingly distant relationship to the damages awarded in patent litigation for use of the patented invention.

Patents are remarkably flexible tools that foster competition by creating incentives to innovate. Essentially, patents reward innovators by granting a patentee the right to

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exclude others from practicing the patented invention.\footnote{U.S. CONST. art. I, § 8 (granting Congress the power "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries"); 35 U.S.C. § 271 (2000).} Innovators utilize this government-granted right to prevent competitors from using an inventor's idea for the patent term.\footnote{35 U.S.C. § 271.}

However, over the past several years, patentees have begun to use patents not only to exclude others from practicing the patentee's invention, but also as a source of revenue. A number of organizations that license, but do not commercialize patents, have sprung up with the sole purpose of asserting patents against potential infringers.\footnote{One example of an organization that does not create or sell product, but instead only develops and acquires intellectual property, including patents, for licensing is Intellectual Ventures. \textit{See generally} Thomas Kellner, \textit{Patent Stalker}, \textit{FORBES}, Nov. 14, 2005, at 166, \textit{available at} http://www.forbes.com/formbes/2005/11141166_print.html. Additional firms with similar business models include Rambus, Inc. and InterTrust Technologies. \textit{See} Rambus, Inc., Licensing FAQ, http://www.rambus.com/products/innovationslicensing/licensingfaq/index.aspx (last visited Jan. 25, 2006) (describing Rambus's business model: "Rambus does not manufacture chips, but rather licenses technologies and designs to some of the world's leading semiconductor companies"); InterTrust Technologies, Overview, http://www.intertrust.com/main/overview/index.html (last visited Jan. 25, 2006) (describing InterTrust's history and business model).} Established companies have also begun "monetizing" existing patent portfolios in the same way.

Intel had a recent experience that exemplifies the patent trolling problem.\footnote{Maggie Shiels, \textit{Technology Industry Hits Out at Patent Trolls}, BBC NEWS, June 2, 2004, http://news.bbc.co.uk/1/hi/business/3722509.stm.} In that case,\footnote{TechSEARCH LLC v. Intel Corp., 286 F.3d 1360 (Fed. Cir. 2002) (affirming judgment for defendant), \textit{cert. denied}, 537 U.S. 995 (2002).} a patent licensing company purchased a patent for $50,000 and then sought $7 billion from Intel for alleged infringement by the company's Pentium II semiconductor.\footnote{Shiels, \textit{supra} note 4.} Although the court dismissed the case, Intel paid $3 million in legal fees. As Intel's attorney stated after the experience, "[patent assertion] has become more and more prevalent because people see it as a very, very profitable business model."\footnote{Id.}

At their worst, patent trolls threaten companies with...
baseless lawsuits that seek product shutdowns and large monetary judgments. Congress, concerned about a potential practice "to extort money from high tech companies, both large and small," is currently considering a way to stem such practices. The solutions considered may significantly drain the patent troll's prey: companies that are themselves engaged in innovative activity. This dilemma has pulled patents into the center of a political debate that focuses on the costs of patent trolling activity. Recently, the U.S. House of Representatives Subcommittee on Courts, the Internet, and Intellectual Property drafted the Patent Act of 2005 to address this problem.

The proposed legislation includes a provision targeted at more closely aligning patent royalty damages with the value of patents. In brief, the draft legislation attempts to reign in overvaluation of patented inventions. The proposal requires fact-finders to consider specifically whether the infringer's contribution to the accused product adds to its value. This proposal is intended to modify current law, which permits patentees to recover royalties on an entire product or system, even where the patent covers only a minor component of that product or system.


11. Id.

12. Id. ("In determining a reasonable royalty in the case of a combination, the court shall consider, if relevant and among other factors, the portion of the realizable profit that should be credited to the inventive contribution as distinguished from other features of the combination, the manufacturing process, business risks, or significant features or improvements added by the infringer.").

13. Fonar Corp. v. Gen. Elec. Co., 107 F.3d 1543, 1552 (Fed. Cir. 1997) (stating that where a patentee demonstrates that the entire market value of a device is attributable to the patented invention, the court "allows for the
Under the current Patent Act, patent trolls are able to game the system by using existing patent damages decisions. Generally, patent law authorizes monetary damages for infringement in the form of a "reasonable royalty." Awarding damages for unpatented components of an infringing device can be seen as overcompensation for actual harm suffered by patentees, expanding patent rights beyond their scope, and threatening to deter lawful innovative activity. The proposed Patent Act of 2005 is a helpful start in re-focusing the damages inquiry on the specific harms caused by infringement.

This article examines the proposed legislation to assess whether its approach resolves—or exacerbates—existing problems with the proposal to focus fact-finders on the infringer's contribution. Specifically, the article concludes that the proposed legislation's goal of limiting a patentee's recovery to the harm suffered from use of the patented invention is laudable, but argues that this proposal fails to address more pernicious problems that concern both accuracy in the valuation of patents and, more broadly, whether the royalty award remedy serves the patent system's goal to encourage innovation. Standards that provide greater certainty in valuing the use of a patented invention are necessary.

Further, this article suggests that engrafting a deterrence function onto the reasonable royalty award may be laudable in intent, but would be disastrous in application. The lack of any defined deterrence standard, coupled with this feature's potential application to innocent infringers, threatens to penalize defendants without some additional and necessary safeguards. Ultimately, the problem of valuing an infringed claim as exploited by an infringer will continue to arise even if the proposed legislation is enacted.

Part II of this article traces the historical origins of recovery of damages based on the value of an entire apparatus containing several features, even though only one feature is patented" (quoting Paper Converting Mach. Co. v. Magna-Graphics Corp., 745 F.2d 11, 22 (Fed. Cir. 1984)). As further explored in Part III, jury awards may include royalties for the selling price of a product where a patent covers only part.

monetary patent recovery, with particular focus on the apportionment procedures that have been re-awakened by the proposed legislation. Part III examines the current state of the law and describes how modern courts apply the reasonable royalty standard. This part also identifies a damaging lack of defined analysis for determining a reasonable royalty award. Part III further asserts that the tension between compensating patentees and deterring infringers has left ample room to encourage patent trolls to game the patent system. Part IV examines the legislative proposal in the Patent Act of 2005, which is aimed at multi-invention products, and discusses potential ambiguities in the proposed legislation that should be addressed by Congress prior to adoption. Part IV also examines the implications of the proposed amendment, including its failure to propose defined standards for determining patent valuation methods and reasonable royalty damages in a patent infringement case. This article demonstrates that although the proposed Patent Act of 2005 is a helpful step toward curbing patent trolling activity, the proposal fails to resolve the central problem with the unworkable methods used by courts to calculate reasonable royalty damages.

II. THE ORIGINS OF PATENT REMEDIES

The current version of the Patent Act authorizes monetary relief for infringement at 35 U.S.C. § 284, which states in relevant part that "[u]pon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court." This provision was enacted to "ensure that the patent holder would in fact receive full compensation for any damages he suffered as a result of the infringement." Compensation awarded under § 284 is in the form of the patentee’s lost profits, a reasonable royalty, or a combination of both. In addition, courts may award up to three times the

17. See, e.g., Crystal Semiconductor Corp. v. TriTech Microelectronics Int'l,
damage award if a jury finds that an infringer acted willfully or in bad faith. In exceptional cases, a court may also award reasonable attorney fees.

Awarding damages for an infringing use of a patentee's invention is consistent with the purposes of patent law: to increase innovation and to compensate patentees for the loss of the right to exclude others from using the invention. One article describes the system of economic rewards for exploitation of the patent monopoly as follows:

Essentially, the patent law gives the innovator a right to exclude—a "patent monopoly" . . . . The innovator tries to earn profits (which may be large or small) from this "monopoly." And the intention is that the private returns will compensate the innovator for the effort and cost associated with the innovation. From a societal perspective, the goal is that the short-term "monopoly" prices will be more than offset over time by the increased rate of innovation, which in turn yields better products at lower cost than would have been available without the innovations.

Providing the innovator with a period of exclusivity allows the patentee time to exploit any first-mover advantages that may exist in the market for the patentee's

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Inc., 246 F.3d 1336, 1354 (Fed. Cir. 2001).

18. 28 U.S.C. § 284. After a jury makes a finding of willfulness, a court considers several factors to determine whether the damage award should be trebled, including:

(1) deliberate copying; (2) the infringer's investigation and good-faith belief of invalidity or non-infringement; (3) litigation conduct; (4) the infringer's size and financial condition; (5) the closeness of the case; (6) the duration of the misconduct; (7) remedial action by the infringer; (8) the infringer's motivation for harm; and (9) concealment.

Transclean Corp. v. Bridgewood Servs., Inc., 290 F.3d 1364, 1377-78 (Fed. Cir. 2002) (citing Read Corp. v. Portec, Inc., 970 F.2d 816, 827 (Fed. Cir. 1992)).

19. 35 U.S.C. § 285 ("The court in exceptional cases may award reasonable attorney fees to the prevailing party."). See generally Transclean Corp., 290 F.3d at 1379. Another significant form of relief is injunctive relief, which seeks to prevent further violations of the patent right. See 35 U.S.C. § 283.

20. King Instruments Corp. v. Perego, 65 F.3d 941, 950 (Fed. Cir. 1995) ("The [Patent] Act supplies a carrot in the form of economic rewards resulting from the right to exclude. The Act further guarantees adequate damages in the form of provable lost profits to underscore the value of the invention and the incentive to innovate.").

product.  

A. Monetary Remedies in Courts of Equity Under Former Law

The Patent Act of 2005 proposes to amend the current Patent Act by requiring the fact-finder to consider apportionment of the infringing product in terms of its features derived from the patented invention and those features contributed by the infringer.  

Before 1946, such apportionment proceedings were a very active part of patent litigation. Indeed, apportionment was once viewed as extremely problematic and criticized as unfair, expensive, and procedurally burdensome. In addition to other considerations, these criticisms led to a major amendment of the damages rules in 1946. In order to understand fully the implications of the proposed Patent Act of 2005, it is useful to examine these apportionment practices under the historic case law.

Historically, the type of monetary relief available to a patentee depended on whether the suit was brought in equity.

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22. Marvin B. Lieberman & David B. Montgomery, To Pioneer Or Follow?: Strategy Of Entry Order 6 (Stanford Sch. of Bus., Research Paper No. 1084, 1990), available at http://gsbapps.stanford.edu/researchpapers/library/RP1084.pdf (describing the first-mover advantage, stating, "[t]he evidence presented . . . suggests that first-mover or pioneering advantages do indeed exist, that they may persist over very substantial periods of time, and they may be derived from product, technology, and market pioneering").


24. Cincinnati Car Co. v. N.Y. Rapid Transit Corp., 66 F.2d 592, 593 (2d Cir. 1933) ("The difficulty of allocating profits in such cases has plagued the court from the outset, and will continue to do so, unless some formal and conventional rule is laid down, which is not likely. Properly, the question is in its nature unanswerable."); Recovery in Patent Infringement Suits: Hearing on 5231 Before the Comm. on Patents of the H. of Rep., 79th Cong. (1946) [hereinafter Hearing on 5231], reprinted in Vincent Tassinari, Compiled Legislative History of 35 U.S.C. § 284: The Patent Compensation Statute, 31 UWLA L. REV. 45, 55-56 (2000) (statement of Rep. Robert K. Henry, Member, Congress, describing the high volume and significant length of apportionment proceedings under then-current law).

25. Hearing on 5231, reprinted in Tassinari, supra note 24, at 56 (statement of Rep. Robert K. Henry, Member, Congress, describing apportionment proceedings and stating, "[t]he result is that there is a complete failure of justice in almost every case in which supposed profits are recovered or recoverable").

or in law. A patentee suing in equity could recover "the amount of gains and profits that the defendants [had] made by the use of his invention."27 Cases in equity focused on recovery of the infringer's gain.28 Equity courts reasoned that the infringer was essentially a trustee for the patentee with respect to profits made for the use of the invention and that a court of equity was empowered to disgorge such profits in order to effectuate complete justice between the parties.29 Thus, courts analogized recovery of an infringer's profits as relief to "the same rule that courts of equity apply to the case of a trustee who has wrongfully used the trust property for his own advantage."30 That is, an infringer was seen as one who had "wrongfully intermeddled" with the patent31 and who "must yield the gains begotten of his wrong."32 Additionally, recovery of an infringer's profits was described as allowing a patentee "a substitute for damages, at the election of the complainant, for the purpose of preventing multiplicity of suits" that might otherwise require a patentee to file a separate suit in a court of law.33

For example, in Duplate Corp. v. Triplex Safety Glass Co.,34 Justice Cardozo rejected the argument that a reasonable royalty was an appropriate measure of damages. Instead, the Court ordered an accounting for recovery of the infringer's profits.35 The Court held that the infringer's gain from the infringement was "viewed upon an accounting as if held upon a quasi trust to contribute what it can to the profits of the business."36

The patentee's monetary recovery in equity was limited to the defendant's actual profits; the patentee suing in equity could recover nothing more.37 However, the term "profits," as

28. See, e.g., Birdsall v. Coolidge, 93 U.S. 64, 69 (1876) (noting that the infringer's gains and profits were the "proper measure of damages in equity suits" and that "the infringer in such a suit [is] regarded as the trustee of the owner of the patent as [to] such gains and profits").
29. Tilghman, 125 U.S. at 147.
30. Id.
35. Id. at 457.
36. Id.
37. See Cowing v. Rumsey, 6 F. Cas. 670, 671 (C.C.N.D.N.Y. 1870) ("In such
used by the equity courts, included any advantage that the defendant gained by the patent, such as a defendant's manufacturing cost savings if attributable to the patented invention. Until a statutory amendment in 1870, a patentee's total recovery in equity could not exceed the defendant's actual profit—that is, if the defendant failed to make a profit, a patentee suing in equity could not obtain monetary relief.

B. History: Royalties as a Legal Remedy

A patentee suing at law was entitled to recover for all harm suffered due to the defendant's infringement. A broad range of evidence could support an award based on harm to the plaintiff for use of the patented invention, including the approximate value of the invention, customary profits, market demand, an established royalty, or information that might establish a reasonable royalty. A patentee was entitled to present evidence of an infringer's profits if such evidence supported the inference that the patentee would have realized such profits and that this figure represented the patentee's loss.

There were two types of royalty damages available in courts of law. First, patentees could prove an established royalty damage figure where the value of a patent had been

38. Tilghman, 125 U.S. at 146.
39. Cowing, 6 F. Cas. at 671-72. An 1870 statutory amendment permitted patentees to recover both profits and damages in a court of equity. Id. at 671-72 & n.2 (discussing An Act to Revise, Consolidate, and Amend the Statutes Relating to Patents and Copyrights, § 55, 16 Stat. 198, 206 (1870)); see also Root v. Ry. Co., 105 U.S. 189, 201-02 (1882) (noting the effect of the statutory change).
40. Cowing, 6 F. Cas. at 671. For a patentee's action at law, "it is precisely what is lost to the plaintiff, and not what the defendant has gained, which is the legal measure of damages to be awarded." Id.
41. Id. at 671-72; see also Suffolk Co. v. Hayden, 70 U.S. 315, 320 (1866).
42. Cowing, 6 F. Cas. at 672-73.
set through a series of existing licenses.\textsuperscript{43} That is similar to the established royalty rates used today.\textsuperscript{44} However, a court could disregard an established royalty if the infringer demonstrated that such royalties were not indicative of the value of what had been appropriated from the patentee.\textsuperscript{45}

Second, a patentee could establish a basis for a remedy at law using a reasonable royalty theory,\textsuperscript{46} a predecessor to the damages calculation under current law. The reasonable royalty sought to accomplish the statutory purpose of compensating the patentee injured by use of the invention where he or she could not demonstrate either lost profits or an established royalty.\textsuperscript{47} As one court summarized, under former law, the reasonable royalty

may also be well called "general damage"; that is to say, damage not resting on any of the applicable, exact methods of computation but upon facts and circumstances which permit the jury or the court to estimate in a general, but in a sufficiently accurate way, the injury to plaintiff caused by each infringing sale.\textsuperscript{48}

Evidence that supported a reasonable royalty award included information about "the nature of the invention, its utility and advantages, and the extent of use involved."\textsuperscript{49} Other reasonable royalty awards were premised on an invention's cost savings to the defendant.\textsuperscript{50}

\textsuperscript{43} Philp v. Nock, 84 U.S. 460, 462 (1873) ("Where the plaintiff has sought his profit in the form of a royalty paid by his licensees, and there are no peculiar circumstances in the case, the amount to be recovered will be regulated by that standard.").

\textsuperscript{44} See, e.g., Sun Studs, Inc. v. ATA Equip. Leasing, Inc., 872 F.2d 978, 993 (Fed. Cir. 1989) (defining an established royalty as a royalty that is 1) determined prior to infringement; 2) paid by a sufficient number of persons to demonstrate acquiescence in its reasonableness; 3) negotiated without threatened or actual litigation; and 4) paid for rights comparable to those infringed in the lawsuit); Nickson Indus., Inc. v. Rol Mfg. Co., 847 F.2d 795 (Fed. Cir. 1988) (applying patentee's established royalty amount as the measure of damages).

