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THE HYPOTHETICAL NEGOTIATION AND REASONABLE ROYALTY DAMAGES: THE TAIL WAGGING THE DOG

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ABSTRACT

Reasonable royalty damages are the predominant form of relief awarded in patent infringement cases and, of late, have been a lightning rod for assertions that the patent protection system is out of control. The primary tool used to assess reasonable royalty damages is the hypothetical negotiation construct arising from the seminal Georgia-Pacific Corp. v. United States Plywood Corp. *decision in 1970. The construct provides that a reasonable royalty should be determined by hypothesizing an imaginary negotiation between a patent holder and an infringer over use of a patented invention at the time of first infringement. This Article examines the wisdom of the historically heavy reliance upon the construct. We question whether this construct is likely to achieve the ultimate goal of reasonable royalty damages–namely, to provide the patent holder with fair and adequate compensation for the unauthorized use of a patented invention. We find that the foundation for the construct is tenuous and that the use of the hypothetical negotiation construct introduces unnecessary and unproductive questions and conflict into the determination of reasonable royalty damages. We*

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propose that the determination of reasonable royalty damages be based on a direct and objective assessment of a patent's (1) incremental benefits, (2) licensing comparables, and (3) design-around costs. We propose a balancing and weighing of the results of these different approaches without the introduction of artificial bargaining drama, guided by the objective of ensuring fair patent holder compensation in light of the infringement at issue.

INTRODUCTION

Reasonable royalty estimation in patent damages cases has come under increased scrutiny in recent years. The Court of Appeals for the Federal Circuit has carefully reviewed a number of lower-court rulings, ultimately vacating or remanding many of them.[1] District courts, in turn, have closely examined royalty analyses and excluded or limited testimony deemed to be unreliable or ill-founded.[2] The Federal Trade Commission (FTC) has undertaken investigations of the state of damages law, considered voluminous written and live testimony, and issued reports in 2003[3] and 2011[4] suggesting a variety of substantive and procedural changes. Meanwhile, practitioners and academics have published numerous papers evaluating the art of patent damages determination and have suggested a host of "fixes."[5]

1. *See, e.g.*, ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc., 694 F.3d 1312 (Fed. Cir. 2012); LaserDynamics, Inc. v. Quanta Computer, Inc., 694 F.3d 51 (Fed. Cir. 2012); Whitserve, LLC v. Computer Packages, Inc., 694 F.3d 10 (Fed. Cir. 2012); Uniloc USA, Inc. v. Microsoft Corp., 632 F.3d 1292 (Fed. Cir. 2011); ResQNet.com, Inc. v. Lansa, Inc., 594 F.3d 860 (Fed. Cir. 2010); Wordtech Sys., Inc. v. Integrated Network Solutions, Inc., 609 F.3d 1308 (Fed. Cir. 2010); i4i Ltd. P'ship v. Microsoft Corp., 589 F.3d 1246 (Fed. Cir. 2009); Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301 (Fed. Cir. 2009).

2. *See, e.g.*, Cornell Univ. v. Hewlett-Packard Co., No. 01-CV-1974, 2008 U.S. Dist. LEXIS 41848 (N.D.N.Y. May 27, 2008).

3. FED. TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY (2003) [hereinafter TO PROMOTE INNOVATION], *available at* http://www.ftc.gov/os/2003/10/innovationrpt.pdf.

4. FED. TRADE COMM'N, THE EVOLVING IP MARKETPLACE: ALIGNING PATENT NOTICE AND REMEDIES WITH COMPETITION (2011) [hereinafter THE EVOLVING IP MARKETPLACE], *available at* http://www.ftc.gov/os/2011/03/110307patentreport.pdf.

5. *See, e.g.*, Eric E. Bensen & Danielle M. White, *Using Apportionment to Rein in the* Georgia-Pacific *Factors*, 9 COLUM. SCI. & TECH. L. REV. 1 (2008); Thomas F. Cotter, *Four Principles for Calculating Reasonable Royalties in Patent Infringement Litigation*, 27 SANTA CLARA COMPUTER AND HIGH TECH. L.J. 725 (2011); Daralyn J. Durie & Mark A. Lemley, *A Structured Approach to Calculating Reasonable Royalties*, 14 LEWIS & CLARK L. REV. 627 (2010); Michael A. Greene, *All Your Base Are Belong to Us: Towards an*

A common theme across these efforts has been a redoubling of support for the use of a hypothetical negotiation construct to determine reasonable royalty damages.[6] Presumably emanating from the 1970 district court decision *Georgia-Pacific Corp. v. United States Plywood Corp.*,[7] the construct provides that a reasonable royalty should be determined by hypothesizing the results of a presumed negotiation between a patent holder and an infringer over use of a patented invention as of the point of first infringement.[8] Its long-standing and widespread use has led many courts to go so far as to *define* a reasonable royalty as the outcome of a hypothetical negotiation.[9]

This Article examines the wisdom and usefulness of continued reliance on the hypothetical negotiation construct for assessing reasonable royalty damages. A reasonable royalty is a form of general damages intended to provide adequate compensation for infringement of a patent, and the hypothetical negotiation construct was originally introduced simply as one of many considerations to estimate such damages.[10] It has since evolved into the primary tool used to determine reasonable royalty damages. Unfortunately, reliance on the hypothetical negotiation construct has, to some degree, reversed the proper relationship between damages and tools to estimate those damages. That is, much of the focus of royalty estimation over the past forty years has been placed on proper implementation of the hypothetical negotiation process,

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Appropriate Usage and Definition of the 'Entire Market Value' Rule in Reasonable Royalties Calculations, 53 B.C. L. REV. 233 (2012); Amy L. Landers, *Let the Games Begin: Incentives to Innovation in the New Economy of Intellectual Property Law*, 46 SANTA CLARA L. REV. 307 (2006) [hereinafter Landers, *Let the Games Begin*]; Amy L. Landers, *Patent Claim Apportionment, Patentee Injury, and Sequential Invention*, 19 GEO. MASON L. REV. 471 (2012) [hereinafter Landers, *Patent Claim Apportionment*]; Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991 (2007); John W. Schlicher, *Patent Damages, the Patent Reform Act, and Better Alternatives for the Courts and Congress*, 91 J. PAT. & TRADEMARK OFF. SOC'Y 19 (2009); Christopher B. Seaman, *Reconsidering the* Georgia-Pacific *Standard for Reasonable Royalty Patent Damages*, 2010 BYU L. REV. 1661 (2010); Bo Zeng, Lucent v. Gateway*: Putting the 'Reasonable' Back into Reasonable Royalties*, 26 BERKELEY TECH. L.J. 329 (2011); Brian J. Love, Note, *Patentee Overcompensation and the Entire Market Value Rule*, 60 STAN. L. REV. 263 (2007).

6. *See, e.g.*, THE EVOLVING IP MARKETPLACE, *supra* note 4, at 21 ("Courts should consistently adopt and apply the hypothetical negotiation and willing licensor/willing licensee model as the conceptual framework against which conduct of the damages trial is tested."); *see also* Alan Devlin, *Improving Patent Notice and Remedies: A Critique of the FTC's 2011 Report*, 18 MICH. TELECOMM. & TECH. L. REV. 539, 542, 561 (2012).

7. 318 F. Supp. 1116 (S.D.N.Y. 1970).

8. *See* Zeng, *supra* note 5, at 332.