\textsuperscript{45} See Birdsall v. Coolidge, 93 U.S. 64, 70 (1876).

\textsuperscript{46} Dowagiac Mfg. Co. v. Minn. Moline Plow Co., 235 U.S. 641, 648 (1915) (explaining that a reasonable royalty represents a measure of damages for patent infringement that is based on general evidence of "the nature of the invention, its utility and advantages, and the extent of the use involved").

\textsuperscript{47} Philp, 84 U.S. at 462.

\textsuperscript{48} U.S. Frumentum Co. v. Lauhoff, 216 F. 610, 617 (6th Cir. 1914).

\textsuperscript{49} Dowagiac, 235 U.S. at 648.

\textsuperscript{50} Tilghman v. Proctor, 125 U.S. 136, 146 (1888) ("If, for example, the unauthorized use by the defendant of a patented process produced a definite
Courts would not award a reasonable royalty unless the patentee proved an inability to demonstrate lost profits or an established royalty. The reasonable royalty was granted where other methods of proving the patentee's harm failed, as "send[ing] the successful plaintiff away after years of litigation and with only nominal damages is repellent to the sense of justice."

As one example of the application of these principles, in *McKeever v. United States*, the Court of Claims considered a reasonable royalty figure where the plaintiff could not establish lost profits or an established royalty. *McKeever* rejected the argument that a patentee should be limited to only nominal damages under such circumstances. According to the court, a limitation to nominal damages left the infringer with an absurd advantage over the patentee, who "[was] without legal redress" for the infringer's use of the patent. *McKeever* examined a range of factors to establish a reasonable royalty, including (1) the infringing article's price; (2) a customary royalty under comparable circumstances; (3) whether the accused device was based entirely on the patentee's invention, or whether the accused device included additional features that were already well-known; and (4) competent expert opinion.

C. History and Origins of Apportionment of Patent Damages

Early cases evidence courts' concern with awarding damages in both law and equity based on infringement of savings in the cost of manufacture, he must account to the patentee for the amount so saved.

51. *See Wallace & Tiernan Co. v. City of Syracuse*, 45 F.2d 693, 694 (2d Cir. 1930); *see also 35 U.S.C. § 70* (1951), amended by 35 U.S.C. §§ 283-86, 290 (1952) (providing that if "the complainant has suffered damage from the infringement or ... the defendant has realized profits therefrom," but "such damages or profits are not susceptible of calculation and determination with reasonable certainty," then the court may award "a reasonable sum as profits or general damages for the infringement").


54. *Id.* The patent at issue in *McKeever* was incorporated into devices used by the U.S. military, not sold for profit. Further, the patentee had licensed the patent to only two manufacturers who made some of the devices incorporating the patentee's invention for the military. *Id.* at 427.

55. *Id.* at 428.

56. *Id.* at 425.
non-patented features. For example, in *Seymour v. McCormick*, the U.S. Supreme Court stated that it would be a "very grave error to instruct a jury 'that as to the measure of damages the same rule is to govern, whether the patent covers an entire machine or an improvement on a machine.'"\(^{57}\)

*Seymour* expressed concern that a patentee could receive damages entailing "whole profits arising from the skill, labor, material, and capital employed in making the whole machine"\(^{58}\) where the patented invention covered only a portion of the infringing device. As the Court explained, "[w]e deny that the patent laws confer a monopoly of profits on any thing not actually patented. It would be extending the statute so as to make it cover, in effect, things that the patentee did not invent, and which by law belong to the public at large."\(^{59}\)

In *Westinghouse Electric & Manufacturing Co. v. Wagner Electric Manufacturing Co.*,\(^{60}\) the U.S. Supreme Court addressed a patentee's request for a defendant's profits on an infringing product that included "noninfringing and valuable improvements which contributed to the profits."\(^{61}\) In reaching its decision, the Court found that that a patentee was entitled to recover all profits gained from an infringing device where the patent-related feature was the entire basis for customer demand for the product.\(^{62}\) *Westinghouse* also re-affirmed then-existing law that, where the patent did not provide the entire marketable value to the infringing product, a patentee's recovery was limited to the portion of an infringing device that incorporated the patented invention.\(^{63}\) As the

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58. *Id.* at 490.
59. *Id.* at 482 ("The law allows him all the profit he can make on his patented improvement, and nothing beyond.").
61. *Id.* at 610.
62. *Id.* at 614-15. This rule had already been well-established at the time the *Westinghouse* case was decided. See *Garretson v. Clark*, 111 U.S. 120, 121 (1884) (noting that a patentee "must in every case give evidence tending to separate or apportion the defendant's profits and the patentee's damages between the patented feature and the unpatented features").
63. *Garretson*, 111 U.S. at 121 ("When a patent is for an improvement, and not for an entirely new machine or contrivance, the patentee must show in what particulars his improvement has added to the usefulness of the machine or contrivance. He must separate its results distinctly from those of the other
Westinghouse Court explained:

[The patentee's] invention may have been used in combination with valuable improvements made, or other patents appropriated by the infringer, and each may have jointly, but unequally, contributed to the profits. In such case, if plaintiff's patent only created a part of the profits, he is only entitled to recover that part of the net gains.  

The Westinghouse Court went on to establish a new interpretation intended to mitigate the harshness of these rules as applied to plaintiffs asserting patents that did not cover an entire infringing product or method. Specifically, where apportionment was impossible, Westinghouse relieved patentees of their entire burden of proving apportionment. In such circumstances, this burden shifts to the defendant. An infringer who could not prove that separating the patented and unpatented features was impossible was required to pay damages based on the price of the entire product.

Westinghouse explained that the infringer bore the loss of the price of the entire infringing device if the infringer “had ingenuity enough to smother the patent with improvements belonging to themselves or to third persons,” thus making the patentee's burden of demonstrating apportionment insurmountable. Finding this situation in Westinghouse, the Court remanded the case with the burden on the infringer “to unravel the knot.”

The rule in Westinghouse was applied in a subsequent U.S. Supreme Court decision, Dowagiac Manufacturing Co. v. Minnesota Moline Plow Co. There, the Court observed that the marketable value of infringing drills was “not entirely attributable to the invention, but was due in a substantial degree to the unpatented parts or features.” Because the patented and unpatented features were commingled in the

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64. Westinghouse, 225 U.S. at 615.
65. Id.
66. See id. at 618-19.
67. See id.
68. Id. at 694.
69. Cincinnati Car Co. v. N.Y. Rapid Transit Co., 66 F.2d 592, 593 (2d Cir. 1933).
71. Id. at 646.
infringing product, Dowagiac held that apportionment was necessary, as the “plaintiff’s patent created only a part of the profits,” and so the patentee “[was] only entitled to recover that part of the net gains.”

Based on these precedents, courts adjudicating patent cases in the earlier part of the twentieth century operated under the principle that a patent’s value was limited to a particular use in a specified product. Appropriate procedures had to be developed to consider how a line between the patentee’s invention and the infringer’s contribution should be drawn in individual cases.

1. Calculating Apportionment: Accounting Procedures

Apportionment was typically adjudicated in an accounting proceeding ordered by the district courts after the patentee established infringement. As Dowagiac explained, accounting proceedings were intended to effect “a rational separation of the net profits so that neither party may have what rightfully belongs to the other.”

Under the rules established by Westinghouse and prior court decisions governing attribution of portions of product to a patented invention, a patentee in apportionment proceedings was required to apportion the value of the invention based on the amount of material derived from the existing prior art as well as that attributable to non-patented features present in an infringing product. One example of the application of these rules is Clark v. Schieble

72. Id. In Dowagiac, the court placed the burden of demonstrating apportionment on the plaintiff, distinguishing Westinghouse by noting that the plaintiff had not demonstrated that apportionment was impossible. Id.

73. See Hearing on 5231, reprinted in Tassinari, supra note 24, at 57 (“When the court enters a decree finding infringement, the practice is to make reference to a master to take an accounting for the profits derived from the infringement.” (statement of Rep. Robert K. Henry, Member, Congress)).

74. Dowagiac, 235 U.S. at 647.

75. See, e.g., Stearns-Roger Mfg. Co. v. Ruth, 87 F.2d 35, 39 (10th Cir. 1936) (“If the case is such that it is practicable for the patentee to apportion the profits between what is new and what is old, he should do so or fail.”). In contrast to patented inventions, which must be both novel and non-obvious, the term “prior art” refers to knowledge that is publicly known, used by others, or available on the date of invention to a person of ordinary skill in an art, including what would be obvious from that knowledge. See 35 U.S.C. §§ 102, 103 (2000).

Toy & Novelty Co.,77 where the patent at issue described a friction-driven frame for the operation of toy vehicles such as locomotives and automobiles.78 The toy bodies were sold in two configurations—one with the patented friction-driven frames attached and another version without.79 The appellate court found that comparing the sales of the toys with the patented feature with sales of those lacking the patented feature “effectively establish[ed] the relative values of the patented and unpatented parts of the toys at issue.”80

2. Historic Challenges in Implementing Apportionment Rules and the Perceived Need for Legislative Change

Over time, courts were forced to address problems that arose in implementing Westinghouse and the rules governing apportionment.81 One of these problems included the Westinghouse rule, which led to damages determinations based on procedural rules governing the burden of proof rather than substantive considerations, such as a fair value for the patented invention or furthering compensatory or deterrence goals.82 As a later court recognized, infringers might disproportionately bear the brunt of overpayment because “[i]t is generally impossible to allocate quantitatively

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78. Id. at 277.
79. Id. at 280.
80. Id. at 281.
81. The statute governing damages at the time that Westinghouse, Dowagiac, and their progeny were decided was 35 U.S.C. § 70, which stated in relevant part:

[T]he complainant shall be entitled to recover, in addition to the profits to be accounted for by the defendant, the damages the complainant has sustained thereby, and the court shall assess the same or cause the same to be assessed under its direction. If on the proofs it shall appear that the complainant has suffered damage from the infringement or that the defendant has realized profits therefrom to which the complainant is justly entitled, but that such damages or profits are not susceptible of calculation and determination with reasonable certainty, the court may . . . adjudge and decree the payment by the defendant to the complainant of a reasonable sum as profits or general damages for the infringement.

82. See generally Hearing on 5231, reprinted in Tassinari, supra note 24, at 56 (“The result is that there is a complete failure of justice in almost every case in which supposed profits are recovered or recoverable.” (statement of Rep. Robert K. Henry, Member, Congress)).
the shares of the old and the new, and the party on whom that duty falls, will usually lose."\textsuperscript{83}

Criticisms of Westinghouse and the lengthy and procedurally burdensome apportionment proceedings led to a legislative call for change. The legislative history of the amendments to 35 U.S.C. § 284, which currently governs patent damages, reflects the widespread perception of patent practitioners that Westinghouse permitted royalty awards based on procedural matters, such as the burden of proof, rather than on what represented fair and reasonable compensation on the merits.\textsuperscript{84} A representative of the American Bar Association providing a statement to the House Committee in support of the legislative amendment noted that patentees under the Westinghouse doctrine get "in very many cases enormously more than that to which [they are] really entitled"\textsuperscript{85} because of the burden-shifting rules of Westinghouse.\textsuperscript{86}

The legislative history also notes criticism of the district courts' referral of apportionment proceedings to a special master.\textsuperscript{87} According to an assistant commissioner of patents at the time, apportionment proceedings were "conducted in accordance with highly technical rules and [were] always expensive, [and were] often protracted for decades and in many cases result[ed] in a complete failure of justice."\textsuperscript{88} Indeed, such accountings continued as long as ten or twenty years after infringement had been determined.\textsuperscript{89}

\textsuperscript{83.} Cincinnati Car Co. v. N.Y. Rapid Transit Corp., 66 F.2d 592, 593 (2d Cir. 1933).
\textsuperscript{84.} See generally Hearing on 5231, reprinted in Tassinari, supra note 24, at 62-63 (statement of Rep. Robert K. Henry, Member, Congress).
\textsuperscript{85.} \textit{Id.} at 56.
\textsuperscript{86.} See \textit{supra} note 84 and accompanying text.
\textsuperscript{87.} \textit{Hearing on 5231, reprinted in Tassinari, supra note 24, at 68 ("After the case goes to the master for an accounting, it is entirely out of the control of the court. In other words, the court lets the master take control of the case and the master has to go on and find out what is infringement and what is not." (statement of Edwin B.H. Tower, Jr., representing the Legislative Comm. of the Milwaukee Patent Bar Ass'n)).}
\textsuperscript{88.} \textit{Id.} at 61.
\textsuperscript{89.} \textit{Id.} at 69. Moreover, special masters acted as fact-finders by determining infringement on products created by the defendant after the initial verdict had been entered. This practice raised the issue that substantive infringement determinations were being made by an appointed master, and not a jury or an Article III judge. \textit{Id.} at 54.
A. Overview of Patent Remedies Under Current Law

Legislative changes to the patent statute were adopted in 1946, eliminating a patentee's right to recover an infringer's lost profits and the burdensome apportionment proceedings described above.\(^9\) As a result of this amendment, the purpose of patent damages shifted from the former view of recovering the infringer's unjust enrichment toward the view that patent damages constituted compensation for the patentee.\(^9\)1

Under the current patent statute, a patentee may seek monetary damages under one of two theories.\(^9\)2 First, the patentee may elect to proceed under a lost profits theory.\(^9\)3 To do so, the patent holder must show that the infringer actually caused the economic harm for which the patentee seeks compensation, including a reasonable probability that the patent holder would have made the asserted profits absent infringement.\(^9\)4 A patentee may not always be able to meet this standard. This might occur where a patentee does not sell a product that directly competes with that of the infringer, where a patentee's sales failed for reasons unrelated to the infringer's violation of a patent right, or

\(^9\)0. 35 U.S.C. § 284 (2000). The House Committee Report discussing the proposed legislation noted that recovery of defendant's profits created adjudication delays, proof problems, and the impossibility of apportionment in the vast majority of cases. H.R. Rep. No. 1587 (1946), reprinted in Tassinari, supra note 24, at 81. See also Aro Mfg. Co. v. Convertible Top Replacement Co., 377 U.S. 476, 505 (1964) (noting that the "purpose of the change was precisely to eliminate the recovery of profits as such and allow recovery of damages only").

\(^9\)1. Aro, 377 U.S. at 507 (defining patent damages as "the difference between [the patent owner's] pecuniary condition after the infringement, and what his condition would have been if the infringement had not occurred" (quoting Yale Lock Mfg. Co. v. Sargent, 117 U.S. 536, 552 (1886)); Gen. Motors Corp. v. Devex Corp., 461 U.S. 648, 654 (1983) ("In 1946 Congress excluded consideration of the infringer's gain by eliminating the recovery of his profits, the determination of which had often required protracted litigation." (citation omitted)).


where a patentee does not commercialize the patent.\textsuperscript{95} Under such circumstances, a patentee can elect to proceed on an alternative, second theory of recovery: a reasonable royalty.

A reasonable royalty may be based on an established royalty if one exists.\textsuperscript{96} If not, a fact-finder considers a variety of factors to set a royalty rate, which is then multiplied by a royalty base grounded on sales or distribution of the infringing product.\textsuperscript{97} By permitting the award of a reasonable royalty, the patent statute guarantees patentees a reasonable royalty even when they are unable to prove entitlement to lost profits or an established royalty rate.\textsuperscript{98} Damages, including royalties, are a question of fact decided by a jury.\textsuperscript{99} A jury is not restricted to selecting an award proffered by any of the litigants to the case, but may instead select any figure supported by the evidence.\textsuperscript{100}

Unlike former law, modern courts do not require a patentee to demonstrate an inability to recover lost profits prior to seeking a reasonable royalty award. Rather, a plaintiff can elect to seek monetary recovery under either theory.

Section 284's language, "but in no event less than a reasonable royalty for the use made of the invention,"\textsuperscript{101} suggests that a reasonable royalty amount is a lesser recovery than that possible under a lost profits theory. Although the Federal Circuit has stated that "Congress set a reasonable royalty as the floor,"\textsuperscript{102} nothing prevents a jury from awarding a reasonable royalty that exceeds a plaintiff's conceivable lost profits. The two forms of recovery are analytically distinct and, indeed, some reasonable royalty awards are quite large.\textsuperscript{103} Further, under § 284, patentees need not exploit

\textsuperscript{95} Id.
\textsuperscript{96} Hanson v. Alpine Valley Ski Area, Inc., 718 F.2d 1075, 1078 (Fed. Cir. 1983).
\textsuperscript{97} See id.
\textsuperscript{98} Riles v. Shell Exploration & Prod. Co., 298 F.3d 1302, 1311 (Fed. Cir. 2002).
\textsuperscript{100} Id.
\textsuperscript{102} King Instruments Corp. v. Perego, 65 F.3d 941, 947 n.2 (Fed. Cir. 1995).
\textsuperscript{103} See, e.g., Defendant Microsoft's Motion for a New Trial with Respect to Damages or, in the Alternative, for Remittitur, Eolas Techs. v. Microsoft Corp., 70 U.S.P.Q.2d (BNA) 1939 (N.D. Ill. 2004) (No. 99-C-0626) (discussing the lack
their invention to establish the right to monetary relief and may obtain both monetary and injunctive relief regardless of whether the patentee produces or sells any product in the field of the invention.104

The sole and overarching limitation on patent damages is the tort principle of proximate cause, which is said to apply "logic, common sense, justice, policy and precedent."105 This limitation is intended to prevent recovery for harms that might be caused in fact by the infringement, but that are not the legal cause of the harm in the court's judgment. As a practical matter, this limitation primarily excludes harms outside of the scope of the patent laws. For example, the Federal Circuit has stated that the proximate cause limitation might cut off recovery for such harms as "a heart attack of the inventor or loss in value of shares of common stock of the patentee corporation caused indirectly by infringement."106 Under this standard, a patentee can broadly recover for all direct harms from the infringer's use of the patented invention so long as there is some reasonable relation to the patent right.

B. The Reasonable Royalty and the Hypothetical Negotiation

Generally, finding a reasonable royalty consists of two steps: 1) determining a reasonable compensation base, i.e., the total value of the infringing items on which the patentee is entitled to royalty payments; and 2) determining a reasonable royalty rate to apply to that compensation base.

To determine the royalty rate, courts consider evidence from a number of sources, including several Georgia-Pacific factors.107 These factors include prior license rates obtained by the patentee, the commercial relationship between the patentee and the infringer, and the market rate for the

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104. *King Instruments*, 65 F.3d at 949 ("A patentee qualifies for damages adequate to compensate for infringement without exploiting its patent . . . for the patentee's right to exclude others from making, using or selling the invention."); *see also* Rite-Hite v. Kelley Co., 56 F.3d 1538, 1548 (Fed. Cir. 1995).

105. *Rite-Hite*, 56 F.3d at 1546.

106. *Id*.

patented invention that the parties would have reached if a
rate had been negotiated between them.\textsuperscript{108} However, a court
does not need to consider all of these factors in every case.\textsuperscript{109}

\begin{itemize}
  \item 1. The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty.
  \item 2. The rates paid by the licensee for the use of other patents comparable to the patent in suit.
  \item 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.
  \item 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.
  \item 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.
  \item 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 convoyed sales.
  \item 7. The duration of the patent and the term of the license.
  \item 8. The established profitability of the product made under the patent; its commercial success; and its current popularity.
  \item 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.
  \item 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.
  \item 11. The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use.
  \item 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.
  \item 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.
  \item 14. The opinion testimony of qualified experts.
  \item 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.
\end{itemize}

\textit{Id.}

\textsuperscript{108} \textit{Ga.-Pac. Corp.}, 318 F. Supp. at 1120. A list of the factors is as follows:

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 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 convoyed 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.

\textit{Id.}

\textsuperscript{109} \textit{TWM Mfg. Co.}, 789 F.2d at 899 (affirming reasonable royalty and rejecting the argument that the calculation method was flawed due to the
Rather, a court need only consider those factors deemed most relevant.\(^{110}\)

Courts appear to favor basing a reasonable royalty on an established royalty for the patent, which will "usually be adopted at the best measure of reasonable and entire compensation."\(^{111}\) The patentee's past licensing practices are given considerable weight in the analysis.\(^{112}\) If no established royalty exists, the courts will look to other relevant factors. The determination of a reasonable royalty is based upon the totality of the evidence, and the court is "not limited to selecting one or the other of the specific royalty figures urged by counsel as reasonable."\(^{113}\)

The most important reasonable royalty factor is the "hypothetical negotiation"—that is, "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."\(^{114}\)

Although the relevant time for assessing the hypothetical negotiation is the date that infringement first began,\(^{115}\) courts permit the jury to consider evidence of events that occurred subsequent to the commencement of infringement, such as

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10. See id.

11. Hanson v. Alpine Valley Ski Area, 718 F.2d 1075, 1078 (Fed. Cir. 1983) (quoting Tektronix, Inc. v. United States, 552 F.2d 343, 347 (Fed. Cir. 1977)). An established royalty must be "paid by such a number of persons as to indicate a general acquiescence in its reasonableness by those who have occasion to use the invention." Id. (quoting Rude v. Westcott, 130 U.S. 152, 165 (1889)).


14. Ga.-Pac. Corp. v. U.S. Plywood Corp, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970); see also Riles, 298 F.3d at 1311 (reversing the damages award, in part because the patentee had failed to present evidence that the proposed royalty rate reflected an agreement between the patentee and the infringer in a hypothetical negotiation); Rite-Hite v. Kelley Co., 56 F.3d 1538, 1554 (Fed. Cir. 1995) ("The royalty may be based upon . . . the supposed result of hypothetical negotiations between the plaintiff and defendant."); Unisplay, S.A. v. Am. Elec. Sign Co., 69 F.3d 512, 518-19 (Fed. Cir. 1995) (noting that a reasonable royalty should reflect "what the parties might have agreed to" in a hypothetical negotiation).

15. Riles, 298 F.3d at 1311 ("A 'reasonable royalty' contemplates a hypothetical negotiation between the patentee and the infringer at a time before the infringement began.").
the infringer's profits on the infringing products.\textsuperscript{116}

C. The Foundation of the Reasonable Royalty Award and the Lack of a Coherent Method for Determining Sound Economic Proof

1. Current Views of the Reasonable Royalty

Reasonable royalty jurisprudence rests on various foundations of economics and justice. As stated by the Federal Circuit, "[d]etermining a fair and reasonable royalty is often, as it was here, a difficult judicial chore, seeming often to involve more the talents of a conjurer than those of a judge."\textsuperscript{117} Any patent damages analysis asks a court to reconstruct events that might have occurred absent infringement. With respect to the hypothetical negotiation, the Federal Circuit explains:

The methodology encompasses fantasy and flexibility; fantasy because it requires a court to image what warring parties would have agreed to as willing negotiators; flexibility because it speaks of negotiations as of the time infringement began, yet permits and often requires a court to look at events and facts that occurred thereafter and that could not have been known to or predicted by the hypothesized negotiation.\textsuperscript{118}

The \textit{Georgia-Pacific} factors\textsuperscript{119} encompass a flexible test that considers a wide variety of evidence, and the additional considerations identified by the Federal Circuit as relevant to a reasonable royalty inquiry further complicate the analysis.\textsuperscript{120} For instance, a jury need not consider all of the factors.\textsuperscript{121} Under the courts' elastic and somewhat uncertain

\textsuperscript{118} See supra note 108 (listing the \textit{Georgia-Pacific} factors).
\textsuperscript{119} Id. (affirming a jury award where a number of the \textit{Georgia-Pacific} factors were deemed irrelevant).}
standards, the potential forms of evidence that might be presented to a jury are inestimable.122

The Federal Circuit has stated that for damage awards, "this court requires sound economic proof of the nature of the market and likely outcomes with infringement factored out of the economic picture."123 Significantly, the Federal Circuit has not defined the term "sound economic proof."124 District courts have been left to determine its meaning in the face of widely divergent damages theories typically presented by the parties.125

2. Economic Approaches to Measuring Royalties

There is no shortage of available methods of determining "sound economic proof"—indeed, there may be too many. Economists and valuation theorists have methods of calculating the market value of a patented invention.126 For example, some have outlined various factors considered

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122. See infra Part III.C.3.
124. Id.
125. Polaroid Corp. v. Eastman Kodak Co., 16 U.S.P.Q.2d (BNA) 1481, 1483 (D. Mass. 1990) ("The only surprise was that despite sharing all of the evidence that was ultimately produced at trial among all of the experts, the parties' positions were irreconcilably apart in every area."); see also id. at 1553 ("On the issue of reasonable royalty, like every other issue in this case, competing experts were pitted against each other."); Sherry & Teece, supra note 21, at 408 ("We have seen many cases where the two 'sides' damage analyses are largely talking past one another, because each side focuses on the approach which gives it the most favorable outcome."); William Choi & Roy Weinstein, An Analytical Solution to Reasonable Royalty Rate Calculations, 41 IDEA 49, 51 (2001) ("From our experience, it appears that licensing experts run down the list and identify some factors that support 'high' royalty rates, while others identify those factors that support 'low' royalty rates, whichever seems to benefit them most. When this happens, an unsound calculation, shrouded by 'reliance' on the Georgia-Pacific factors, can occur.").
relevant to patent licensing, such as the parties’ bargaining power, the existence of economic substitutes for the patented invention, market values, and the risk and uncertainty of events that may affect the uses or value of the patented invention.\(^{127}\)

There are numerous available economic formulations for determining market values of intellectual property, including patents. Some include valuation based on income projections.\(^{128}\) This approach focuses on the income-producing capability of the intellectual property and considers the current and/or potential uses of the patent, the economic climate relating to the market for the invention, potential profitability, competition, and potential changes in capital investment needed to support commercialization of the invention’s use.\(^{129}\) The income approach can be broken down further into different extrapolation methods based on the type of information gathered about the potential uses for the intellectual property.\(^{130}\)

Income projection rates have been developed to include discount rates, which analyze projected cash flow that may vary over the useful life of the invention.\(^{131}\) Under this method, the discount rate is calculated by reducing the projected cash flow by the patentee’s actual sales and by an annual rate of return that an investor would expect to earn from the projected income.\(^{132}\) Other considerations, such as risks and uncertainties associated with the income stream, are also factored into the analysis.\(^{133}\)

Another method of valuing intellectual property includes cost approaches, which considers the cost to develop the

\(^{127}\) Rapp & Beutel, supra note 126, at 867-68 (noting that infringement is a “sensible strategy” where the “infringer [is] no worse off than if he had chosen to license in the first place”).


\(^{129}\) See id. at 361-84 (reviewing various methods of extrapolation, life cycle calculations, and judgmental methods of valuing intellectual property).


\(^{131}\) See id. at 387, 394-97 (offering an example of this method).

\(^{132}\) Id. at 387-88.
technology,\textsuperscript{134} comparable profits,\textsuperscript{135} and also examines a split of profits from the use of the invention.\textsuperscript{136} Additionally, an infringer might benchmark a "reasonable profit" by comparison to an expected return on the infringer's next best investment.\textsuperscript{137} This benchmarking approach reasons that an infringer would likely take advantage of the next best return on investment rather than license from the patentee.\textsuperscript{138}

3. Approaches to Patent Royalties in the Courtroom

Although economists have developed a panoply of economic methods to measure patent values, the courts have missed opportunities to establish standards to determine whether these economic methods may be relied upon in determining a reasonable royalty. Absent such standards, there is a significant risk that fact-finders are deciding royalty questions based on patent valuation evidence that lacks a credible basis. Damages that consist of a reasonable royalty are decided in litigation, based on widely divergent views of the parties. Although framed in terms of a "hypothetical negotiation," adversarial positions taken in litigation tend to magnify, rather than dissolve, differences in the parties' positions. As one article notes, the parties' opposing damages positions are typically such that "the two sides' damages analyses are largely talking past one another, because each side focuses on the approach which gives it the most favorable outcome."\textsuperscript{139}


\textsuperscript{137} See Epstein & Marcus, supra note 126, at 557.

\textsuperscript{138} \textit{Id.} at 558-59.

\textsuperscript{139} Sherry & Teece, supra note 21, at 408; see also supra note 137 and accompanying text. To some extent, the parties' positions in litigation concerning the hypothetical negotiation reflect positions that such parties would take in a real-world negotiation. See, e.g., Ian Ayres & Eric Talley, Solomonic Bargaining: Dividing a Legal Entitlement to Facilitate Coasean Trade, 104 \textit{Yale L.J.} 1027, 1030 (1995) ("Sellers tend to overstate the value they place on the bargained-for item, while buyers tend to understate their desire to purchase..."
Absent defined standards, district courts have little reason to prevent economically unsupportable theories from reaching the jury. In a typical case, the district court allows both sides the opportunity to present a damages case based on their individual theories and experts.140 A district court is likely to exclude such testimony only when there is some affirmative evidentiary reason to do so, such as relevance or the exclusion of expert evidence under *Daubert v. Merrell Dow Pharmaceuticals, Inc.*141 The scope of relevance under the fifteen *Georgia-Pacific* factors is broad.142 District courts appear to allow juries to sort out divergent evidence as a factual issue as long as the expert's testimony is couched in terms of the *Georgia-Pacific* factors.143

After considering the evidence permitted by the district court, a jury will choose between the parties' theories or fashion an independent standard based on its view of the evidence and an assessment of the numerous *Georgia-Pacific* factors. In any case, the jury's result is afforded a deferential standard of review.144 One example of the difficulty that it. As a result of such strategic behavior, the parties may fail to detect and exploit a mutually beneficial trade, and even when they can it is usually after considerable and costly delay."].

140. See, e.g., Micro Chem., Inc. v. Lextron, Inc., 317 F.3d 1387, 1394 (Fed. Cir. 2003) ("Each side had the opportunity to present its damages theory. Each party's expert supported his reasonable royalty determination with an analysis of relevant factors based on his client's view of the disputed facts.").


142. *Ga.-Pac. Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970); see also *supra* note 108 (listing the *Georgia-Pacific* factors); cf. *Eolas Techs., Inc. v. Microsoft Corp.*, 65 U.S.P.Q.2d (BNA) 1090, 1116 (N.D. Ill. 2002) (indicating the need to admit a broad range of evidence to support a reasonable royalty award because "the indefinite nature of an analysis based on a hypothetical necessitates flexibility").

143. See, e.g., Mercexchange, L.L.C. v. eBay, Inc., 275 F. Supp. 2d 695, 705 (E.D. Va. 2003) (denying a motion to preclude expert testimony which did not use revenue as the royalty base, but rather relied on gross merchandise sales ("GMS") despite the fact that the experts: "(1) had never used GMS as a royalty base before; (2) had never seen GMS used as a base before; (3) conducted no studies to determine the reliability of GMS; (4) were not aware of any studies testing GMS reliability; and (5) did not know whether $2 billion worth of goods listed on" defendant's website were included in GMS), aff'd in part, rev'd in part, 401 F.3d 1323 (Fed. Cir. 2005), cert. granted, 126 S. Ct. 733 (2005).

144. *Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co.*, 425 F.3d
district courts have experienced in determining whether theories constitute "sound economic proof" is the application of the so-called "rule of thumb." Under this theory, a baseline royalty rate is established at a "25%/75%" rule of thumb split, which allocates 25% of the infringer's pre-tax profits to the patentee and 75% to the licensee.\textsuperscript{145} This 25% baseline is then subject to upward or downward departures based on the \textit{Georgia-Pacific} factors. Noting that the 25% rule of thumb was supported by published articles on patent licensing, one court observed:

The 25% rule is a shorthand phrase for a method of dividing expected profit between a licensor and licensee. It divides net pretax profit with normally 25% of that profit being paid to the licensor as a reasonable royalty, while 75% is reserved to the licensee as its profit for the risks attendant manufacturing and marketing.\textsuperscript{146}

A number of courts have adopted the rule of thumb as the baseline starting point for a royalty rate before applying the \textit{Georgia-Pacific} factors.\textsuperscript{147} By contrast, other courts reject the rule of thumb or decline to give the rule any substantial weight in their analysis.\textsuperscript{148} The 25% rule of thumb has been

\textsuperscript{1366, 1372-73 (Fed. Cir. 2005)} ("A jury's decision with respect to an award of damages must be upheld unless the amount is grossly excessive or monstrous, clearly not supported by the evidence, or based only on speculation or guesswork." (citations omitted)). Further, juries may be daunted by instructions that require them to consider the fifteen factor \textit{Georgia-Pacific} test in addition to the divergent evidence submitted by the parties.


\textsuperscript{147. \textit{Bose Corp.}, 112 F. Supp. 2d at 167 ("Courts have found the 25%/75% approach to be a useful approach to arriving at a baseline royalty rate."); \textit{Standard Mfg. Co.}, 42 Fed. Cl. at 759; W.L. Gore & Assocs., Inc. v. Int'l Med. Prosthetics Research Assocs., Inc., No. 84-559, 1990 WL 180490, at *23 (D. Ariz. July 7, 1990) ("As a general rule of thumb, a royalty of 25 percent of net profits is used in license negotiations.").