9. *See, e.g.*, Fujifilm Corp. v. Benun, 605 F.3d 1366, 1372 (Fed. Cir. 2010); Integra Lifesciences I, Ltd. v. Merck KGaA, 331 F.3d 860, 869 (Fed. Cir. 2003), *vacated* 545 U.S. 193 (2005); Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538, 1554 (Fed. Cir. 1995) (en banc); State Indus., Inc. v. Mor-Flo Indus., Inc., 883 F.2d 1573, 1580 (Fed. Cir. 1989); Brandeis Univ. v. Keebler Co., No. 1:12-cv-01508, 2013 U.S. Dist. LEXIS 18948, at *25 (N.D. Ill. Jan. 18, 2013).

10. JOHN W. SCHLICHER, PATENT LAW, LEGAL AND ECONOMIC PRINCIPLES § 13:145 (West 2d ed. 2009).

rather than on evaluation of whether the damages are fair in light of the specific use of a specific invention.

This Article is developed in four parts. In Part I, we provide an overview of patent damages, describing the various forms of relief and the differences between them. In Part II, we describe the evolution of reasonable royalty damages, with particular emphasis on the *Georgia-Pacific* line of cases. In Part III, we discuss the hypothetical negotiation construct and examine a number of issues associated with its use. We find that the construct does not necessarily lead to fair compensation. In fact, use of the construct can impede such a determination by unduly emphasizing consideration of factors that may be linked to "bargaining power," but may not be linked closely enough to fair compensation for use of a single patent. The result is often unnecessary and unproductive in litigation disputes. In Part IV, we propose an alternative approach. It is based on standard approaches used to value a wide range of assets, and does not depend so heavily upon the use of a hypothetical negotiation. We propose direct and objective assessment of a patent's (1) incremental benefits, (2) licensing comparables, and (3) design-around costs, considering all relevant evidence. We also propose a balancing and weighing of the results of these different approaches, guided by the objective of ensuring fair compensation to the patent holder in light of the infringement at issue. This approach is consistent with the original purpose of reasonable royalty damages, the fundamental teachings of *Georgia-Pacific*, and the recent line of reasonable royalty cases, and it eliminates the distractions and distortions that consideration of a hypothetical bargaining process can introduce.

I. Overview of Patent Damages

Since 1952, 35 U.S.C. § 284 has provided for actual damages or a reasonable royalty, whichever is higher:

> Upon 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 . . . .[11]

A. *Actual Damages*

Actual damages represent compensation for the direct (business) losses the patent holder suffers that are attributable to the infringement at issue. They include lost profits and lost established royalty payments.[12]

11. 35 U.S.C. § 284 (2011).

12. Procter & Gamble Co. v. Paragon Trade Brands, Inc., 989 F. Supp. 547, 600 (D. Del. 1997).

1. *Lost Profits*

Lost profits represent the difference between the "but-for" profits the patent holder would have realized had there been no infringement and the "actual" profits the patent holder realized (or will realize) in the presence of the infringement.[13] To be eligible for lost profits damages, the patent holder typically must prove four things: (1) there was demand for the patented product, (2) there was an absence of acceptable noninfringing alternative, (3) the patent holder could have made and sold additional units, and (4) the patent holder's profit rate can be reasonably estimated.[14]

Price erosion, a form of lost profits, measures the extent to which the patent holder's profits were reduced because the infringement constrained the patent holder's pricing.[15] To be eligible for price erosion damages, the patent holder must demonstrate that the infringement was a reason for the price constraint.[16] And the analysis must account for the impact on sales volume associated with the lowered actual prices (that is, elasticity of demand).[17]

2. *Established Royalty*

An "established royalty" refers to a royalty payment that is sufficiently prevalent and accepted so as to provide an objective price for the use of the patent in question.[18] When an established royalty exists for a particular patent, the market has, in effect, objectively determined the price of practicing that patent and, more importantly, the amount that the patent holder should receive in exchange for granting access to the patent.[19] In practice, the standard for establishing the existence of an established royalty is very high and, consequently, is seldom satisfied.[20]

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13. *See* Gregory K. Leonard & Lauren J. Stiroh, *A Practical Guide to Damages*, *in* ECONOMIC APPROACHES TO INTELLECTUAL PROPERTY: POLICY, LITIGATION, AND MANAGEMENT 27 (Gregory K. Leonard & Lauren J. Stiroh eds. 2005); John C. Jarosz and Erin M. Page, *The* Panduit *Lost Profits Test After* BIC Leisure v. Windsurfing, 3 FED. CIR. B.J. 311 (1993); *see also* BIC Leisure Prods., Inc. v. Windsurfing Int'l, Inc., 1 F.3d 1214, 1218 (Fed. Cir. 1993).

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

15. Vulcan Eng'g Co. v. Fata Aluminium, Inc., 278 F.3d 1366, 1377 (Fed. Cir. 2002).

16. Minco, Inc. v. Combustion Eng'g, Inc., 95 F.3d 1109, 1120 (Fed. Cir. 1996).

17. Crystal Semiconductor v. Tritech Microelectronics Int'l, Inc., 246 F.3d 1336, 1359 (Fed. Cir. 2001).

18. BRYAN W. BUTLER, PATENT INFRINGEMENT: COMPENSATION AND DAMAGES § 4.01 (Law Journal Press 2006).

19. *Id.*; *see also* Del Mar Avionics, Inc. v. Quinton Instrument Co., 836 F.2d 1320, 1328 (Fed. Cir. 1987).

20. Mobil Oil Corp. v. Amoco Chems. Corp., 915 F. Supp. 1333, 1342 (D. Del. 1994). To qualify as an "established royalty," a royalty rate must have been (1) paid prior to the infringement at issue, (2) "paid by a sufficient number of persons" as "to indicate the reasonableness of the rate," (3) uniform, (4) not set under the threat of a lawsuit or in

B. *Reasonable Royalty Damages*

In contrast to "actual" damages (eligibility for which must be demonstrated), reasonable royalty damages may be available to an injured patent holder even if it is unable to prove any actual competitive injury as a result of the alleged infringement.[21]

According to PricewaterhouseCoopers, "reasonable royalties are the most frequent kind of damages awards in patent cases and comprise a greater share with each passing year."[22] They are awarded in roughly eighty percent of patent infringement cases in which damages are awarded.[23]

Because reasonable royalty damages are almost always available,[24] courts have historically tended to afford litigants a substantial amount of flexibility regarding both the type and quantum of evidence that may be used to support a reasonable royalty damages determination.[25] They have cautioned, however, that a reasonable royalty damages determination, like any other damages determination, must not be based on speculation, and that courts must be vigilant in preventing flexibility from lapsing into speculation and guess-work.[26]

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settlement of a litigation, and (5) covering a comparable set of rights or uses as are at issue in the litigation under consideration. *Id.*; *see also* Rude v. Westcott, 130 U.S. 152, 164-65 (1889); Butler, *supra* note 18, at § 3.02.

21. A reasonable royalty form of relief is fundamentally different from an established royalty form of relief; the former is not simply a slightly loosened version of the latter. *See* Butler, *supra* note 18, § 4.01; *see also* Michael J. Chapman, *Using Settlement Licenses in Reasonable Royalty Determinations*, 49 IDEA 313, 322-25 (2009).

22. PRICEWATERHOUSECOOPERS, 2011 PATENT LITIGATION STUDY: PATENT LITIGATION TRENDS AS THE "AMERICA INVENTS ACT" BECOMES LAW 14 (2011), *available at* http://www.pwc.com/us/en/forensic-services/publications/assets/2011-patent-litigation-study.pdf.

23. *Id.* at 15 chart 4.

24. *See* DowChemical Co. v. Mee Industries, Inc., 341 F.3d 1370, 1382 (Fed. Cir. 2003) ("The district court's conclusion that no damages could be awarded, in light of the presumption of damages when infringement is proven, was in error. . . . Should Dow prove infringement . . . , the district court should consider the so-called *Georgia-Pacific* factors . . . in detail, and award such reasonable royalties as the record evidence will support."). *But see* Apple, Inc. v. Motorola, Inc., No. 1:11-cv-08540, 2012 U.S. Dist. LEXIS 89960, at *33-34 (N.D. Ill. May 22, 2012) (Posner, J., sitting by designation).

25. *See* Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1325 (Fed. Cir. 2009) ("[A]ny reasonable royalty analysis 'necessarily involves an element of approximation and uncertainty.'" (citing Unisplay, S.A. v. Am. Elec. Sign Co., 69 F.3d 512, 517 (Fed. Cir. 1995))); Faulkner v. Gibbs, 199 F.2d 635, 639 (9th Cir. 1952) ("There is no mathematical formula for the determination of a reasonable royalty. The property loss of a patentee from infringement may arise from such varying facts and circumstances that each case must be controlled by those peculiar to it and except in rare instances the loss can only be determined by reasonable approximation." (citations omitted)).

26. *See* PATENT DAMAGES HANDBOOK COMM. MEMBERS, COMPENSATORY DAMAGES ISSUES IN PATENT INFRINGEMENT CASES: A HANDBOOK FOR FEDERAL DISTRICT COURT JUDGES 5-6 (Lexis Emerging Issues 2010) ("Regardless of the form of damages, . . . the court should not apply any less rigorous standard of admissibility to the evidence than that

C. *Combined Awards*

Over time, courts have provided that an injured patent holder is entitled to compensation for *each* infringing sale based on either lost profits or a reasonable royalty, but not both.[27] That is, courts have allowed for lost profits damages on infringing sales for which a patent holder is able to establish the requirements for such an award and reasonable royalty damages on the remaining infringing sales.[28] Such awards are often called "combined" or "split" awards.[29]

II. EVOLUTION OF REASONABLE ROYALTY DAMAGES

Reasonable royalty damages initially were conceived of by courts seeking to determine and award damages in situations where a patent holder who had proven infringement was unable to provide adequate proof of actual damages.

A. *Origins*

In the 1865 case *Suffolk Co. v. Hayden*,[30] the U.S. Supreme Court examined a patent dispute in which no evidence pertaining to lost profits or an established royalty had been produced.[31] Due to the lack of such evidence, the lower court permitted an expert to testify on a range of issues that were relevant to the jury's assessment of the patent's value.[32] The infringer appealed on the grounds that such evidence could not be used to assess patent damages, but the Court disagreed:

> This question of damages . . . is always attended with difficulty and embarrassment . . . . There being no established patent or license fee in the case, in order to get at a *fair measure of damages*, or even an approximation to it, *general evidence must necessarily be resorted to*. And what evidence could be more appropriate and pertinent than that of the utility and advantage of the invention over the old modes or devices that had been used for working out similar results? With a knowledge of these benefits to the persons who have used the invention, and the extent of the use by the infringer, a jury will be in

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required by the rules of evidence or any less rigorous standard to the proof of facts. Speculation is not evidence. Courts should allow damage awards based only on 'sound economic and factual predicates.'" (citations omitted)).

27. U.S. Frumentum Co. v. Lauhoff, 216 F. 610, 616-17 (6th Cir. 1914).

28. *See* State Indus., Inc. v. Mor-Flo Indus., Inc., 883 F.2d 1573, 1577 (Fed. Cir. 1989); TWM Mfg. Co. v. Dura Corp., 789 F.2d 895, 898 (Fed. Cir. 1986). S ome commentators have questioned the availability of such awards on the grounds that they may overcompensate patent holders. *See* THE EVOLVING IP MARKETPLACE, *supra* note 4, at 156-57.

29. *See State Indus.*, 883 F.2d at 1577.

30. 70 U.S. 315 (3 Wall.) (1865).

31. *Id.* at 320.

32. *Id.* at 317.

> possession of material and controlling facts that may enable them . . . to ascertain the damages, or, in other words, the loss to the patentee or owner, by the piracy, instead of the purchase of the use of the invention.[33]

In subsequent years, and consistent with *Suffolk*, several lower courts considered a variety of factors in assessing general patent damages, with some courts adopting the term "reasonable royalty" to refer to such damages.[34]

In 1914, the Sixth Circuit reviewed the lower court's opinion in *United States Frumentum Co. v. Lauhoff*,[35] where a patent holder was awarded only nominal damages because of its inability to prove actual damages. The court declared that "[i]t is a travesty to allow property rights to be seized and enjoyed without remedy simply because of the supposed difficulty in establishing their value."[36] To avert such a travesty, the court described an appropriate damages analysis:

> *This damage or compensation is not, in precise terminology, a royalty at all, but it is frequently spoken of as a "reasonable royalty"; and this phrase is a convenient means of naming this particular kind of damage.* It 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.[37]

One year after the *Frumentum* decision, the U.S. Supreme Court specifically endorsed the use of reasonable royalty damages as compensation for patent infringement in *Dowagiac Manufacturing Co. v. Minnesota Moline Plow Co.*[38] After acknowledging that "[t]here was . . . no adequate basis for an assessment of damages upon the ground of lost sales,"[39] and that "there was no established royalty,"[40] the Court held that "it was permissible to show the value by proving what would have been a reasonable royalty, considering the nature

33. *Id.* at 320 (emphasis added).

34. For example, in 1894, the Ninth Circuit wrote, "Where damages cannot be assessed upon the basis of a royalty, nor on that of lost sales, nor on that of hurtful competition, the proper method of assessing them is to ascertain what would have been a reasonable royalty for the infringer to have paid." Hunt Bros. Fruit-Packing Co. v. Cassiday, 64 F. 585, 586 (9th Cir. 1894).

35. 216 F. 610, 614-15 (6th Cir. 1914). The opinion has been described as "[p]erhaps the most significant case aiding the modern development of the reasonable royalty remedy." Erick S. Lee, *Historical Perspectives on Reasonable Royalty Patent Damages and Current Congressional Efforts for Reform*, 13 UCLA J.L. & TECH. 1, 24 (2009). In 1925, the Second Circuit praised the judge in *Frumentum* (Judge Denison) as having "done more than any other one man to liberalize the matter of damages for infringement of a patent." Merrell Soule Co. v. Powdered Milk Co. of Am., 7 F.2d 297, 299 (2d Cir. 1925).

36. *Frumentum*, 216 F. at 616-17.

37. *Id.* at 617 (emphasis added).

38. 235 U.S. 641 (1915). This case had been argued before the Supreme Court in 1913, and the Supreme Court's decision in this matter was pending at the time that the *Frumentum* decision issued.

39. *Id.* at 648.