\textsuperscript{148. \textit{Proctor & Gamble Co.}, 989 F. Supp. at 612 (declining to give the rule of thumb any substantial weight and noting criticisms of the rule); Gargoyles, Inc. v. United States, 37 Fed. Cl. 95, 108 (Fed. Cl. 1997) (rejecting expert's reliance on the rule of thumb as contrary to the balancing of factors relating to the totality of circumstances required under the \textit{Georgia-Pacific} test; "Rather than balancing all the factors in an effort to 'negotiate' a reasonable royalty, [the
criticized as economically unsound:

This number is essentially arbitrary. Because it is based on ex post results, it does not necessarily relate to the results of a negotiation that took place prior to the infringement. It could be considerably higher or lower than a more careful analysis would indicate. The fiction of the 25% rule is hardly justified by its convenience.149

Other commentators have noted that "rules of thumb have no economic basis," and that "rules of thumb merely reflect past tradition and industry averages. They have no theoretical merit."150

The rule of thumb fails to account for the parties' actual individual risk-sharing, the risks assumed by both parties, and the resources contributed by each.151 For example, a pharmaceutical company that invested years of research on a new drug would likely command a higher profit split against a copyist than the inventor of a minor improvement ultimately incorporated into an infringing complex semiconductor containing numerous unpatented features. The Federal Circuit has not yet addressed whether the 25% rule of thumb meets the standard for sound economic proof.152

This disagreement among courts typifies the lack of established standards for assessing the type of evidence that meets the Federal Circuit's sound economic proof standard. In the absence of such standards, trial courts may err on the
side of sending questionable evidence to a jury.\textsuperscript{153} Meanwhile, the litigants, who stand in the center of such disagreements, lack guidance on a starting point for the presentation of damages evidence and for settlement discussions.

D. Complicating an Already Complex Analysis: The Reasonable Royalty as a Patent Infringement Deterrent

In order to assess the potential success of the proposed changes to the patent laws, a definition of the very purpose of a reasonable royalty should be considered. Case law commonly defines the reasonable royalty award in terms of a neutral market value of the patented invention.\textsuperscript{154} Most of the \textit{Georgia-Pacific} factors relate to economic considerations directed at determining the amount that the patentee lost for use of the patented invention.\textsuperscript{155} In addition, as discussed in this section, the courts have also incorporated both compensatory and deterrence functions into the reasonable royalty calculation.

The U.S. Supreme Court has defined the statutory measure of patent damages in terms of its compensatory function—that is, "the difference between [the patent owner's] pecuniary condition after the infringement, and what his condition would have been if the infringement had not occurred."\textsuperscript{156} In implementing this standard, the Federal Circuit has described the marketplace as an outer benchmark for the availability of patent damages. However, the Federal Circuit has qualified this statement with the notion that a damages award is intended to accomplish the purpose of deterrence as well as compensation:

[The Patent Act creates an incentive for innovation. The economic rewards during the period of exclusivity are the

\textsuperscript{153} Cf. Eolas Techs., Inc. v. Microsoft Corp., 65 U.S.P.Q.2d (BNA) 1090, 1116 (N.D. Ill. 2002) (indicating the need to admit a broad range of evidence to support a reasonable royalty award because "the indefinite nature of an analysis based on a hypothetical necessitates flexibility").

\textsuperscript{154} See, \textit{e.g.}, id. at 1115-16 (defining the reasonable royalty in terms of a price hypothetically agreed upon prior to the date of infringement).

\textsuperscript{155} Rapp & Beutel, \textit{supra} note 126, at 865-66 (observing that the \textit{Georgia-Pacific} factors provide a list of primarily market-based evidentiary factors to consider when calculating a reasonable royalty sufficient to compensate a patentee).

carrot. The patent owner expends resources in expectation of receiving this reward. Upon grant of a patent, the only limitation on the size of the carrot should be the dictates of the marketplace. Section 284 attempts to ensure this result by deterring infringers and recouping market value when deterrence fails.\textsuperscript{157}

Although § 284 similarly mandates that the reasonable royalty award be that which is "adequate to compensate for the infringement,"\textsuperscript{158} 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.\textsuperscript{159} As the Federal Circuit has explained, a characterization of the hypothetical negotiation as a "willing licensor/willing licensee" negotiation is "inaccurate, and even absurd" because the patentee is suing the infringer in court and therefore obviously "does not wish to grant the license."\textsuperscript{160}

The analysis underlying the increase over a negotiated royalty figure is not tethered to any \textit{Georgia-Pacific} factor or any particularized evidence that a patentee lost a specific market share due to the existence of a competitor in the market. Rather, such increases are typically characterized by language that avers to the deterrence function that is served, such as "[t]he willing licensee/licensor approach must be flexibly applied as a 'device in the aid of justice.'"\textsuperscript{161} Other courts invoke equitable principles, for example, additional compensation "required if the inventor is to have substantial justice."\textsuperscript{162} These increases can be substantial, such as the imposition of a reasonable royalty of thirty-three percent of the selling price of an infringing product where the industry

\begin{itemize}
\item[\textsuperscript{157}] King Instruments v. Perego, 65 F.3d 941, 950 (Fed. Cir. 1995).
\item[\textsuperscript{159}] Bio-Rad Labs., Inc. v. Nicolet Instrument Corp., 739 F.2d 604, 617 (Fed. Cir. 1984) (noting that industry royalty rates "do not necessarily establish a ceiling for the royalty that may be assessed after an infringement trial"); TWM Mfg. Co. v. Dura Corp., 789 F.2d 895, 898-99 (Fed. Cir. 1986) (royalty rate awarded in litigation may exceed the amount actually offered by the patentee).
\item[\textsuperscript{160}] Rite-Hite v. Kelley Co., 56 F.3d 1538, 1554 n.13 (Fed. Cir. 1998).
\item[\textsuperscript{161}] \textit{TWM Mfg. Co.}, 789 F.2d at 900 (quoting Cincinnati Car Co. v. N.Y. Rapid Transit Corp., 66 F.2d 592, 595 (2d Cir. 1933)).
\item[\textsuperscript{162}] Maxwell v. Angel-ettes, No. 99-10516, 2001 WL 34133507, *9 (C.D. Cal. July 9, 2001) (jury awarded an additional fifteen cents per infringing item above the reasonable royalty, which resulted in an amount above the infringer's profit).
\end{itemize}
royalty rate runs from three to ten percent (3-10%).\textsuperscript{163}

According to the court, some deterrence measure of damages is appropriate so that infringers have an incentive to license rather than to litigate: "[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."\textsuperscript{164}

An infringer might refuse a license in the hope that the costs of filing and maintaining a patent infringement lawsuit are too significant for the patentee to bear.\textsuperscript{165} Moreover, an infringer might believe that a patentee will refrain from enforcing his patent in court because of the risk that the patent would undergo an invalidity or unenforceability challenge by the alleged infringer.\textsuperscript{166} Because of this, the patentee may decide that the cost or risks of suit outweigh the potential benefit of asserting the infringement claim.\textsuperscript{167}

Further, absent a mechanism that permits some increase over market rates, a potential infringer may never be faced with paying either license fees or damages. If an infringer anticipates paying the same license fee in damages as that which was available at the outset of infringement, the infringer gambles that no license fee will ever be imposed. At

\textsuperscript{163} Bio-Rad Labs., 739 F.2d at 617 (Fed. Cir. 1984) (noting that industry royalty rates "do not necessarily establish a ceiling for the royalty that may be assessed after an infringement trial"). Such decisions stand in contrast to the approach taken in the United Kingdom in General Tire and Rubber Co. v. Firestone Tyre and Rubber Co., (1975) 2 All E.R. 173, which reversed a lower court awarding more than double a royalty rate that had been offered by the patentee to the industry.


\textsuperscript{165} According to a recent survey by the American Intellectual Property Lawyer's Association, patent litigation for a case in which $1 to $25 million is in dispute costs approximately $2 million for each litigant. See AM. INTELLECTUAL PROP. LAW ASS'N: LAW PRACTICE MGMT. COMM., AIPLA REPORT OF THE ECONOMIC SURVEY 2003, at 93 tbl.22 (2003).

\textsuperscript{166} An infringer who establishes that a patent is invalid or unenforceable would prevent the patentee from enforcing the patent against any other person. See generally 35 U.S.C. §§ 102-03, 112 (2000).

worst, the infringer will pay the same amount that the patentee would have originally charged. If the infringer earns more in profit than initially expected, but is subject to that same royalty rate, the infringer would benefit from infringing. In effect, this dynamic gives the infringer an incentive to infringe.\footnote{168}

Courts may be removing an infringer’s incentive to infringe by permitting a higher royalty than that set by the patentee at the outset of the infringement.\footnote{169} Courts thereby use the reasonable royalty as a means of deterring infringers that might otherwise refuse to obtain a license until entry of an infringement judgment.\footnote{170} Indeed, the patent system in Japan, which limits royalty awards to an amount that would have been negotiated with the infringer, has been described as a “vehicle for promoting licensing agreements rather than for protecting patent rights.”\footnote{171} By contrast, under U.S. law, “[t]he fact that an infringer ha[s] to be ordered by a court to pay damages, rather than agreeing to a reasonable royalty,” is relevant to the royalty calculation.\footnote{172}

Other examples of courts’ willingness to increase the royalty above the value of the patented invention at the time of infringement include the Federal Circuit’s directive that

\footnotesize{168. Id.; see also Rapp & Beutel, supra note 126, at 867-68 (noting that infringement is a “sensible strategy” because “the infringer is no worse off than if he had chosen to license in the first place”).


170. These rationales rest on less-defined calculations than more traditional forms of compensation for a delay in receiving compensation, such as prejudgment interest. See, e.g., Decca Ltd. v. United States, 640 F.2d 1156, 1168 (Fed. Cir. 1980) (calculating “delay damages” for the infringer’s failure to pay a license prior to infringement based on a multiplication of the accrued royalties times an appropriate annual percentage rate).


172. Maxwell v. J. Baker, Inc., 86 F.3d 1098, 1109-10 (Fed. Cir. 1996). In Maxwell, the jury had awarded reasonable royalty damages of $1.5 million plus an additional $1.5 million. Id. at 1108. The Maxwell court affirmed these figures on appeal, noting that the increase was “required to adequately compensate the patentee based on other relevant factors.” Id. at 1110. It is questionable whether the patentee in Maxwell suffered harm, such as market erosion or lost sales of complementary products, as the patentee was a Target store employee, id. at 1101, and, thus, presumably not a competitor in the market for the patented product.}
"the circumstances of continuing infringement" be considered in pushing a royalty upward.\textsuperscript{173} Juries can therefore consider "actual commercial consequences of the infringement including the fact of infringement, the patentee's need to file litigation to enforce its rights, and any erosion of patentee's market position or of the patent's value."\textsuperscript{174} Thus, neutral measures of the market value for use of the patent are subject to an "increase, which may be stated by the trial court either as a reasonable royalty for an infringer . . . or as an increase in the reasonable royalty determined by the court."\textsuperscript{175}

Courts' willingness to increase damages above the market value of the patented invention is illustrated in \textit{TWM Manufacturing Co. v. Dura Corp.}\textsuperscript{176} There, the court explained that a royalty offered by the patentee was not controlling during litigation because "to look only at that question would be to pretend that the infringement never happened. It would also make an election to infringe a handy means for competitors to impose a 'compulsory license' policy upon every patent owner."\textsuperscript{177} For that reason, the court in \textit{TWM} noted that a patentee's actual willingness to pay a lower royalty in pre-litigation negotiations with the infringer "is of little relevance" to a royalty awarded after litigation.\textsuperscript{178} The court's characterization of the patentee's figure minimizes the patentee's valuation of the patent's own expectancy interest and instead shifts the inquiry toward compensatory and deterrence goals.\textsuperscript{179}

However, it is not clear whether the policy of including

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\item \textsuperscript{173} Maxwell, 86 F.3d at 1110; Studiengesellschaft Kohle, m.b.H. v. Dart Indus., 862 F.2d 1564, 1581 (Fed. Cir. 1988).
\item \textsuperscript{174} Sun Studs, Inc. v. ATA Equip. Leasing, Inc., 872 F.2d 978, 994 (Fed. Cir. 1989).
\item \textsuperscript{175} Id.
\item \textsuperscript{176} TWM Mfg. Co. v. Dura Corp., 789 F.2d 895, 900-01 (Fed. Cir. 1986). This aspect of \textit{TWM Manufacturing Co.} was repeated and reinforced by the Federal Circuit sitting \textit{en banc} in \textit{Rite-Hite v. Kelley Co.}, 56 F.3d 1538, 1555 (Fed. Cir. 1995).
\item \textsuperscript{177} \textit{TWM Mfg. Co.}, 789 F.2d at 900.
\item \textsuperscript{178} \textit{Id.} at 900. \textit{TWM Manufacturing Co.} affirmed a special master's calculation, in which the master subtracted the infringer's usual or acceptable net profit (based on the industry standard profit) from the infringer's anticipated net profit realized from sales of infringing devices, deriving a 30% royalty rate. \textit{Id.} at 901.
\item \textsuperscript{179} See generally Margaret Jane Radin, \textit{Compensation and Commensurability}, 43 DUKE L.J. 56, 57-60 (1993) (describing differing doctrinal views of the function of awarding damages in tort cases).
\end{itemize}
deterrence in the reasonable royalty award permits infringers to gauge the potential financial exposure resulting from their conduct. Without a standardized method of calculating the deterrence component of a reasonable royalty award, accused infringers lack any means of assessing whether ceasing the infringing activity is rational. Factors relating to deterrence are not stated explicitly in the Georgia-Pacific factors or the patent statute. Moreover, the courts have not explicitly stated any analytic methodology for determining an appropriate level of deterrence in any particular case.\textsuperscript{180}

E. Is Using the Compensatory Award to Deter Patent Infringement Appropriate for Innocent Infringement?

The uncertain efficacy of using compensatory royalty awards to deter infringement raises the question of whether deterrence would be better served by awarding punitive damages, based on a finding of willful infringement, and attorney’s fees.\textsuperscript{181} Although the Federal Circuit has stated that “[r]oyalties, like lost profits, are compensatory damages, not punitive,”\textsuperscript{182} an increase in a compensatory award for deterrence purposes is not explicitly limited to infringers who have acted in knowing disregard of a patentee’s rights.\textsuperscript{183} Unlike an increase for willful infringement, which expressly requires the court to examine whether an infringer had notice of the patent and violated a duty of care not to infringe, a deterrence increase might be applied in all cases without

\textsuperscript{180} See, e.g., Sherry & Teece, supra note 21, at 405 ("The essential idea of the economic theory of deterrence is that people respond to the incentives they face, including rewards and (in particular) penalties imposed by the legal system. Increasing the penalties leads people to engage in less of the penalized activity. The question of “optimal deterrence” is then that of finding the level of penalties which leads to the “right amount” of deterrence, seeking to deter all and only that conduct which is deemed undesirable.").

\textsuperscript{181} Under 35 U.S.C. § 284 (2000), a trial judge may enhance actual compensatory damages by up to three times. Read Corp. v. Portec, Inc., 970 F.2d 816, 826 (Fed. Cir. 1992). One of the reasons that a trial court may increase damages includes a finding of willful infringement. See id. at 830-31.

\textsuperscript{182} Integra Lifesciences I, Ltd. v. Merck KGaA, 331 F.3d 860, 870 (Fed. Cir. 2003), rev’d on other grounds, 125 S. Ct. 2372 (2005).

\textsuperscript{183} See, e.g., King Instruments Corp. v. Perego, 65 F.3d 941, 959 (Fed. Cir. 1995) (Nies, J., dissenting) ("[W]here 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."). As a general matter, there is no “knowledge” or “scienter” requirement to a finding of patent infringement; direct patent infringement is a strict liability tort.
regard to the infringer's level of knowledge about potential infringement.\textsuperscript{184} This view, however, underestimates the difficulties that potential infringers may face in discovering patent infringement, particularly in industries that create complex products. As one patent attorney from Apple Computer described:

[Software and computers are examples of "system" products—they comprise thousands, even hundreds of thousands, of individually functioning components and features all assembled in a package for a customer. Because many of these features could be the subjects of a patent, it is often the case that thousands of patents may be relevant to a particular computer or software product. This phenomenon—sometimes referred to as "co-location of patents"—means that any single patent covering a computer or piece of software accounts for only a small fraction of the intellectual property value of the entire system.\textsuperscript{185}

Some technologies may also be surrounded by "patent thickets,"\textsuperscript{186} which make accurate assessment of potential infringement difficult, if not impossible. 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.\textsuperscript{187} At present, courts have

\textsuperscript{184.} Cf. Mahurkar v. C.R. Bard, 79 F.3d 1572, 1581 (Fed. Cir. 1996) (noting that enhanced damages based on a finding that a case is "exceptional" are subject to requirements of clear and convincing proof of willfulness and exceptionality).

\textsuperscript{185.} Comm. Print Regarding Patent Quality Improvement, supra note 9, at 52 (statement of Richard J. Lutton, Jr., Chief Patent Counsel of Apple, on behalf of the Business Software Alliance).


not delineated any legal standard for the deterrence premium that is so frequently upheld on appeal. At a minimum, a deterrence premium should be limited to circumstances where the infringer should have actually known about the potential for infringement, as an innocent infringer by definition will not be deterred unless there is some reason to think it is infringing. Further, by analogy to punitive damage awards in tort cases, deterrence damages "should be awarded if, and only if, an injurer has a chance of escaping liability for the harm he causes."\(^{188}\) To the extent that deterrence is a goal of awarding compensatory damages, courts should seek to define optimal deterrence for patent infringement and the circumstances under which such deterrence damages are appropriate.

The ambiguity surrounding the deterrence function of the reasonable royalty entrusts district courts with considerable discretion and makes it difficult for infringers to accurately fix their maximum level of risk. This situation may cause those engaged in product-producing activities to take excessive measures to avoid infringement. In the patent context, this may cause producing entities or investors to avoid certain industries where "patent thickets" exist. Further, increasing damages to implement a deterrence premium raises questions of whether a patentee is receiving compensation in excess of the harm suffered, in contravention of § 284's purpose of awarding the patentee a reasonable royalty "for the use made of the invention by the infringer."\(^{189}\)

Patent cases discussing above-market damages for patent infringement do not premise their findings on any showing of knowing infringement. Imposing a deterrence premium on innocent infringers arguably maximizes enforcement mechanisms for patent infringement and provides potential infringers with an incentive to consider whether a particular course of conduct will result in infringement.\(^{190}\) However,

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\(^{190}\) See, e.g., Louis Kaplow, *Optimal Deterrence, Uniformed Individuals and Acquiring Information About Whether Acts are Subject to Sanctions*, 6 J.L. Econ. & Org. 93, 114 (1990) (describing deterrence mechanisms as incentives to encourage actors to determine the legality of conduct prior to engaging in the
such a rule might also cut off incentives for individuals to feign ignorance, encourage potential infringers to take precautionary steps to avoid infringing activity, and lead to a greater respect of patent rights through licensing or refraining from the infringing activity. 191

F. Awards over the Market Value of the Patented Invention Provide Patentees with an Incentive to Engage in Patent Trolling

Increasing damages above a neutral market rate also raises the possibility that patentees have an "incentive to be harmed" by infringement. 192 Specifically, a patentee seeking to maximize profit may obtain patents and use patent assertion as an exclusive method of generating revenue. Over the past several years, there has been a shift from using patents to assure market exclusivity to a perception that patents are one form of "intellectual capital." 193

Over the last decade, numerous books, articles, and consultants promoting the concept of "intellectual capital" have included reliance on success stories, including IBM's extensive patent licensing program during the 1950s that currently generates approximately a billion dollars annually. 194 Patent mining programs are typically implemented with an eye toward optimizing financial return

potentially illegal conduct); Omri Ben-Shahar, Playing Without a Rulebook: Optimal Enforcement When Individuals Learn the Penalty Only by Committing the Crime, 17 INT'L REV. L. & ÉCON. 409 (1997) (discussing individuals' incentives to comply with the law once the penalty for breaking the law is learned).

191. Kaplow, supra note 190, at 114.
192. See generally Dunbar & Wagner, supra note 167, at 345.
193. See, e.g., JULIE L. DAVIS & SUZANNE S. HARRISON, EDISON IN THE BOARDROOM 2-3 (2001). Generally, the term intellectual capital refers to "knowledge that can be converted to value"—in other words, monetization through capture, licensing, and enforcement. Id.
consistent with the present and future business goals of these companies. For example, one company may license non-core patents or those relating to abandoned product lines. Another company will license core patents in an effort to foster support for the company's solution as an industry standard.195

Other companies have gone further, eschewing the manufacture and distribution of products entirely to concentrate solely on intellectual property licensing. The business plans of these licensing companies are targeted at developing or purchasing intellectual property to generate profits through licensing or enforcement litigation.196 As one book notes, "there is no denying that some companies today use patent suits—or simply the threat of patent suits—as key elements of their business strategies."197

Strategic assertion of patents solely as revenue-generating instruments has become common.198 Indeed,

195. Rivette & Kline, supra note 194, at 76 (quoting a senior licensing executive at Ford Motor Co.: "Isn't it a lot better to have the industry standard based on our technology rather than someone else's?"); see generally Pamela Samuelson & Suzanne Scotchmer, The Law and Economics of Reverse Engineering, 111 Yale L.J. 1575, 1619-20 (observing that control over an industry standard can be an "important source" of an "enduring power" in a market). 196. See supra notes 3-7 and accompanying text.
197. Rivette & Kline, supra note 194, at 48. As these authors describe, "some firms have made patents their sole product and raison d'être":
BTG and InterDigital, for example, are just two of several intellectual-property based businesses that are engaged in the buying, development, and licensing of technology patents. According to the Wall Street Journal, BTG executives like to refer to themselves as "merchant scientists" who roam the world "prowling for great ideas to license to deep-pocketed manufacturers." The company splits license revenues 50-50 with the patent's original inventors, and currently holds over 8,500 patents involving some 300 technologies . . . .
Id. at 132.
198. See, e.g., supra notes 2-9 and accompanying text. As described by a vice president of one of the business units of Xerox:
What was missing before, and what we're now doing, is a systematic mining of our patent portfolio for opportunities. This means, first and foremost, waging a proactive and aggressive effort to generate revenue from our patents. But it also means looking for other uses for our technology besides in products or just sitting on the shelf. If you only use your patents to protect your products, which is the old paradigm, you're missing all manner of revenue-generating and other opportunities.
Rivette & Kline, supra note 194, at 127-28.
patents as revenue-generating devices have been discussed as appropriate instruments for securitization. \footnote{199}{"Securitization" refers to the use of legal instruments (in this case, patents) as the basis of a financial instrument that can be transferred into collateral for debt or constitute a basis for selling shares of stock. See generally Michael C. McGrath, \textit{Structural and Legal Issues In Securitization Transactions}, 878 PLI/COMM 751, 755 (2005) (defining securitization). See generally \textit{RIVETTE \& KLINE}, supra note 194, at 139-40 (quoting Ethan Penner, who developed securitization instruments for mortgages, describing the potential use of patents for companies to obtain debt relief as a “way to borrow against their patent portfolios and, what's more, do it off the balance sheet. That's because these loans would be non-recourse and secured only by patents.”).} Enforcement, which garners more than the market rate for the patents or more than the harm suffered, assists such organizations in reaching their goals of becoming “merchant scientists.” \footnote{200}{\textit{RIVETTE \& KLINE}, supra note 194, at 132.} To the extent that the courts enforce awards based on a higher-than-market rate in enforcement litigation, a growing number of such merchant scientists should not be surprising.

The effect of these merchant scientists on the total amount of innovation is open to question. On one hand, there is concern that some patentees are overly aggressive in asserting patent claims to the detriment of those attempting to create and sell products. \footnote{201}{See \textit{Patent Act of 2005 Hearings, supra note 8, at 15 (statement of Rep. Bob Goodlatte, Vice Chairman, House Subcomm. on Courts, the Internet, and Intellectual Prop.).}} Some have expressed concern that this activity has a stifling effect on innovation. \footnote{202}{See supra notes 8-10 and accompanying text.} The press is replete with allegations of abuse by so-called patent licensing shops. For example, one article described a situation in which a patentee asserted infringement over Intel's Pentium II semiconductors as an example of “patent trolls” that “threaten to shut down the entire computing industry with a court order injunction, no matter how minor the feature that has been patented is.” \footnote{203}{Shiels, supra note 4; see generally Jonathan's Weblog, Putting Sun's Settlement with Kodak In Context, http://blogs.sun.com/roller/page/jonathan/20041018 (describing Sun Microsystems's payment of $92 million to Kodak to settle litigation on patents that Sun thought invalid, explaining that Sun did not want the suit hanging over their heads, so Sun “settled - not to validate Kodak, not to validate those patents, but to let [Sun's] customers and employees and stockholders focus on market opportunity, not litigation”).} Companies that do not produce products, but simply acquire patents to obtain...
licensing revenue, are viewed as particularly pernicious. Such licensing companies are compared to "terrorists" that "threaten legitimate innovators and producers" and are cited as examples of a "disturbing trend."\(^{204}\) This conduct has been described as imposing considerable costs on those accused of infringement.\(^{205}\) On the other hand, some argue that problems relating to patent assertion are overblown.\(^{206}\) Nonetheless, the existence of highly publicized awards that are affirmed on appeal might be viewed by a profit-maximizing entity as a significant incentive to pursue the assertion of patents against potential infringers.

There does not appear to be any available data with respect to whether the existence of patent licensing companies affects the total amount of innovation. To the extent that such companies are discouraged from commercializing products in favor of licensing, such companies may fail to develop the follow-up innovation and improvements attendant with testing products in the market.\(^{207}\) Licensing is a valid means of obtaining compensation for innovating activity.\(^{208}\) Entities that seek to license their patents can be seen as simply exercising their legitimate rights granted under the patent laws by gaining

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\(^{205}\) See Comm. Print Regarding Patent Quality Improvement, supra note 9, at 9 (statement of J. Jeffrey Hawley, Legal Division Vice President and Director, Patent Legal Staff, Eastman Kodak Co.).

\(^{206}\) See id. at 142 (statement of Nathan Myrvold, CEO, Intellectual Ventures) (describing that horror stories about overly aggressive assertion of patent rights are exaggerated and that, in fact, "[t]he total of all these lawsuits over the last five years was just over 2% of all patent lawsuits. Furthermore, fully half of those lawsuits are from one very litigious company.").

\(^{207}\) Lieberman & Montgomery, To Pioneer or Follow?: Strategy of Entry Order, supra note 22, at 8 (describing the "learning curve" that permits producing entities to gain additional knowledge and make refinements upon commercialization of a product).

\(^{208}\) Rite-Hite v. Kelley Co., 56 F.3d 1538, 1547 (Fed. Cir. 1995) ("A patent is granted in exchange for a patentee's disclosure of an invention, not for the patentee's use of the invention. There is no requirement in this country that a patentee make, use, or sell its patented invention.").
value from their innovation. Original inventors may have a legitimate expectancy interest in selling their inventions for value. It remains to be seen whether "patent trolls" are actually paying a fair price. Further, some licensing companies have research and development departments that generate innovation. In any event, authorizing an increase of an amount needed to compensate the plaintiff would appear to provide a monetary incentive for a secondary market in patents to continue.

G. Monsanto and Golight: The Federal Circuit's Lost Opportunities to Establish an Analytic Framework

Monsanto Co. v. Ralph\textsuperscript{209} and Golight, Inc. v. Wal-Mart Stores, Inc.\textsuperscript{210} are examples of the current state of Federal Circuit review of reasonable royalty awards. In both cases, the Federal Circuit failed to take the opportunity to refine the reasonable royalty determination analysis and provide guidance to the lower courts.

1. Monsanto Co. v. Ralph

In Monsanto, the patentee Monsanto asserted a patent involving genetic alterations to plant seeds, an invention that protected the seeds and their plants from the adverse effects of certain herbicides.\textsuperscript{211} Monsanto required retailers to execute standard contracts with grower-purchasers before selling them seed containing the patented invention.\textsuperscript{212} The contracts contained a patent license but restricted the use of the seed to a single season and prohibited saving any crop or seed for re-planting.\textsuperscript{213} The contract also specifically prohibited restrictions on other uses of the seed or seed distribution.\textsuperscript{214} A technology fee included in the contract charged grower-purchasers $5.00 per bag of soybean seed and $112.80 per bag of cottonseed.\textsuperscript{215}

Contrary to the terms of the Monsanto license, the infringer saved bags of seed at the end of the growing season

\textsuperscript{209} Monsanto Co. v. Ralph, 382 F.3d 1374 (Fed. Cir. 2004).
\textsuperscript{210} Golight, Inc. v. Wal-Mart Stores, Inc., 355 F.3d 1327 (Fed. Cir. 2004).
\textsuperscript{211} Monsanto, 382 F.3d at 1377.
\textsuperscript{212} Id.
\textsuperscript{213} Id.
\textsuperscript{214} Id.
\textsuperscript{215} Id.
for two successive years, re-planting some of the seed and transferring some bags of seed to at least one other person. Monsanto filed suit for patent infringement and the matter proceeded to trial. On the patent infringement claim, the jury awarded approximately five to ten times the cost of the technology fee. The infringer argued that damages should have been limited to the patentee’s lost profits or, otherwise, the standard technology fee charged for use of the patent. The infringer thereby attempted to establish the value for the use of the patented invention at the rate set by the patentee in its standardized agreements with the growers. The Federal Circuit rejected this view, affirming the upward deviation awarded by the jury over the contract price, reasoning that the technology fee was for “only a narrow, contractually agreed-upon use of the seed.”

The Monsanto patentee had established lost profits and the record contained sufficient evidence to establish the monetary equivalent of the patentee’s harm based on the parties’ contract price. This served as the basis for the hypothetical negotiation analysis. The Monsanto court could have focused on either objective measure of the

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216. Id. at 1377-78.
217. Monsanto, 382 F.3d at 1378.
218. Id. at 1379.
219. Id. at 1383.
220. Id. at 1384.

221. Id. at 1383-84. Unquestionably, the potential harm that Monsanto could have suffered from the infringer’s use and transfer of the seed was enormous. Id. at 1381. As the Monsanto court acknowledged by way of example, a single patented cottonseed produces a plant that yields 70 to 120 patented seeds. Id. Thus, a single bag of the cottonseed transferred to another farmer could therefore, by a conservative estimate, produce hundreds of thousands of bags of seed (i.e., 70 x 70 x 70 = 343,000) over the course of just three growing seasons. Id. However, § 284 authorizes damages for actual—not potential—harm. 35 U.S.C. § 284 (2000) (referring to damages adequate to compensate for infringement); cf. Shockley v. Arcan, Inc., 248 F.3d 1349, 1362-63 (Fed. Cir. 2001) (damages cannot be based on speculation, award for future damages must be based on extrapolation of actual data). Therefore, the Monsanto court’s discussion presumably relates solely to compensation for Monsanto’s actual harm. See Monsanto, 382 F.3d at 1381-84.

222. Monsanto, 382 F.3d at 1383. One method of calculating compensation for use of the invention under similar circumstances would be to multiply the contract price for use of the invention by the time period of infringement. See, e.g., Integra Lifesciences I, Ltd. v. Merck KGaA, No. 96-1307-B, 2004 WL 2284001, at *10-11 (S.D. Cal. Sept. 7, 2004) (calculating royalties based on a rate established in a pre-existing license agreement).
plaintiff's harm, but instead affirmed the jury award based on the patentee's loss of control over the exclusive right to the patented invention.\textsuperscript{223} The Monsanto court reasoned that another form of damages might impose a compulsory license "against the will and interest of the person wronged, in favor of the wrongdoer" and that under such circumstances "the hypothetical negotiation process has its limits."\textsuperscript{224}

Monsanto's focus on the harm to the patentee's right to exclude is unquestionably consistent with the underlying purposes of patent law. However, as with prior decisions, Monsanto failed to provide a meaningful, concrete analytic framework to guide lower courts in future cases and considered the patentee's ex ante valuation of the patented invention irrelevant to the analysis.

The facts of the Monsanto case presented the Federal Circuit with an opportunity to guide lower courts on the appropriateness of deviation from the parties' agreed-upon royalty rate. Although the Monsanto opinion referred generally to a difference between the nature and scope of the rights granted under the parties' agreement and defendant's infringement, the Federal Circuit might have provided lower courts and fact-finders with some measurable or concrete reasons that the jury's award of five to ten times deviation from the parties' agreed-upon figure was appropriate and whether the parties' contract price for a limited license should be disregarded in all subsequent infringement cases. Such guidance would have been useful not only for the resolution of litigated disputes, but also for parties to intellectual property license agreements who may be considering breach or license expiration. As the opinion is written, Monsanto rests merely on jury deference without consideration of the manner in which the rights violated should be valued.

\textsuperscript{223} Monsanto, 382 F.3d at 1383-84.

\textsuperscript{224} Id. at 1384; see also, e.g., Bott v. Four Star, 229 U.S.P.Q. (BNA) 241 (E.D. Mich. 1985). The district court examined evidence that the industry-standard rate for licensing was three percent of gross sales. Bott, 229 U.S.P.Q. (BNA) at 247. Nonetheless, the Bott court set a reasonable royalty at five percent of gross sales based on the view that the patentee "was not a voluntary licensor and had no desire to offer [the infringer] a license." Id. at 247-48.

In *Golight, Inc. v. Wal-Mart Stores, Inc.*, the Federal Circuit considered claims brought by owners of two patents for portable search lights, which were sold through plaintiff Golight. The facts were ideal for the Federal Circuit to have discussed any deterrence function that the reasonable royalty analysis might serve, as the defendant Wal-Mart had purchased and imported low-end copies of such lights to sell in Wal-Mart's retail stores. The trial court's factual findings laid a solid foundation for the Federal Circuit to discuss deterrence, as Wal-Mart's apparent piracy was to "position[] itself as a direct competitor for a share of Golight's growing market."