40. *Id.*

of the invention, its utility and advantages, and the extent of the use involved."[41]

B. *Codification*

In 1922, the U.S. patent statute was revised to permit "general evidence to be heard in order to determine a 'reasonable' recovery of damages."[42] The language in the 1922 Act did not specifically adopt the phrase "reasonable royalty," but it did enable patent holders who were otherwise unable to prove actual damages to pursue *reasonable compensation* based on evidence of *general damages*.

The patent statute was amended again in 1946. In this amendment, the term "reasonable royalty" appeared, and reasonable royalty damages were explicitly authorized. The amended statute provided that the patent holder "shall be entitled to recover *general damages* which shall be due compensation for making, using, or selling the invention, not less than a reasonable royalty . . . ."[43] According to the legislative history, "the 1946 Act sought to 'make the basis of recovery in patent infringement suits general damages, that is, any damages the complainant can prove not less than a reasonable royalty.'"[44]

The current language pertaining to patent damages was incorporated into the Patent Act in 1952. Under the statute, the patent holder is entitled to recover "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."[45] No substantive changes have been made to the statutory language pertaining to the calculation of patent damages since 1952.

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41. *Id.*; *see also* Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538, 1566 (Fed. Cir. 1995) (en banc) (Nies, J., dissenting in part) ("[I]n *Dowagiac Mfg. Co.*, . . . the Supreme Court endorsed the theory of a hypothetical reasonable royalty as 'damages' where the patentee could not prove actual damages. This relief had been developed in several lower courts because of the unfairness to the patentee who, despite infringement, received only *nominal* damages.")

42. Lee, *supra* note 35, at 6 ("After considering 'such evidence and all other evidence in the record, *the court may* adjudge' and *allow the patentee to recover from the infringer 'a reasonable sum as* profits or *general damages* for the infringement.'" (emphasis added) (citing Act of Feb. 18, 1922, ch. 58, § 8, 42 Stat. 389, 392)); *see also Rite-Hite*, 56 F.3d at 1566 (Nies, J., dissenting in part) ("Congress gave its specific approval to a reasonable royalty as statutory 'damages' by enactment of the provision, 'general damages . . . not less than a reasonable royalty.'" (alteration in original)).

43. Act of August 1, 1946, ch. 726, 60 Stat. 778 (emphasis added).

44. Lee, *supra* note 35, at 8 (citing H.R. REP. NO. 79-1587, at 1-2 (1946); S. REP. NO. 79-1503, at 2 (1946), *reprinted in* 1946 U.S.C.C.A.N. 1387).

45. Act of July 19, 1952, Pub. L. No. 82–593, 66 Stat. 813 (codified at 35 U.S.C. § 284).

C. Georgia-Pacific *Decisions*

The most important decision interpreting reasonable royalty damages under the 1952 Patent Act was the 1970 district court opinion in *Georgia-Pacific*, issued by Judge Tenney of the Southern District of New York.[46] Since it issued, the considerations emanating from *Georgia-Pacific* have become the foundation of modern reasonable royalty damages analysis, being variously referred to as "the touchstone of modern reasonable royalty analysis,"[47] the "gold standard for calculating reasonable royalty damages,"[48] and the "universally accepted test for reasonable royalty damages."[49] The considerations have been applied by virtually every patent court since then facing the task of determining fair compensation for patent infringement.[50] In fact, in *Parental Guide v. Thomson*, the Federal Circuit wrote that reference to a royalty pursuant to § 284 "unambiguously contemplate[s] . . . a reasonable royalty that [would be] determined by a judge or a jury through the express application, by the judge or jury, of the *Georgia Pacific* factors."[51]

1. *District Court Determination (1970)*

There is no indication that the court in *Georgia-Pacific 1970* intended to make new law concerning the determination of reasonable royalty damages. Instead, the decision suggests that the court was simply attempting to apply existing law in the context of a case in which there was an "extreme divergence of the parties" with regard to the appropriate reasonable royalty to be paid in compensation for Georgia-Pacific's infringement.[52]

The court observed that "[a] comprehensive list of evidentiary facts relevant, in general, to the determination of the amount of a reasonable royalty for a patent license may be drawn from a conspectus of the leading cases,"

46. Georgia-Pacific Corp. v. U.S. Plywood Corp. (*Georgia-Pacific 1970*), 318 F. Supp. 1116 (S.D.N.Y. 1970); *see* PAUL M. JANICKE, MODERN PATENT LITIGATION 56 (2d ed. 2006). Although the 1970 district court decision is the most often cited decision in this line of cases, there were, in fact, a number of opinions issues relating to this proceeding, dating back to 1956. *See* Georgia-Pacific Plywood Co. v. U.S. Plywood Corp., 148 F. Supp 846 (S.D.N.Y. 1956); Georgia-Pacific Corp. v. U.S. Plywood Corp., 258 F.2d 124 (2d Cir. 1958); Georgia-Pacific Corp. v. U.S. Plywood Corp. (*Georgia-Pacific 1965*), 243 F. Supp. 500 (S.D.N.Y. 1965); *Georgia-Pacific 1970*, 318 F. Supp. 1116 (S.D.N.Y. 1970); Georgia-Pacific Corp. v. U.S. Plywood-Champion Papers, Inc. (*Georgia-Pacific 1971*), 446 F.2d 295 (2d Cir. 1971).

47. RICHARD F. CAULEY, WINNING THE PATENT DAMAGES CASE 7 (2009).

48. Durie & Lemley, *supra* note 5, at 628.

49. *Id.* at 629.

50. Cauley, *supra* note 47, at 12; Zeng, *supra* note 5, at 331-32.

51. Parental Guide of Tex., Inc. v. Thomson, Inc., 446 F.3d 1265, 1270 (Fed. Cir. 2006); *see also* Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1325 (Fed. Cir. 2009) (reviewing a damage award "within the *Georgia-Pacific* framework").

52. *Georgia-Pacific 1970*, 318 F. Supp. 1116, 1119 (S.D.N.Y. 1970).

although it did not choose to provide such a list.[53] Instead, it proceeded to enumerate "*some* of the factors mutatis mutandis seemingly more pertinent to the issue[s]" in the case.[54] The factors selected by the court as being most pertinent became the now-ubiquitous "*Georgia-Pacific* Factors:"

> 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.
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> 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.

53. *Id.* at 1120.
54. *Id.* (emphasis added).

> 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.[55]

Having provided this nonexhaustive list of factors to be considered, Judge Tenney explained that the manner and extent to which the different factors would be considered was left to the discretion of the factfinder.[56] It ultimately awarded U.S. Plywood a royalty of $50 per thousand square feet, which U.S. Plywoods's expert testified was the cheapest rate to which it would have consented.[57]

2. *Second Appellate Review (1971)*

Though famous, *Georgia-Pacific 1970* was not the last word in the line of cases. In June 1971, the Second Circuit reviewed the damages findings of the district court. It reversed, in fact, the lower court's reasonable royalty damages determination:

> [U]nder the willing buyer-willing seller rule a reasonable "royalty must be fixed so as to leave the infringer, or suppositious licensee, a reasonable profit" . . . [and] . . . the royalty imposed [on GP] . . . gobbles up all of GP's

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55. *Id.*

56. *Id.* at 1120-21. *Georgia-Pacific 1970* appears to have evolved naturally from prior case law. *See, e.g.*, Faulkner v. Gibbs, 199 F.2d 635, 639 (9th Cir. 1952); Horvath v. McCord Radiator & Mfg. Co., 100 F.2d 326, 335-36 (6th Cir. 1938); Austin-Western Rd. Mach. Co. v. Disc Grader & Plow Co., 291 F. 301, 304 (8th Cir. 1923); U.S. Frumentum Co. v. Lauhoff, 216 F. 610, 617 (6th Cir. 1914) ("The jury, in a patent case, can be shown what plaintiff's patent property was, to what extent defendant has taken it, its usefulness and commercial value as shown by its advantages over other things and by the extent of its use and as shown by the profits and savings which could be made upon its sale or adoption. The jury can learn how much of the realizable profit should be credited to the manufacturing process and business risk and how much to the patent, also, what share of the profits or of the selling price it may be customary in that or similar business to allow for the use of such an invention. Experts may be amply qualified to give useful opinions as to the value of the property which is to be appraised.").