At trial, Wal-Mart presented evidence that typical intellectual property licenses for the retailer that sold the infringing product ranged from two to five percent of the wholesale cost. Rejecting Wal-Mart's proposed royalty rate of 2.5% of the cost, the trial court ultimately set the royalty rate at one-half of Golight's profit for the sale of the infringing products. The trial court awarded the full amount proffered by the patentee's expert witness, an amount well over Wal-Mart's forecasted profit of $8.00 per unit. Wal-Mart apparently obtained no concrete benefit from the infringement, as the record further demonstrated that the amount awarded by the district court exceeded Wal-Mart's actual profit on the infringing units.

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226. *Id.* at 1329.
228. *Id.* at 1184.
229. *Id.* at 1182.
230. *Id.* at 1184. Wal-Mart argued in the alternative that the royalty rate should be no more than Wal-Mart's anticipated profit of $8.00 per unit. *Id.* at 1182. The district court awarded reasonable royalty damages of $31.80 per unit and rejected the patentee's request for willfulness damages. *Id.* at 1184, 1186.
231. *Id.* at 1184.
232. *Id.* at 1182.
233. *Golight*, 216 F. Supp. 2d at 1184. Wal-Mart's evidence demonstrated that it had lost some $30,000 selling the infringing product. *Id.* at 1182. Under the *Georgia-Pacific* test, such evidence would put downward pressure on a royalty award. *See* States Contracting & Eng'g Corp. v. Condotte Am., Inc., 346 F.3d 1057, 1072 (Fed. Cir. 2003). The eleventh *Georgia-Pacific* states: "The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use." *Ga.-Pac. Corp. v. U.S. Plywood Corp.*, 318 F.
The Federal Circuit affirmed, emphasizing that "[t]here is no rule that a royalty be no higher than the infringer's net profit." The Golight appellate court further affirmed the use of the patentee's profits as an appropriate basis for the reasonable royalty award, rejecting Wal-Mart's argument that the royalty award left it selling the infringing product at a significant loss. The Federal Circuit also rejected as irrelevant Wal-Mart's argument that any royalty should be capped at Wal-Mart's projected profit: "Wal-Mart's evidence in this case establishes nothing more than what it might have preferred to pay, which is not the test for damages."

The Federal Circuit's decision in Golight demonstrates several problems with the current application of the reasonable royalty principles and shows that the desirability of a flexible inquiry may have reached an extreme. First, the hypothetical negotiation is not currently serving as a useful construct because the asserted value of the technology to both "negotiators" can be entirely disregarded. In TWM, the Federal Circuit had previously instructed that a patentee's willingness to agree to a low royalty rate "is of little relevance" to a reasonable royalty award.237 In Golight, the Federal Circuit instructed that evidence of what an infringer would be willing to pay "is not the test for damages."238 Taking TWM in combination with Golight, a fact-finder can disregard the actual bargaining positions of the parties in determining the result of the hypothetical negotiation that would have occurred between them.

From an accused infringer's perspective, Golight represents a royalty award standard with a troubling lack of logical or economic constraints. A reasonable royalty has been defined as an amount "which a person, desiring to

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234. Golight, 355 F.3d at 1338. This statement stands in sharp contrast to a prior decision of the Federal Circuit in Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 895 F.2d 1403, 1408 (Fed. Cir. 1990), which found that an expert's opinion that an 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 [the] case, absurd."

235. Golight, 355 F.3d at 1338.

236. Id.


238. Golight, 355 F.3d at 1338.
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."\textsuperscript{239} In a free market, a willing licensee would not license at a royalty rate that exceeds anticipated profits.\textsuperscript{240} Golight, however, stands for the proposition that the economically rational motivations of an infringer, including a fundamental motive to make a profit, are not a stopping point in the hypothetical negotiation.\textsuperscript{241} Although the Federal Circuit had previously stated that the hypothetical negotiation should consider the parties' actual bargaining positions,\textsuperscript{242} in Golight the court explicitly disregarded the infringer's position.\textsuperscript{243}

Allowing a patentee to recover more than the infringer's anticipated profit, particularly without evidence that the infringer is suppressing prices to drive the patentee out of the market, raises questions about whether such a result rests on sound economic proof.\textsuperscript{244} The logical extension of such an award in excess of an infringer's profit is that the infringer has adopted a product line with an aim toward achieving an

\begin{itemize}
\item \textsuperscript{239} Panduit Corp. v. Stahlin Bros. Fibre Works, Inc., 575 F.2d 1152, 1157-58 (6th Cir. 1977).
\item \textsuperscript{240} W.L. Gore & Assocs., Inc. v. Int'l Med. Research Assocs., Inc., No. 84-559, 1990 WL 180490, at *23 (D. Ariz. July 9, 1990); see also Lindemann Maschinenfabrik GmbH v. Am. Hoist & Derrick Co., 895 F.2d 1403, 1408 (Fed. Cir. 1990) (finding an expert's opinion that an infringer would agree to pay a royalty in excess of expected profits "absurd"); Hanson v. Alpine Valley Ski Area, Inc., 718 F.2d 1075, 1081 (Fed. Cir. 1983) ("That a reasonable royalty would leave the infringer with a reasonable profit ... is implicit ... "); Rapp & Beutel, supra note 126, at 885 ("The potential licensee will pay no more than the profits it expects to gain from sales of the invention.").
\item \textsuperscript{241} See Golight, 355 F.3d at 1338. However, other Federal Circuit decisions find that the economically rational motivations of a hypothetical licensee limit the hypothetical negotiation. See, e.g., Integra Lifesciences I, Ltd. v. Merck KGaA, 331 F.3d 860, 870 (Fed. Cir. 2003) (cost of non-infringing alternative acts as a cap on the reasonable royalty that an infringer is likely to pay), rev'd on other grounds, 125 S. Ct. 2372 (2005).
\item \textsuperscript{242} Integra Lifesciences I, 331 F.3d at 870 (reversing a $15 million damages award as inconsistent with the risks and expectations of the parties as of the date of the hypothetical negotiation).
\item \textsuperscript{243} Golight, 355 F.3d at 1338.
\item \textsuperscript{244} Neither the Federal Circuit nor the district court in Golight mention that the record supported price suppression. See also Grain Processing Corp. v. Am. Maize-Prods. Co, 185 F.3d 1341, 1351 (Fed. Cir. 1999) (noting that the reasonable royalty analysis must be supported by sound economic and factual predicates).
\end{itemize}
economical loss. Because the Golight court treated the patentee as Wal-Mart's competitor, Wal-Mart's loss was Golight's gain. Thus, in a hypothetical negotiation under the Golight court's analysis, Wal-Mart would have taken a negotiating position that not only harmed itself economically, but that also benefited a competitor patentee. The court failed to identify any economic theory that supported such generosity on the part of Wal-Mart. Wal-Mart's inability to obtain the profit margin of the patentee casts doubt on any conclusion that the patented invention could be valued at the amount ultimately awarded by the court.

Golight is consistent with prior decisions holding that a patentee's royalty may exceed a previously negotiated license rate. However, the Golight district court specifically found "Wal-Mart would not typically have paid such a high royalty" that was awarded by the court—an amount that equaled the full amount sought by the patentee in litigation. Here, the plaintiff had refused to negotiate a license with the infringer. The Golight patentee ultimately obtained a higher royalty rate in litigation because it had refused to negotiate with Wal-Mart at the outset.


246. King Instruments Corp. v. Perego, 65 F.3d 941, 951 (Fed. Cir. 1995) ("The patentee profits more by supplying the demand itself than by granting a license on terms which would allow the competitor to reasonably operate. In this situation, no reasonable royalty exists. Willing negotiators, assuming they both act in their own best interests, would not agree to any royalty. The value of exercising the right to exclude is greater than the value of any economically feasible royalty.").


248. Id. at 1182. The district court noted that "the only evidence of a reasonable royalty presented at trial was the testimony of Mr. Levko," who was the plaintiff's expert. Id.

249. Id.

250. Id. at 1183 (finding that during an actual negotiation, Wal-Mart would not have agreed to the royalty rate awarded in litigation). Precedent supports raising the reasonable royalty where the patentee wishes to maintain the patent monopoly by refusing to license to others. Specifically, under the fourth Georgia-Pacific factor, a royalty rate is subject to an upward adjustment where the patentee has an "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." Ga.-Pac. Corp. v. U.S. Plywood Corp., 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970); see also supra note 108 (listing the Georgia-Pacific factors).
can therefore be read to support the rule that a reasonable royalty recovery allows a patentee to make more money by forgoing negotiations with an accused infringer, obtaining more through litigation than a patentee's negotiation, whether hypothetical or actual, with the accused infringer. By failing to limit its holding to those patentees with a market to protect, \textit{Golight} appears to create incentives for patent trolls to assert their patents in court because patentees can earn more by obtaining a higher monetary recovery in litigation than the patentee could have obtained through licensing negotiations.

Both \textit{Monsanto} and \textit{Golight} presented the Federal Circuit with difficult issues of valuation and compensation that are likely to arise time and again: the role of a prior patent license, the need for deterrence, and whether there are limits on the amounts that patentees might recover. Failing to address these considerations leaves district courts and fact-finders with no ability to provide a reasoned basis for damage awards in patent litigation. Further, the lack of any definition leaves patent trolls with incentives to assert patents in the hope of leveraging this uncertainty into a profitable settlement. At the same time, the lack of defined standards leaves those involved in innovative activity that might later give rise to patent infringement allegations no basis upon which to assess the potential downsides of their activity.

\textbf{H. Apportionment: The Entire Market Value Rule}

Once a royalty rate is determined, it must be applied to a royalty base to determine the actual damages figure. Unlike the reasonable royalty rate figure that is linked to the date of first infringement, the royalty base amount is comprised of the actual sales or uses of the infringing product. Notably, over the past several decades the courts have engaged in a tendency of expanding the royalty base and, through this expansion, have increased the total available basis for royalty damages. One problem that the proposed changes to the patent law seek to address is the extent to which the selling price of an entire infringing product or system should be included in the royalty base where the patent claim covers
less than the entire product.\textsuperscript{251}

Prior to the 1946 amendment to the patent damages statute, a patentee seeking to obtain any form of monetary damages based on the sale of an entire infringing product containing features beyond those of the patented invention had to show "that the profits and damages [were] to be calculated on the whole machine, for the reason that the entire value of the whole machine, as a marketable article, is properly and legally attributable to the patented feature."\textsuperscript{252} The rule applied in these cases, known as the "entire market value rule," allowed a patentee whose improvement covers only a portion of an infringing device to obtain damages based on the entire infringing product if consumers purchase the product because of the patented feature.\textsuperscript{253} Generally, the entire market value rule allows a patentee to recover damages for infringement of unpatented components, recognizing that the patent is responsible for the sales of the entire product.\textsuperscript{254}

Courts prior to 1946 focused application of the entire market value rule on whether the patented invention substantially created the value of the entire infringing item, emphasizing that the "the sole utility" must be based on the inventive aspect of the patent.\textsuperscript{255} For example, in \textit{Leesona Corp. v. United States},\textsuperscript{256} the court considered infringement of a patent that related to mechanically rechargeable metal-air batteries. The portions of the batteries that were found to be infringing included a certain cathode and the relationship

\textsuperscript{251} H.R. 2795, 109th Cong. § 6 (2005). Uncertainty about the value of a prior innovation creates risk for those who may seek to improve upon these innovations, even where the later improvements constitute innovative activity. \textit{See} Mark A. Lemley, \textit{The Economics of Improvement in Intellectual Property Law}, 75 TEX. L. REV. 989, 998 (1997) ("The more absolute the property right given to original authors and inventors, the more critical efficient licensing is to subsequent innovation, and the more sensitive the industry is to market failures in licensing.").

\textsuperscript{252} \textit{Garretson v. Clark}, 111 U.S. 120, 121 (1884).

\textsuperscript{253} \textit{Rite-Hite v. Kelley Co.}, 56 F.3d 1538, 1549 (Fed. Cir. 1995).

\textsuperscript{254} \textit{King Instruments Corp. v. Perego}, 65 F.3d 941, 951 n.4 (Fed. Cir. 1995); \textit{see also} Site Microsurgical Sys., Inc. v. Cooper Cos., 797 F. Supp. 333, 339 (D. Del. 1992) ("The rule merely recognizes the actual economic value of the patented technology.").

\textsuperscript{255} \textit{See}, \textit{e.g.}, \textit{Decca Ltd. v. United States}, 640 F.2d 1156, 1175 (Fed. Cir. 1980).

\textsuperscript{256} \textit{Leesona Corp. v. United States}, 599 F.2d 958 (Ct. Cl. 1979).
between a replaceable anode to the cathode. Anodes were necessary to allow the battery to function, and a significant number of anode replacements were needed for the battery to be useful. Both the trial and appellate courts agreed that the patents were of "substantial importance" to the success of the infringing batteries.

The Court of Claims affirmed the trial court's finding that damages were properly awarded based on the infringement of the anodes, cathodes, and battery covers in the compensation base under the entire market value rule, explaining:

[T]he battery's very uniqueness lies in the fact that it uses a device like replacing anodes to be recharged, instead of relying on a cumbersome recharging device. In fact, the separability of the anodes is the key to the battery's value. In addition, the fragile nature of this special battery made it imperative that there be extra cathodes and covers to avoid a situation where damage would occur in the field, and the battery become useless because no cathodes or covers were available.

Since the late 1990s, the Federal Circuit has decided a number of cases that have expanded the application of the entire market value rule beyond the selling price of an entire device to include components that might be sold with the infringing device.

In Rite-Hite v. Kelley Co., which first recognized the modern entire market value rule, the Federal Circuit expressly stated that a patent damages award could include

257. Id. at 962.
258. Id. at 963.
259. Id.
260. Id. at 975. Similarly, another court stated the rule in terms of whether the patented apparatus "was of such paramount importance that it substantially created the value of the component parts." Marconi Wireless Tel. Co. v. United States, 99 Ct. Cl. 1, 49 (Ct. Cl. 1942), aff'd in part and vacated in part, 320 U.S. 1 (1943); see also Hurlbut v. Schillinger, 130 U.S. 456, 472 (1889). In Hurlbut, the Court awarded a royalty based on profits made on concrete pavement for infringement of a patent concerning a method for laying the pavement, stating: "The pavement was a complete combination in itself, differing from every other pavement, and the profit made by the defendant was a single profit derived from the construction of the pavement as an entirety." Id.
recovery for the sale of unpatented components where such components could "function together" with the infringing device.\textsuperscript{262} \textit{Rite-Hite} further required that the patent-related feature be "the basis of consumer demand."\textsuperscript{263} A strict application of the modern rule requires the fact-finder to determine consumers' motivations for purchasing a product, when, in reality, consumers may have different, sometimes mixed, motives to determine whether the patented feature was the basis of their demand.\textsuperscript{264} In this respect, \textit{Rite-Hite}'s formulation of the entire market value rule is consistent with \textit{Westinghouse} and \textit{Dowagiac}'s delineation between value which is creditable to the patent and value which is not.

Later cases have further expanded the modern entire market value rule to permit damages based on unpatented components that are foreseeably sold with the infringing item as long as some functional relationship exists between them.\textsuperscript{265} These cases demonstrate a shift away from \textit{Rite-}

\textsuperscript{262} Rite-Hite v. Kelley Co., 56 F.3d 1538, 1540 (Fed. Cir. 1995). \textit{Rite-Hite} further stated: "It is a clear purpose of the patent law to redress competitive damages resulting from infringement of the patent, but there is no basis for extending that recovery to include damages for items that are neither competitive with nor function with the patented invention." \textit{Id.} at 1551. \textit{Rite-Hite} noted that recovery based on the sales of unpatented components absent these limitations "would constitute more than what is 'adequate to compensate for the infringement.'" \textit{Id.} at 1550.

\textsuperscript{263} Id. at 1572.

\textsuperscript{264} F. Russell Denton & Paul J. Heald, \textit{Random Walks, Non-Cooperative Games, and the Complex Mathematics of Patent Pricing}, 55 \textit{Rutgers L. Rev.} 1175, 1189 (Summer 2003) (discussing the difficulty of proving consumer motivation for purchasing any particular product). To the extent that the "basis for consumer demand" remains a valid application of the entire market value rule, evidence that an infringer's marketing material promotes the patented feature in question is sufficient to demonstrate that the feature is the "basis of consumer demand" for the entire product, regardless of the reasons for purchasing the unpatented component. See Fonar Corp. v. Gen. Elec. Co., 107 F.3d 1543, 1552-53 (Fed. Cir. 1997); Advanced Med. Optics, Inc. v. Alcon, Inc., 361 F. Supp. 2d 404, 418 (D. Del. 2005). This point was made explicitly in \textit{King Instruments Corp. v. Perego}, 65 F.3d 941, 957 (Fed. Cir. 1995), where a majority affirmed a damages award based on the sale of the defendant's unpatented tape loader that used the infringing device as an optional accessory.

\textsuperscript{265} \textit{King Instruments}, 65 F.3d at 951; Micro Chem., Inc. v. Lextron, Inc., 318 F.3d 1119, 1125-26 (Fed. Cir. 2003) (patentee could recover lost profits on unpatented product by demonstrating a reasonable foreseeability of unpatented product profits earned by virtue of sales or distribution of the patented product). Such results might be labeled as expanding the patent beyond its scope due to either the broad view of the entire market value rule or a "reach through" royalty for use of the invention.
Hite's more stringent "functional relationship" test toward a still more lenient test.266

Micro Chemical, Inc. v. Lextron, Inc.267 is illustrative of this application of the modern entire market value rule. There, the Federal Circuit considered a patent damages award for lost profits on microingredient weighing machines268 that incorporated the patented invention. The patentee and infringer provided these machines to consumers at no cost and recouped the expense of the machines by selling microingredients to the feedlots purchasing the machines.269 The district court found that the entire market value rule did not apply because any demand for the weighing machines was not due to the existence of the patented features.270

The Federal Circuit reversed and remanded the case without undertaking any analysis of whether the microingredients created the demand for the patented weighing machines.271 Instead, the court authorized a royalty award based on sales of the unpatented microingredients because it was "reasonably foreseeable" that the patentee would have profited from sales of the unpatented microingredients absent infringement.272

Similarly, in Minco, Inc. v. Combustion Engineering, Inc.,273 the Federal Circuit affirmed a damages award where the infringing product was a rotary furnace for fusing minerals to produce silica.274 The Federal Circuit confirmed the use of the unpatented end product, the fused silica, as a baseline for damages for the use of the patented invention.275 In doing so, the court reaffirmed that damages are available for unpatented components that are the end product made by

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268. Id. at 1121. "Microingredient weighing machines" are used to measure and dispense chemicals—here vitamins used for feeding animals. Id.
269. Id.
272. Id.
274. Id. at 1112.
275. Id. at 1118.
Micro Chemical and Minco represent a trend that shifts away from Rite-Hite's more stringent "functional relationship" test toward awarding damages for all products that might be foreseeably sold and used with the infringing product. Evidence that an infringer's marketing materials promote the patented feature in question is sufficient to demonstrate that the accused feature meets the legal standard for the "basis of consumer demand" for the entire product, regardless of the reasons that consumers purchase the unpatented component. Overall, these latest iterations represent a more lenient standard for patentees to meet than the previous standard, which required patentees to demonstrate that the patented feature "was of such paramount importance that it substantially created the value of the component parts."\(^{277}\)

Riles v. Shell Exploration and Production Co.,\(^{278}\) runs counter to the trend of applying an expansive entire market value rule. In Riles, the plaintiff had established infringement of a method for "anchoring offshore oil rigs without mud mats."\(^{279}\) The patentee's damages expert proposed a reasonable royalty based on the entire oil platform.\(^{280}\) Rejecting this proposal, the Federal Circuit held that the plaintiff could recover only for the "pecuniary benefit lost due to infringement," and that the patentee must link the request for a reasonable royalty with the value of the patented method.\(^{281}\) The patentee could not use the whole platform as his base for calculating royalty damages.\(^{282}\)

Riles appears to be the exception to the expansive modern entire market value rule. Despite Riles, many district courts have followed the shift away from Rite-Hite's functional relationship test and have increased the royalty

\(^{276}\) Id. (observing that such damages were available because this type of injury was, or should have been, reasonably foreseeable, which appears to highlight proximate cause principles in a reasonable royalty analysis).


\(^{279}\) Id. at 1312.

\(^{280}\) Id. at 1311.

\(^{281}\) Id. at 1312.

\(^{282}\) Id.
The most recent applications of the entire market value rule have increased potential for recovery by a patentee in a number of ways. First, as outlined above, lenient application of the entire market value rule has permitted patentees to recover damages for patented and unpatented products which are not necessarily a central reason for consumers' purchases of the unpatented components, as long as there is a functional relationship between the products, and the sale of the unpatented components is foreseeable. Second, the application of the entire market value rule fails to distinguish non-inventive aspects of an improvement claim from inventive features. Third, patentees drafting improvement claims may be encouraged to include additional components in combination claims to sweep additional products within their scope. For example, a patentee who claims an improvement to one component of a computer networking system can mention other components of the system in the language of the claim to later support an argument that the royalty base should include the entire system. Eolas Technologies, Inc. v. Microsoft Corp. is demonstrative of

283. See, e.g., Lucent Techs., Inc. v. Newbridge Networks Corp., 168 F. Supp. 2d 181, 237-38 (D. Del. 2001). In Lucent, the court approved the use of the entire market value rule to award royalty damages for two software programs in addition to the infringing device, a computer network switching device. Id. The patentee did not allege that the two software programs infringed the patents in suit. Id. Instead, the patentee asserted that damages included the two software programs because the infringer "would have anticipated an increase in sales of the patented software because of the unpatented device of which it was a part." Id. See also Hem, Inc. v. Behringer Saws, Inc., No. 00-CV-0331, 2003 WL 23213578, at *3 (N.D. Okla. July 30, 2003) (affirming a royalty award on non-infringing saws because "the unpatented saws functioned together with the patented feed table so as to produce the desired end result, which was the basis for consumer demand").

284. See Seymour v. McCormick, 57 U.S. 480, 487 (1853) (stating that the patentee is entitled to damages based on an entire machine, despite the patented invention comprising only a part, "because it is his improvement that gives value to the machine on account of the public demand for it"); Rite-Hite v. Kelley Co., 56 F.3d 1538, 1549-50 (Fed. Cir. 1995) (stating the modern formulation of the entire market value rule); cf. Garretson v. Clark, 111 U.S. 120, 121 (1884) (holding that a patentee could not recover for the entire cost of an infringing mop head where the novel aspect of the accused device was a "mode of clamping, [and] mop-heads like the plaintiff's had been in use time out of mind").

this practice.

In *Eolas Technologies*, the patentee asserted two claims against functionality that appeared in Microsoft's Internet Explorer® browser, which is distributed within the Microsoft Windows® operating system. Microsoft argued that the claim represented "a small part of the functions performed and features provided by Internet Explorer® and an even smaller part of the functions and features of Windows®." The patentee countered that because the claim included the term "computer program," the asserted claims read on the entire Windows® operating system.

The patentee did not purport to be the first inventor of a "computer program" within the meaning of the claim term; rather, the "computer program" was part of several other elements of the combination claims. Nonetheless, the patentee argued that using the term "computer program" in the claim language meant that damages were recoverable for the entire Windows® operating system, even though the accused features were limited to only portions of the entire software program. Such expansive use of claim language appears to cut against the Patent Act's authorization of "a reasonable royalty for the use made of the invention by the infringer," which refers to the salient inventive aspects of a claim. More specifically, royalties are authorized for use of "the invention," and thus a royalty award should be tailored to the infringement. This statutory limitation is similar to an analogous limitation to damages caused by an "antitrust


289. On the record, it is difficult to tell whether the *Eolas* patentee's strategy was successful. *Eolas Techs. v. Microsoft Corp.*, 70 U.S.P.Q.2d (BNA) 1939 (N.D. Ill. 2004), rev'd on other grounds, 399 F.3d 1325 (Fed. Cir. 2005). The district court noted that the jury "may have" rejected the entire market value rule, stating that the record reflected an award less than the plaintiff had requested even though the court was "not entirely comfortable with the large size of the judgment." *Id.* at 1942.

injury” for violations of the Clayton Act. The current iterations of the entire market value rule are inconsistent with the Patent Act’s statutory language.

I. Implications of Expanding the Royalty Base

The expanding royalty base under modern iterations of the entire market value rule has policy implications for the application of patent law and innovation more generally. Despite the trend toward applying damages in a manner that may stifle innovation, there does not appear to be any court opinion that examines and appreciates the fundamental disconnect between the carefully constructed balance of rights inherent in considerations of patent claim scope and the need to carefully balance the rights of earlier patentees and the rights of later innovators. Although the Georgia-Pacific factors distinguish between patented and non-patented elements in setting the royalty rate, the royalty base is subject to considerable expansion under current law. Permitting recovery for unpatented portions of products or unpatented components sold with an infringing device represents an expansion of patent rights by allowing a patentee to recover on a basis beyond that which is claimed in the patent.

Permitting the patentee to recover damages for unpatented items appears to implicate many of the same policy choices that are implicated by a determination of the appropriate claim scope. For example, permitting a patentee to recover too little under-compensates patentees and fails to provide a sufficient incentive to undertake inventive activity. However, permitting patentees to recover for far more than is patented create disincentives for those

291. See, e.g., Brunswick Corp. v. Pueblo Bowl-O-Mat, 429 U.S. 477, 485, 487-88 (1977) (stating that to recover damages under Section 7 of the Clayton Act, a plaintiff must show injury “of the type that the statute was intended to forestall,” where the statutory language allowed recovery by “[a]ny person who shall be injured in his business or property by reason of anything forbidden in the antitrust laws . . .” (emphasis added)). Further, “courts may be very demanding as to the quality of the plaintiff’s damage model” in the antitrust context. Joseph Hundsader et al., Proving Antitrust Injury and Damages, SH045 A.L.I.-A.B.A. 323, 330 (2002).

engaged in commercial activity that might be accused of infringing activity. If the accused infringer's cost of engaging in that activity is too high, the accused infringer is likely to abandon otherwise beneficial activity. 293

Defining the meaning and scope of patent claims is a critical task to implement a fundamental policy underlying patent law—that is, to reward the initial innovator and to minimize impediments on subsequent innovation. 294 Careful attention is paid to ensure that claim construction is done properly, with the understanding that a fundamental purpose of claim construction 295 arises "from trying to grasp the world of things—actual inventions in real space—with words." 296 In the course of litigation, claim construction consumes significant resources of both the courts and the parties, 297 in part because claim construction is viewed as important to furthering the incentive policy that underlies patent law, as

293. As a practical matter, devices that infringe on a single patent may include other innovative features added by the infringer. To the extent that both the patentee and the infringer are both engaged in innovation, including potentially competitive innovation, allowing the infringer to engage in inventive activity is likely to result in more innovation overall. See Merges & Nelson, supra note 292, at 908 (noting the "general conclusion is that multiple and competitive sources of invention are socially preferable to a structure where there is only one or a few sources. Public policy, including patent law, ought to encourage inventive rivalry, and not hinder it.").

294. Id. at 843 ("The concept of incentives, in our view, should embrace post-invention conditions favorable to the inventor, such as extension of an initial patent to cover subsequently-developed versions of the invention. Likewise, the notion of a patent's social costs should include its potential to reduce competition in the market for improvements to the patented technology.").

295. "Claim construction" refers to the process of interpreting claims. See generally Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996) ("It has long been understood that a patent must describe the exact scope of an invention and its manufacture to 'secure to [the patentee] all to which he is entitled, [and] to apprise the public of what is still open to them.'" (citing McClain v. Ortmayer, 141 U.S. 419, 424 (1891)).


297. See, e.g., Allen-Bradley Co. v. Kollmorgen Corp., 199 F.R.D. 316, 319 (E.D. Wis. 2001) ("[T]his court devoted a substantial amount of time and effort to the claim construction order. The Markman hearing itself consumed seven days of court time, and many additional hours were spent doing pre- and post-hearing research and writing the opinion itself."); Jay Dratler, Jr., Alice In Wonderland Meets the U.S. Patent System, 38 AKRON L. REV. 299, 326 (2005) (observing that current methods to construe patent claims have generated "150 years of increasing complexity in law and practice, plus transaction costs no doubt measurable in the trillions of dollars").
well as the public notice and disclosure functions.\textsuperscript{298}

The choice of awarding damages beyond the metes and bounds of a defined claim under the entire market value rule implicates, and in some cases contradicts, the same policy choices that animate claim construction. First, broad application of the entire market value rule appears to broaden the practical scope of a remedy for patent infringement beyond the legal scope of the patent and despite careful attention to a precise and proper construction of claim terms. Further, although the entire market value rule was conceived to ensure a proper level of damages for the infringement by recognizing a patent's value that went beyond sales of a single product, the courts' abandonment of a meaningful "basis of consumer" demand test\textsuperscript{299} requires an infringer to pay damages for an entire system, despite that the patent has been issued on only a narrow piece that has little market impact on sales of unpatented components. Similarly, failing to provide subsequent inventors with clear notice of their potential liability by uneven application\textsuperscript{300} of the entire market value rule may chill innovation and interfere with the public notice requirements on which the patent laws depend. Overcompensating initial inventors and over-deterring subsequent inventors interferes with the

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\textsuperscript{299} Rite-Hite v. Kelley Co., 56 F.3d 1538, 1540 (Fed. Cir. 1995) (describing the "basis of consumer demand" test); see also supra note 263 and accompanying text.

\textsuperscript{300} Compare Minco, Inc. v. Combustion Eng'g, Inc., 95 F.3d 1109, 1118 (Fed. Cir. 1996) (affirming that a royalty could be awarded for sales of the unpatented end product made by the patented device, as long as the patentee proved that the patentee's lost sales of the end product "was or should have been reasonably foreseeable by an infringing competitor in the relevant market, broadly defined" (quoting \textit{Rite-Hite}, 56 F.3d at 1546)), with Riles v. Shell Exploration & Prod. Co., 298 F.3d 1302, 1312 (Fed. Cir. 2002) (holding that the patentee could not seek royalties on an end product from an oil platform that was installed using a patented method unless the patentee showed a relation between the end product and the patented method). Thus, in \textit{Minco}, royalties could run to downstream products based solely on the fact that such sales were reasonably foreseeable. \textit{Minco}, 95 F.3d at 1118. By contrast, the \textit{Riles} court required the patentee to show a connection between the end product and the patent. \textit{Rile}, 298 F.3d at 1312.
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balance sought to be struck by proper claim interpretation.

However, it has been argued that a broad application of the entire market value rule is consistent with the patent damages statute's compensation requirements. Under the statute, "[i]f the make-whole principal is to dominate, then a patent-holder that lost reasonably foreseeable and predictable sales of ancillary goods should be compensated for those losses as long as causality is proven, quite apart from issues of functional relationship."\(^{301}\)

The view that damages should be limited only by causative principles has been adopted by the United Kingdom in *Gerber Garment Technology, Inc. v. Lectra Systems Ltd.*\(^{302}\) There, the British court considered whether royalties for infringement of two patents directed toward a machine or process for cutting fabric could also encompass a royalty for computer-assisted design machines to produce patterns for cutting.\(^{303}\) Customers frequently bought both machines, although it was possible to use the computer-assisted design machines with other cutting machines via a special interface.\(^{304}\) The court further acknowledged that the sale of the computer assisted design machines by themselves did not violate the patentee's rights.\(^{305}\) Nonetheless, the court determined that the reasonable royalty encompassed the entire system, including the non-infringing computer-assisted design machines.\(^{306}\) The court rejected the defendant's argument that recovery for non-infringing activities was not permissible under the patent laws, viewing the scope of recovery as an issue of factual causation once infringement was established.\(^{307}\)

*Gerber Garment Technology* applied a two-step analysis.\(^{308}\) First, infringement must be established.\(^{309}\) If this first step is met, then the court proceeds to the second step, which permits a patentee to recover for all damages caused by

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\(^{301}\) Rapp & Beutel, *supra* note 126, at 879.


\(^{303}\) *Id.*

\(^{304}\) *Id.* at 449.

\(^{305}\) *Id.*

\(^{306}\) *Id.*

\(^{307}\) *Id.* at 456.

\(^{308}\) *Gerber Garment Tech.*, R.P.C. at 452-56.

\(^{309}\) *Id.*
the infringer's conduct, regardless of whether all such conduct was infringing.\textsuperscript{310} The court found "no dispute as to causation or remoteness" with respect to sales of the non-infringing components, "nor any ground of policy for restricting the patentee's right to recover."\textsuperscript{311}

\textit{Gerber Garment Technology} is consistent with the direction that the U.S. courts have taken with respect to an expansive reading of patent damages. What remains to be seen is whether the proposed legislative enactment will affect the future of recoverable damages in this area. United States courts appear to have taken this direction without explicitly discussing the policy implications that cut against fundamental choices made in the context of deciding patent claim scope. Although \textit{Gerber Garment Technology} and the most expansive entire market value rule unquestionably serve a compensatory function for wronged innovators, the failure to consider these policy choices raises a danger of over-compensating patentees. That circumstance harms later innovators who may themselves be engaged in socially valuable conduct by adding to the entire fund of human knowledge, albeit based on an earlier patentee's innovation.\textsuperscript{312}

\section*{IV. PROPOSED LEGISLATION}

Against this history and operation of the current law, Congress has proposed changes to the patent law's reasonable royalty provision. The following section will examine the details of Congress's solution and the implications if the legislation is adopted.