57. *Georgia-Pacific 1970*, 318 F. Supp. at 1143-44.

expected profit.[58]

The Second Circuit recalculated the amount that the lower court determined Georgia-Pacific should pay in damages so as to ensure that Georgia-Pacific enjoyed a "reasonable" return on its sales of infringing merchandise and awarded all excess profits to U.S. Plywood as damages.[59] As a result, the reasonable royalty rate used to calculate U.S. Plywood's damages was reduced from $50.00 per thousand square feet to $35.65 per thousand square feet.[60] The Second Circuit emphasized that a "reasonable royalty is in essence a device for *retroactively reaching a just result*."[61]

III. HYPOTHETICAL NEGOTIATION CONSTRUCT

The most important, and lasting, impact of *Georgia-Pacific 1970* (and the *Georgia-Pacific* line of cases) has been the elevation of a hypothetical negotiation construct as the primary tool for considering reasonable royalty damages.[62]

In the *Georgia-Pacific 1970* decision, the court did not prioritize the various factors that were identified as pertinent to the reasonable royalty damages analysis. Over time, however, a de facto prioritization of the *Georgia-Pacific* Factors emerged, as many courts and experts elevated Factor 15 above the others. As the Southern District of Texas explained, "Originally listed as one of many reasonable royalty factors in [*Georgia-Pacific 1970*], the hypothetical negotiation has evolved into an umbrella over all the other factors."[63] In fact, the hypothetical negotiation factor has been characterized as the "most important" aspect,[64] the "theoretical underpinning,"[65] and the "overarching consideration"[66] of a *Georgia-Pacific* analysis.[67] It is no wonder that the process of reasonable royalty estimation over the last four decades has

58. *Georgia-Pacific 1971*, 446 F.2d 295, 299 (2d Cir. 1971).

59. *Id.* at 299-300.

60. *Id.*

61. *Id.* (emphasis added).

62. The hypothetical negotiation, in fact, was introduced decades before *Georgia-Pacific 1970*. Seaman, *supra* note 5, at 1678.

63. WesternGeco L.L.C. v. ION Geophysical Corp., No. 4:09-CV-1827, 2012 WL 2911968, at *1 (S.D. Tex. July 16, 2012); *see also* Studiengesellschaft Kohle m.b.H. v. Dart Indus., 666 F. Supp. 674, 680 (D. Del. 1987) ("Despite the fact that this hypothetical negotiation factor is just one of the factors on the list, the hypothetical negotiation is a method for incorporating the other factors in order to arrive at a reasonable royalty rate.").

64. Landers, *Let the Games Begin*, *supra* note 5, at 327.

65. Cauley, *supra* note 47, at 23.

66. Cotter, *supra* note 5, at 729; *see also* Durie & Lemley, *supra* note 5, at 642 (calling it the "meta-factor . . . the ultimate question all of the other factors are trying to establish").

67. Pulse Med. Instruments, Inc. v. Drug Impairment Detection Servs., 858 F. Supp. 2d 505, 510 (D. Md. 2012) ("Whether characterized as 'applying the *Georgia-Pacific* factors' or as 'conducting a hypothetical negotiation,' the process is one and the same.").

been commonly been referred to as "Willing Licensor/Willing Licensee" analysis and "Hypothetical Negotiation" analysis.[68]

Unfortunately, the concept of a "hypothetical negotiation" is not self-executing in the context of a patent infringement litigation—i.e., the translation of the general concept into a tool that can be used to analyze reasonable royalty damages is not automatic. Rather, it requires the introduction and application of various assumptions and judgments—a process that invites and introduces unnecessary conflict and uncertainty into the determination of reasonable royalty damages.

A. *Overview*

The Western District of Wisconsin described the implementation of the hypothetical negotiation construct in *Innogenetics, N.V. v. Abbott Laboratories*:

> In calculating . . . a reasonable royalty, the jury has to pretend that the parties sat down and negotiated a reasonable royalty before the day that defendant began its infringement of the plaintiff's patent. . . . Unlike a real negotiation, this hypothetical negotiation assumes that the infringer must agree to some amount of royalty payment; it does not have the option of walking away from the table.[69]

Under this construct, the parties are assumed to know that the patent at issue is valid, enforceable, and infringed at the time of the negotiation.

The use of the construct has become so pervasive that some Federal Circuit decisions have suggested that it is mandatory for the determination of reasonable royalty damages.[70] The FTC, after having considered voluminous testimony and submissions over a multiyear period, is in agreement.[71]

The construct appears to rest on the assumption that adhering to good *process* will lead to a good *result*. That is, it is assumed that modeling the interaction of rational parties in a *fair process* will naturally lead to *fair and reasonable* compensation for the patent holder.

B. *Shortcomings*

In his description of the hypothetical negotiation construct, Judge Tenney noted that it "is more a statement of approach than a tool of analysis."[72] To use the construct as an analytical tool, numerous assumptions are required. Unfortunately, there are substantial and ongoing disagreements about those

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68. *See, e.g.*, Hanson v. Alpine Valley Ski Area, Inc., 718 F.2d 1075, 1081 (Fed. Cir. 1983); *see also* Seaman, *supra* note 5, at 1677.

69. Innogenetics, N.V. v. Abbott Labs., 578 F. Supp. 2d 1079, 1093-94 (W.D. Wis. 2007), *aff'd in part and rev'd in part*, 512 F.3d 1363 (Fed. Cir. 2008).

70. *See, e.g.*, Fujifilm Corp. v. Benun, 605 F.3d 1366, 1372 (Fed. Cir. 2010); Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538, 1554 (Fed. Cir. 1995).

71. THE EVOLVING IP MARKETPLACE, *supra* note 4, at 20-21, 176.

72. *Georgia-Pacific 1970*, 318 F. Supp. 1116, 1121 (S.D.N.Y. 1970).

assumptions—presumed strength of the infringed patent, the precise date of the "negotiation," the significance of ex post facts, and the goal of the exercise. The adversarial nature of patent proceedings does not minimize battles about those parameters but invites them, often overshadowing consideration of the resulting damages. The result has been a host of widely divergent royalty recommendations and outcomes within cases and across cases, all purportedly supported by a hypothetical negotiation construct. Individually and collectively these results provide little predictability or guidance to patent owners and future litigants.

1. *Foundation*

Confidence in the hypothetical negotiation construct appears to be rooted in some combination of the language of the patent damages statute, the *Georgia-Pacific* case, real-world licensing, and bargaining theory. However, all provide limited support.

a. *Damages Statute*

35 U.S.C. § 284 provides that an injured party is entitled to "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."[73] This language does not call for a negotiation between the patent holder and the infringer to determine how much the infringer should pay under a (retroactive) contract to use a patent. Rather, it simply contemplates an assessment of the use made by the infringer of a patent, and calls for compensation to the patent holder that is adequate in light of that use.

b. Georgia-Pacific *Case*

The words of *Georgia-Pacific* Factor 15 do not suggest that a reasonable royalty damages award must be the result of a hypothetical negotiation *process*.[74] Rather, they dictate that a damages payment be one that is economically reasonable for both parties. In effect, *Georgia-Pacific* Factor 15 describes the *characteristics* of a hypothetical *license* that corresponds to a reasonable royalty damages award. It does not call for a hypothetical *negotiation process* to determine the terms of such an award.

The suggestion to consider a hypothetical negotiation in assessing damages in the *Georgia-Pacific* case was offered by U.S. Plywood, the patent holder. The court explained that "USP places heavy reliance upon a . . . formulation called 'the willing buyer and willing seller' rule . . . [i]n order to establish what

73. 35 U.S.C. § 284 (2012).

74. *See* SCHLICHER, *supra* note 10, § 13:145.

USP 'would have' demanded and what GP 'would have' agreed to pay at the time of the supposititious negotiations."[75] But, as described above, the court noted that the construct is really just a "statement of approach"—it "represents an attempt to colligate diverse evidentiary facts of potential relevance."[76] The court did not endorse the use of a hypothetical negotiation process in its decision; it simply reported that the parties used it. Moreover, the lower court did not claim that its reasonable royalty terms would have emerged from a hypothetical negotiation between the parties. On the contrary, according to the court's analysis, a hypothetical negotiation between U.S. Plywood and Georgia-Pacific would likely have resulted in a royalty rate of $37.50 per thousand square feet.[77] But in its decision, the court adopted a reasonable royalty of $50.00 per thousand square feet, believing that it had determined a damages amount that fairly compensated U.S. Plywood in light of Georgia-Pacific's infringement.[78]

The Second Circuit, in its review, wrote that "[t]he parties seem in essential agreement that the trial court correctly chose to apply the 'willing buyer-willing seller' rule in determining a reasonable royalty."[79] The trial court did not appear, however, either in words or actions, to apply such a construct.[80] That is, despite having considered the outcome of a hypothetical negotiation in its decision, the trial court found that a different damages amount based on different foundations more fairly compensated U.S. Plywood for Georgia-Pacific's infringement.

c. *Real-World Licenses*

For many, the logic behind a hypothetical negotiation process is rooted in real-world licensing.[81] A *real-world license* is the product of a *real-world licensing negotiation*. Accordingly, it may be natural to assume that determining a *hypothetical license* (under *Georgia-Pacific* Factor 15) necessitates the construction of a *hypothetical licensing negotiation*.

There are several problems, however, with using an analogy to real-world licensing when considering a reasonable royalty. The first problem is that it tends to frame the problem of patent infringement as a *contracting* problem. That is, it suggests that the problem with patent infringement is that the parties

75. *Georgia-Pacific 1970*, 318 F. Supp. at 1121-22.

76. *Id.* at 1121-22.

77. *Id.* at 1141-42 ("It would then be reasonable to assume further that the negotiations would have led to . . . the midpoint between approximately $25.00 (that GP would have been willing to pay according to the foregoing assumption) and approximately $50.00 (that USP would have found acceptable). The result would be a royalty of about $37.50 per thousand square feet.").

78. *Id.* at 1143.

79. *Georgia-Pacific 1971*, 446 F.2d 295, 296 (2d Cir. 1971).

80. *See* SCHLICHER, *supra* note 10, § 13:145.

81. *See, e.g.*, Leonard & Stiroh, *supra* note 13, at 48, 52.

failed to negotiate a contract for use of the patented invention and that the solution is the retroactive negotiation of such a contract, under appropriate assumptions. However, reasonable royalty damages are a form of *general damages* intended to compensate for the *tort* of patent infringement. They are not, and were not intended to be, a form of contract damages, retroactive or otherwise.[82]

Unlike an assessment of contract damages, determination of damages for a tort generally involves the determination of the harm caused by the tortfeasor and is based on the actual consequences of the tort.[83] The evaluation of such damages does not typically involve the construction of a hypothetical contract to determine the amount that the parties would have agreed upon to permit the tort to occur. For example, the determination of damages that are owed to the victim of a bus accident does not involve the creation of a hypothetical pre-accident contract between the victim and the bus company to determine an amount that the bus company would have needed to pay in order for the victim to authorize the bus to hit him. Instead, such damages provide compensation commensurate with the actual consequences of the activity. Similarly, with patent infringement, the statute provides for compensation consistent with and adequate to compensate for the unauthorized use of the patented invention made by the infringer.

The second problem is that the circumstances of a real-world negotiation and a hypothetical negotiation differ in meaningful but difficult-to-quantify ways.[84] That is, many of the uncertainties and motivations that drive real-world negotiations simply do not exist in a hypothetical negotiation. The Sixth Circuit in *Panduit* wrote, "The setting of a reasonable royalty after infringement cannot be treated, as it was here, as the equivalent of ordinary royalty negotiations among truly 'willing' patent holders and licensees."[85] The court explained:

> Determination of a "reasonable royalty" . . . rests on a legal fiction. Created in an effort to "compensate" when profits are not provable, the "reasonable royalty" device conjures a "willing" licensor and licensee, who like Ghosts of Christmas Past, are dimly seen as "negotiating" a "license". There is, of course, no actual willingness on either side, and no license to do

82. Belknap v. Schild, 161 U.S. 10, 17 (1896); Mars, Inc. v. Coin Acceptors, Inc., 527 F.3d 1359, 1365 (Fed. Cir. 2008); U.S. Frumentum Co. v. Lauhoff, 216 F. 610, 617 (6th Cir. 1914).

83. *See, e.g.*, ANDREW BURROWS, UNDERSTANDING THE LAW OF OBLIGATIONS: ESSAYS ON CONTRACT, TORT AND RESTITUTION 9 (Hart 1998) ("[Contract is] largely concerned to *fulfil* [sic] *expectations engendered* by a binding promise (that is, to protect the plaintiff's expectation interest by putting the plaintiff into as good a position as if the contract had been performed) and . . . tort [is] largely concerned *to compensate* for wrongful *harm* (that is, to protect the plaintiff's *status quo* interest by putting the plaintiff into as good a position as if no wrong had occurred).").

84. *See, e.g.*, Lemley & Shapiro, *supra* note 5, at 2019-20.

85. Panduit Corp. v. Stahlin Bros. Fibre Works, Inc., 575 F.2d 1152, 1158 (6th Cir. 1978).

anything . . . .[86]

Critically, in most patent infringement cases, the "decision" to infringe was not a conscious "decision" at all.[87] Rather, infringement is often a consequence of inadvertent use of a patented invention for which the infringer is obligated to pay and the patent holder is entitled to receive fair, but not punitive, compensation.[88] This circumstance is quite different from a typical real-world license. Such a license often reflects two parties' attempt to structure a productive ongoing relationship or their attempt to obtain freedom to operate (i.e., avoid litigation), based on some level of agreement as to the existence of valid, enforceable, and infringed patent rights, but often in the shadow of substantial disagreements as to the degrees of those presumptions.