\subsection*{A. Status of the Current Bill}

Section 6 of H.R. 2795\textsuperscript{313} proposes to add the thirteenth \textit{Georgia-Pacific} factor\textsuperscript{314} to the damages provision of the

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  \item[310.] \textit{Id.} at 456.
  \item[311.] \textit{Id.}
  \item[312.] See Jerry R. Green & Suzanne Scotchmer, \textit{On the Division of Profit in Sequential Innovation}, 26 RAND J. ECON. 1, 26-27 (1995) (noting the possibility of patent infringement can cause a sequential innovator not to enter a market because of the high probability that a later license will harm the sequential innovator's profitability).
  \item[313.] H.R. 2795, 109th Cong. § 6 (2005).
  \item[314.] See supra note 108 (listing the \textit{Georgia-Pacific} factors, including the thirteenth factor: "The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing
Patent Act for infringing products or processes that contain a combination of inventive and non-inventive elements.\textsuperscript{315} It states:

In determining a reasonable royalty in the case of a combination, the court shall consider, if relevant and among other factors, the portion of the realizable profit that should be credited to the inventive contribution as distinguished from other features of the combination, the manufacturing process, business risks, or significant features or improvements added by the infringer.\textsuperscript{316}

Essentially, the proposed legislation would inject some balance into the entire market value rule, cutting back on the recent expansion of the rule. Section 6 can be read to mandate a comparative assessment of the value of the patented features relative to the value of unpatented elements in an infringing combination product. By focusing the fact-finder’s attention on the portion of profit “credited to the inventive contribution,”\textsuperscript{317} the provision would distinguish assets, including intellectual and business assets, that the infringer added to an infringing combination product.

Under this interpretation, the proposed amendment can be understood to preserve the entire market value rule in a modified, more limited, form. Specifically, where “the portion of the realizable profit that [can] be credited to the inventive contribution” is one hundred percent, the inventive contribution will then logically comprise the “entire market value” of the infringing sales.\textsuperscript{318} In such cases, the patentee can recover a reasonable royalty based on the entire profit of the infringing product.\textsuperscript{319} Where, however, the infringer’s contribution adds to the profit of the infringing device, that

\textsuperscript{315} H.R. 2795, 109th Cong. § 6.
\textsuperscript{316} Id.
\textsuperscript{317} Id.
\textsuperscript{318} Id.
\textsuperscript{319} Id.
contribution is considered in determining a reduced royalty.\textsuperscript{320}

As the proposed legislation is in a nascent stage, it is unclear whether courts will continue to apply an expansive definition of the "entire market value rule."\textsuperscript{321} The proposed amendment's use of the phrase "if relevant and among other factors"\textsuperscript{322} can be argued to preserve a court's discretion in applying the entire market value rule or, in the alternative, in apportioning damages between patented and unpatented components. If either situation results, it may be argued that the amendment simply represents a change in the emphasis, but not operation, of existing law. That is, the phrase "if relevant" might be interpreted to continue to determine whether and how to apply the entire market value rule and a court may do so consistent with existing common law. Further, the term "among other factors" arguably preserves the importance of the remaining \textit{Georgia-Pacific} factors as currently interpreted under existing law. However, to the extent that the proposed amendment only reiterates the existing standards, the necessity for enacting this amendment would be dubious.

The current legislative record does not support the argument that the proposed legislation is the same as existing law. The Chair of the House Subcommittee on Courts, the Internet, and Intellectual Property noted that the modification was intended to "more clearly distinguish[] between an inventive contribution and other features of an infringing product."\textsuperscript{323} In contrast to the current \textit{Georgia-Pacific} factors, which examine myriad issues, including the patentee's market for the patented invention,\textsuperscript{324} the proposed legislation's use of the term "profit" appears to focus the valuation inquiry on the profit of the infringing device made by the infringer. To the extent that this reflects a legislative preference for using an infringer's gain as a major factor in determining a reasonable royalty, the proposed legislation

\textsuperscript{320} \textit{Id.}
\textsuperscript{321} See, e.g., \textit{Micro Chem., Inc. v. Lextron, Inc.}, 318 F.3d 1119 (Fed. Cir. 2003); \textit{Minco, Inc. v. Combustion Eng'g, Inc.}, 95 F.3d 1109 (Fed. Cir. 1996).
\textsuperscript{322} \textit{H.R. 2795, 109th Cong. § 6.}
\textsuperscript{323} \textit{See Patent Act of 2005 Hearings, supra} note 8, at 9 (statement of Rep. Lamar Smith, Chairman, House Subcomm. on Courts, the Internet, and Intellectual Prop.).
reflects pre-1946 law that permitted recovery of a defendant's profits as a separate item. If this interpretation is seen as overstating the legislative intent, then, at a minimum, the focus on defendant's profit might provide a statutory basis to limit damages in cases like *Golight*.

**B. Implications of the Proposed Legislation**

By focusing on the specifics of the patented invention, H.R. 2795 evokes the apportionment concepts that were prevalent prior to the 1946 amendments to the Patent Act. Requiring fact-finders to consider the value of the infringer's contribution will undoubtedly raise some of the same practical difficulties encountered under the pre-1946 law. This difficulty is described by two leading economists as follows:

> The apportionment problem—how to determine how much of the “value added” is due to the intellectual property at issue in the case, and how much is due to the other complementary assets (including other intellectual property), skills or risk-taking—is typically one of the most significant practical problems in doing intellectual property damages analysis.

As the legislative hearings supporting the 1946 amendment detailed, apportioning the patented invention from the infringer's contribution in a combination product involves significant burdens and expenses. Reports of pre-1946 apportionment proceedings indicate that they dragged on for up to ten or twenty years. Derivatively, administrative costs of performing the required analysis, as reflected in discovery, expert fees, and trial, may be

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327. *See supra* Part II.C.
329. Sherry & Teece, *supra* note 21, at 410; *see also* Cincinnati Car Co. v. N.Y. Rapid Transit Corp., 66 F.2d 592, 593 (2d Cir. 1933) ("It is generally impossible to allocate quantitatively the shares of the old and the new [in an infringing product].").
anticipated to increase if the proposed legislation is adopted. Methods such as firm judicial control of damages proceedings may be critical to a successful implementation of the proposed legislation. One means of focusing discovery and motion practice is to use the parties' own contentions to limit the suit. For example, requiring the accused infringer to disclose the "other features of the combination, the manufacturing process, business risks, or significant features or improvements added by the infringer" early in the litigation will crystallize the parties' positions. Courts might also consider shifting or imposing costs on parties who take baseless or unreasonable positions in that disclosure.

Despite the burden of the apportionment process, the proposed legislation is a positive step forward. It offers consistency and structure in reasonable royalty awards and limits them to the harm caused by the infringement. H.R. 2795 is a signal to the courts that more definition in this area is needed.

Although the legislative changes are designed to affect more accurate damages results, many problems will remain. On one hand, the proposed legislation will not fundamentally change current tests for lost profits and reasonable royalty rates, thereby allowing patentees to obtain monetary compensation where proof problems might otherwise make it difficult to establish causation. Continuing these practices will continue to establish the importance of patents as an incentive to innovate and commercialize.

On the other hand, the proposed legislation fails to address the high level of defined standards, which may create disincentives for subsequent innovation due to a lack of predictability. As one commentator describes, "[r]oyalty calculations suffer from a lack of any useful analytic framework that would give fact-finders a consistent basis for making awards." Although cases reference economic principles, citing "sound economic proof" and market values

333. See King Instruments Corp. v. Perego, 65 F.3d 941, 950 (Fed. Cir. 1995) ("The encouragement of investment-based risk is the fundamental purpose of the patent grant, and is based directly on the right to exclude.").
334. Rapp & Beutel, supra note 126, at 868.
as benchmarks for compensation, on the whole, they do not view market limitations as a meaningful limit on a patentee's recovery. Consequently, the lack of concrete standards threatens over-deterrence.

Further, the proposed legislation focuses solely on balancing the amount of innovation and risk assumed by both parties. However, the amendment is silent on fundamental policies of compensation, deterrence, and the optimization of innovation that is so critical to the operation of an intellectual property system. The courts must still sort out the extent to which it is appropriate to impose above-market licensing rates on infringers to maximize incentives to license patented inventions incorporated into combination products. As the courts have thus far failed to articulate a position on the appropriate role of deterrence in the reasonable royalty calculation, accused infringers continue to face uncertainty in assessing the costs of their conduct. Arguably, deterrence damages should not be awarded at all where infringement is truly innocent, based on the Federal Circuit's rule that "[r]oyalties, like lost profits, are compensatory damages, not punitive." Deterrence damages where an infringer could not possibly be aware that its conduct is wrongful appears to impose unwarranted costs on an infringer. None of the safeguards in place for willfulness damages are present because willfulness is not a prerequisite for granting reasonable royalty awards that may include a deterrence component. This is problematic, as some level of awareness of patent infringement is necessary for a deterrence award to accomplish its purpose.

Moreover, the question of an appropriate deterrence amount is simply unanswered. This is a complex issue that currently leaves juries without sufficient guidance. There is already a plethora of reasons why a defendant will pay more

335. Despite § 284 of the Patent Act's limit of awards to compensatory damages, courts have added a deterrence component to infringement awards that is not tied to any showing of harm. See supra Part II.D.


337. One of the most significant safeguards is that an infringer must have knowledge of the existence of the patent before a court will find willful infringement. Gustafson, Inc. v. Intersystems Indus. Prods., Inc., 897 F.2d 508, 511 (Fed. Cir. 1990).

338. See supra notes 181-84 and accompanying text.
in litigation than an actual pre-infringement royalty, including ex post consideration of the infringer’s profits.\textsuperscript{339}

One commentator has suggested that the Federal Circuit has left royalty standards undefined for various reasons, including a lack of experience in resolving such issues\textsuperscript{340} and a need to retain flexibility where patentable subject matter is broad and inventions, by their nature, involve novel concepts for emerging markets. However, one might suggest that the ultimate deterrent of patent infringement is an undefined standard, lest infringers ignore patent rights and simply add a quantifiable measure of damages to the purchase price of an infringing product. Nonetheless, courts should consider the chilling effect that the uncertainty of a damage impact will have on subsequent innovation.

The proposed legislation also fails to provide a meaningful standard for courts to use in choosing among the numerous economic methods for determining the value of any particular invention.\textsuperscript{341} Currently, valuation methods are presented at trial by adversaries to juries with little guidance for selecting among the methods. These methods are typically shoe-horned into language from the \textit{Georgia-Pacific} factors without considerations of rigorous analysis. The patent system should not be forced to rely on jury awards based on evidence that constitutes nothing more than

\textsuperscript{339} One reason an infringer might be forced to pay more in litigation than a pre-infringement royalty rate is that an infringer’s actual profits can be considered in litigation. Fuji Photo Film Co. v. Jazz Photo Corp., 394 F.3d 1368, 1378 (Fed. Cir. 2005). Thus, an infringer with an unanticipated market success might pay more after actual profits are considered. Additionally, for the reasons discussed, supra Part II.D, courts will support an above-market royalty rate in a litigated reasonable royalty rate.

\textsuperscript{340} Rochelle Cooper Dreyfus, \textit{The Federal Circuit: A Case Study in Specialized Courts}, 64 N.Y.U. L. REV. 1, 13 (1989) (observing that the Federal Circuit may not have focused on clarifying damages issues because it finds such issues “less crucial to business planning,” and that “[s]everal of the Federal Circuit’s judges came from the CAFC’s predecessor court, the Court of Customs and Patent Appeals, which formerly reviewed the patentability decisions of the PTO. But since the PTO does not handle defenses or damages issues, these judges had not previously grappled with enforcement and damages questions.” (citations omitted)).

\textsuperscript{341} Such methods might be based on those used by economists in valuing technology, such as one of the parties’ cash flow, profit split, cost of development, or market value, or by relying on the “best” method for which there is solid data available to support the use of a particular theory. See supra Part II.C.2 (outlining different economic methods of determining the market value for patents).
essentially “junk economics.”

The lack of defined standards is complicated further where the patentee produces no competing product and suffers no competitive harm from the infringement. Currently, a number of patentees assert patents as revenue-generating mechanisms, a purpose that has considerable support in current U.S. patent law. The patent system has failed to define standards for assessing a royalty for patents asserted by non-product-producing patentees. In this context, the Georgia-Pacific factors and the hypothetical negotiation construct fail to provide sufficient guidance.

The failure to define compensatory and deterrence damages standards may lead to both under- and over-deterrence. To the extent that final awards are excessive, there is a risk that entities may not engage in innovative activity, even if such activity is non-infringing, for fear of incurring large costs in a damages judgment. Entities that are devoted to a single product line, or others that lack capital to effectively recover from a large monetary judgment, are particularly likely to refrain from engaging in conduct that is viewed as a litigation risk. Such risk-aversion is regrettable because it prevents cumulative innovation from evolving, particularly where a patent troll is likely to perceive this weakness and pursue such an entity with a questionable patent.

The proposed patent legislation may, however, cure certain current problems with the entire market value rule. A consistently overbroad application of the entire market value rule

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342. Failing to provide a reasoned basis for selecting among various economic theories raises the same “junk science” concerns as those that led to the U.S. Supreme Court's standards for the admissibility of expert testimony in Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993). See generally Thomas O. McGarity, Our Science is Sound Science and Their Science is Junk Science: Science-Based Strategies for Avoiding Accountability and Responsibility for Risk-Producing Products and Activities, 52 U. Kan. L. Rev. 897, 908-09 (2004) (the trial judge is obliged to evaluate the “scientific validity” of the data and methodologies upon which an expert relies as well as the expert's overall conclusions).

343. Indeed, removing support for patent revenue generation might have long-term adverse effects on innovative activity more broadly, as such licensing activity, which may be a significant incentive for the creation of new inventions.

value rule threatens to chill innovation for those seeking to design, manufacture, and sell products, or invest in such endeavors. The current application of the entire market value rule for inventions that constitute a very narrow feature in a complex product threatens subsequent innovators with an uncapped damage award. Under current standards, the mere mention of a patented feature in a product brochure may lead to a finding that the royalty base should cover an entire product and all products that function with the accused product. This reasoning not only cuts against the purposes of claim construction, but it also damages the patent law's goal of increasing the level of innovation. Although the incentive that competition provides may compensate for uncertainty to some degree, the potential for over-deterrence exists particularly for companies involved in system or multi-invention products.

If patentees consistently receive compensation on an infringer's entire product, where only a narrow portion of the product is subject to the patent claim, patentees are likely to continue asserting narrow patents in litigation to obtain maximum recovery. An overly broad application of the entire market value rule encourages the use of patents as revenue-generating tools. Patentees that perceive an above-market recovery based on the entire value of a multi-invention product are encouraged to assert their patents aggressively in hope of maximizing their potential recovery. To the extent that the patent troll phenomenon has taken hold, a detailed examination of the financial incentives to such activity renders this trend quite unsurprising.

V. CONCLUSION

Although a broad application of the entire market value rule arguably constitutes appropriate compensation to patentees for all foreseeable harm caused by an infringer, the

345. See supra Part II.I.
346. Mark A. Lemley, Property, Intellectual Property, and Free Riding, 83 TEX. L. REV. 1031, 1060 (2005) (observing that, "there is substantial evidence that, at least in some industries, competition is a stronger spur to innovation").
347. Indeed, a consistently expanding view of the entire market value rule might result in higher rates for an individually negotiated license where no litigation is filed. See, e.g., Sherry & Teece, supra note 21, at 413 (noting that "all licensing is done in the shadow of at least an implied threat of litigation").
current breadth of the rule compensates for more harm than is attributable to the infringing activity. Awarding compensation for unpatented components that are foreseeably sold with infringing sales threatens to overcompensate patentees, expand the scope of patent rights beyond that which was intended, and deter lawful non-infringing activity that may add to the pool of innovative activity.

The proposed legislation is a helpful start in focusing a patent court's inquiry on the specific harms caused by infringement—that specifically attributable to the infringement of the patentee's right to exclude. It essentially reigns in overbroad application of patent damages as applied to the royalty base. However, in a reasonable royalty determination, the royalty base and the royalty rate are inextricably linked.

Regardless of whether the proposed legislation is adopted into law, firm standards are needed to value the use of a patented invention. The proposed legislation will not provide more certain standards unless methods of determining the royalty rate are defined. At bottom, the problem of valuing an infringed claim as exploited by an infringer will continue to arise in every case whether or not the proposed modifications to the patent statute are enacted.

Similarly, the proposed statute does not address issues concerning the use of patent damages awards as deterrents for infringers. Engrafting a deterrence function onto the reasonable royalty award may be laudable in intent, but disastrous in application. The lack of a defined standard, coupled with this feature's potential application to innocent infringers, threatens to penalize defendants without the safeguards that the patent willfulness standard provides.

The legislation is the first legislative effort since 1946 to propose any changes to the reasonable royalty provision. As such, the proposal may serve as a signal to the courts that the current judicial construction of the reasonable royalty requirement may be creating problems in innovation, and that the courts' development of the law in this area requires attention.