In a real-world negotiation, moreover, the licensor's perspective on its likely performance in the marketplace is critical. Prospective losses by the patent holder often determine the minimum level of compensation that it is likely to accept. That has led commentators and experts, like Richard Cauley, to conclude that, "[i]n determining a reasonable royalty [in litigation], the most important player is, of course, the plaintiff. . . Whether the plaintiff uses the patent in a business—and how that patent is used—makes a big difference in what royalty would have been reasonable to license the patent in suit."[89] And

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86. *Id.* at 1159; *see also* Maxwell v. J. Baker, Inc., 86 F.3d 1098, 1109-10 (Fed. Cir. 1996); Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538, 1554 (Fed. Cir. 1995).

87. Brian J. Love, *The Misuse of Reasonable Royalty Damages as a Patent Infringement Deterrent*, 74 MO. L. REV. 909, 936-41 (2009) (explaining that most infringement, in fact, is "innocent"); Landers, *Patent Claim Apportionment*, *supra* note 5, at 488 n.124 ("[C]opying is established in less than 2 percent of all cases, and alleged in only 10.9 percent." (citing Christopher A. Cotropia & Mark A. Lemley, *Copying in Patent Law*, 87 N.C. L. REV. 1421, 1424 (2009))).

88. The law has many tools other than reasonable royalty damages that can and should be used to address the problem of strategic or willful infringement. *See* Duric & Lemley, *supra* note 5, at 640 n.62; Love, *supra* note 87, at 915, 925-34; Nathaniel C. Love, *Nominal Reasonable Royalties for Patent Infringement*, 75 U. CHI. L. REV. 1749, 1771 (2008). Those tools may be and often are used to address the concern noted by the Sixth Circuit that "the infringer would have nothing to lose, and everything to gain if he could count on paying only the normal, routine royalty noninfringers might have paid . . . [and] would be in a 'heads-I-win, tails-you-lose' position." *Panduit*, 575 F.2d at 1158. Those tools, however, cannot be used to properly account for all the differences in a hypothetical license versus a real license, such as the presumption of valid, enforceable, and infringed patent rights.

89. CAULEY, *supra* note 47, at 16; *see also* Roger D. Blair & Thomas F. Cotter, *Rethinking Patent Damages*, 10 TEX. INTELL. PROP. L.J. 1, 40 (2001); Jerry A. Hausman, Gregory K. Leonard, & J. Gregory Sidak, *Patent Damages and Real Options: How Judicial Characterization of Noninfringing Alternatives Reduces Incentives to Innovate*, 22 BERKELEY TECH. L.J. 825, 832 (2007) (arguing that an "economic approach to analyzing the hypothetical negotiation" (i.e., use of the Edgeworth Box) necessarily relies upon the "minimum royalty that the patent holder would be willing to accept," which is "a function of the losses that it would sustain by licensing as compared to not licensing"). Leonard & Stiroh have argued that a critical component in a reasonable royalty calculation is the licensor's "willingness to accept" a certain payment. Yet, paradoxically, they have concluded that care should be taken to not double-count what has already been considered in a lost profits determination. Leonard & Stiroh, *supra* note 13, at 53-54.

many courts have agreed.[90] However, as noted above in the context of "combined" awards, reasonable royalty damages are appropriate *only* for those sales that the patent holder has been unwilling or unable to prove that it lost (i.e., lost profits damages are not available). Under those circumstances, there are no "licensor profits" displaced by a hypothetical license that should be a cornerstone in reasonable royalty estimation.[91]

Another difference in the circumstances between a real world and a hypothetical negotiation is the scope of issues addressed in the negotiations. For example, in a real-world negotiation, the parties often seek resolution of a variety of issues with a broad license that addresses a number of existing and potential concerns.[92] In contrast, a hypothetical negotiation covers only a naked license to the specific patent that has been asserted in a particular litigation.[93] This difference in the scope of real world and hypothetical negotiations can limit the applicability of observations drawn from real-world licenses in determining the terms of the hypothetical license.

The third problem with drawing an analogy to a real-world license negotiation is that the idea of parties *negotiating* is not consistent with the idea of a reasonable royalty as *general damages*. The Sixth Circuit described reasonable royalty damages as "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."[94] As a practical matter, it is not clear that the quantification of such an injury should involve consideration of a "negotiation" between the parties. The magnitude of the patent holder's injury does not depend on the negotiating positions or abilities of the litigating parties, or upon the identity of the patent holder.[95] Similarly,

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90. *See, e.g.*, Fuji Photo Film Co. v. Jazz Photo Corp., 394 F.3d 1368, 1378 (Fed. Cir. 2005); C.R. Bard, Inc. v. Medtronic, Inc., No. 96-589-SLR, 1999 U.S. Dist. LEXIS 9875, at *29-36 (D. Del. June 15, 1999); Rosco, Inc. v. Mirror Lite Co., 626 F. Supp. 2d 319, 332 (E.D.N.Y. 2009).

91. In some circumstances, however, licensor profits can be used to measure the value of a patented invention.

92. *See, e.g.*, Veritas Operating Corp. v. Microsoft Corp., No. 2:06-cv-00703-JCC, 2008 U.S. Dist. LEXIS 35627, at *35 (W.D. Wash. Jan. 17, 2008) ("[A] patent license generally looks forward, while damages under § 284 are generally provided to compensate for infringement that has already occurred.").

93. Our reasoning, of course, is equally appropriate when more than one patent is at issue. The critical point is that naked patent rights are at issue in reasonable royalty determination.

94. U.S. Frumentum Co. v. Lauhoff, 216 F. 610, 617 (6th Cir. 1914).

95. *But see* Oracle Am., Inc. v. Google Inc. (*Oracle I*), 798 F. Supp. 2d 1111, 1121 (N.D. Cal. 2011) ("What we must do to stage the hypothetical negotiation is . . . to instruct [the parties] to negotiate in good faith a royalty fee that would fairly and reasonably reflect both sides' relevant business interests and bargaining positions."); Island Intellectual Prop. v. Deutsche Bank, No. 09 Civ. 2675, 2012 U.S. Dist. LEXIS 21742, at *15 (S.D.N.Y. Feb. 14, 2012) ("Only testimony strictly necessary to explain plaintiffs' relative bargaining position (and its effect on the negotiation) will be permitted.").

the benefits derived by the infringer from the unauthorized use of the patented invention are not dependent on the negotiating positions or abilities of the litigating parties, as is often the case in a real-world negotiation.[96]

In determining fair compensation for infringement, the amount of the patent holder's injury and the amount of the infringer's benefits are concepts that may be challenging to evaluate, but often can be reasonably and objectively estimated. Some of this information should be considered in assessing reasonable royalty damages. Overlaying a *negotiation process* on top of these indicators of value likely does not provide any additional clarity or insight to the analysis, and may not enhance the determination of the amount of damages needed to fairly compensate a patent holder.

d. *Bargaining Theory*

Some recent confidence in the use of a hypothetical negotiation also has emanated from the application of game theory, in general, and bargaining theory, in particular.[97] The Nash Bargaining Solution (NBS) is one tool that has become particularly popular.[98]

The logic and motivation for the use of game theoretic models like the NBS in assessing reasonable royalty damages has been described by Stevan Porter:

> [Such] models attempt to take various pieces of information and distill them into mathematical variables that can be incorporated into an algorithm. In the hypothetical negotiation construct, the essential goal is to mathematically define the patentee's and accused infringer's relative bargaining power and thus the proportion of license value each would keep in a deal. . . . A standard algorithm, once accepted, could quickly and indisputably solve the

96. According to Landers, introduction of such real-world considerations can often distort the damages estimation process. Landers, *Let the Games Begin*, *supra* note 5, at 331-32 n.139 ("Sellers tend to overstate the value they place on the bargained-for item, while buyers tend to understate their desire to purchase 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." (quoting Ian Ayres & Eric Talley, *Solomonic Bargaining: Dividing a Legal Entitlement to Facilitate Coasean Trade*, 104 Yale L.J. 1027, 1030 (1995))).

97. *See, e.g.*, Procter & Gamble Co. v. Paragon Trade Brands, Inc., 989 F. Supp. 547, 606 (D. Del. 1997) (explaining that a hypothetical negotiation involves an arm's length bargain between a licensor and licensee (citing Unisplay, S.A. v. Am. Elec. Sign Co., 69 F.3d 512, 517 (Fed. Cir. 1995))).

98. William Choi & Roy Weinstein, *An Analytical Solution to Reasonable Royalty Rate Calculations*, 41 IDEA 49, 63 (2001) ("The necessity to provide objective and sound determinations of reasonable royalty rates in patent infringement litigation provides reason to supplement the *Georgia-Pacific* factors with the approach outlined in this article. Data permitting, John Nash's two-person bargaining game represents a peer-reviewed methodology that can be used to calculate a reasonable royalty rate from a hypothetical negotiation. The theoretical support for the NBS is overwhelming and, in the context of patent litigation, the reasonable royalty rate solution derived from the NBS is fair, efficient, and sensible.").

hypothetical negotiation game; reasonable royalties would be automatic.[99]

A number of courts have found the economics of bargaining theory to be useful for reasonable royalty estimation.[100] And economists have come to believe quite strongly in the tool.[101]

While bargaining theory can be helpful in framing real-world license analyses,[102] its usefulness and guidance in reasonable royalty damages determinations in litigations is much less clear. The theory properly focuses on the value created by the use of a patented invention (i.e., the difference between the total profits or benefits associated with the "sharing" of patent rights and the benefits available to each party if an agreement is not reached). However, it provides virtually no guidance in estimating the inputs needed to solve the licensing problem.[103] Moreover, a critical consideration in determining a bargaining outcome using game theory is the relative bargaining strength of the parties. As noted above, however, reasonable royalty *damages* need not and should not depend on the negotiating positions or abilities of the litigating parties. A patent holder does not become *more injured* by unauthorized use if it enjoys a stronger bargaining position, and it does not become *less injured* by such unauthorized use if it enjoys a weaker bargaining position. In fact, the Federal Circuit has written that the patent system is meant to protect small patent holders in the same way that it protects large patent holders—the "'survival of the fittest' jungle mentality was intended to be replaced, not served, by the law."[104] Consequently, the introduction of even a well-modeled

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99. Stevan Porter, *Vulnerabilities of Game Theory in Reasonable Royalty Analysis*, 19 INTELL. PROP. TODAY, June 2012, at 26, *available at* http://www.iptoday.com/issues/2012/06/vulnerabilities-game-theory-in-reasonable-royalty-analysis.asp.

100. *See, e.g.*, Mformation Techs., Inc. v. Research in Motion Ltd., No. C 08-04990 JW, 2012 U.S. Dist. LEXIS 56784, at *15-16 (N.D. Cal. Mar. 29, 2012); *Island Intellectual Prop.*, 2012 U.S. Dist. LEXIS 21742 at *14-15; Lucent Techs., Inc. v. Microsoft Corp., No. 07-CV-2000 H, 2011 U.S. Dist. LEXIS 75504, at *32-34 (S.D. Cal. July 13, 2011).

101. *See, e.g.*, Elizabeth M. Bailey, Gregory K. Leonard & Mario A. Lopez, *Making Sense of 'Apportionment' in Patent Damages*, 12 COLUM. SCI. & TECH. L. REV. 255, 262-63 (2011); Lemley & Shapiro, *supra* note 5, at 1995-98; Leonard & Stiroh, *supra* note 13, at 52, 59-60; Sebastian Zimmeck, *A Game-Theoretic Model for Reasonable Royalty Calculation*, 22 ALB. L.J. SCI. & TECH. 357 (2012).

102. *See, e.g.*, John C. Jarosz & Michael J. Chapman, *Application of Game Theory to Intellectual Property Royalty Negotiations*, *in* LICENSING BEST PRACTICES: STRATEGIC, TERRITORIAL, AND TECHNOLOGY ISSUES 241 (Robert Goldscheider & Alan H. Gordon, eds., 2006).

103. *See* Porter, *supra* note 104 at 26-27 ("Since not all information necessary for a hypothetical negotiation analysis can always be measured or observed, it often is the case that some element of forecasting or estimation is involved in developing data, which may thus be subject to dispute. A complex mathematical model depending on disputed data to quantify an important variable may not readily allow problematic information to be disentangled and still provide a useful result.").

104. Fromson v. Western Litho Plate & Supply Co., 853 F.2d 1568, 1575 (Fed. Cir. 1988), *overruled by* Knorr-Bremse Systeme Fuer Nutzfahrzeuge GMBH v. Dana Corp., 383 F.3d 1337 (Fed. Cir. 2004).

negotiation process into the assessment of reasonable royalty damages may not improve the quality or reliability of such an assessment.[105]

2. *Implementation*

Use of the hypothetical negotiation often does not narrow differences between the litigating parties, but accentuates them. Because the construct is poorly-grounded, disagreements occur about important parameters: (1) the goal of the construct, (2) the presumed strength of the patent, and (3) the timing of the negotiation. Resulting attention placed on these *process* parameters often becomes an unnecessary distraction in reasonable royalty estimation.[106]

a. *Goal of the Construct*

One area of dispute concerns the objective of the exercise. That is, there are disagreements within cases and across cases about what the hypothetical negotiation is intended to achieve. Many experts (and courts) believe that the construct is intended to estimate the hypothetical licensing terms that *would have been agreed to* by the litigating parties, while others believe that the objective is to determine what the parties *should have agreed to* if they had been acting rationally.

In an analysis of the former (the positive approach), the hypothetical negotiation construct forces the litigating parties into a mandatory bargaining situation and dictates that the parties reach an agreement. U.S. Plywood suggested such an approach in *Georgia-Pacific 1970*,[107] and many other experts and courts have followed suit.[108] In *Lucent Technologies, Inc. v. Gateway, Inc.*, the Federal Circuit reiterated this approach, writing that "we must decide whether substantial evidence supports the jury's implicit finding

105. Cotter has argued for the exclusion of relative bargaining power in reasonable royalty estimation because neither courts nor experts can accurately estimate it. Cotter, *supra* note 5, at 753.

106. In *Pulse Medical Instruments, Inc. v. Drug Impairment Detection Services*, 858 F. Supp. 2d 505, 511 (D. Md. 2012),, the District Court of Maryland addressed the infringer's challenge to the patent holder's damages expert on the grounds that the expert lacked "the requisite background in negotiating." The court rejected the challenge, writing that a reasonable royalty estimation is quite different from a "real-world" negotiation, and it is a "sleight of hand [to focus] on the *tool* employed" rather than the substance of the damages testimony. *Id.* at 510.

107. *Georgia-Pacific 1970*, 318 F. Supp. 1116, 1121-22 (S.D.N.Y. 1970).

108. *See, e.g.*, Wordtech Sys., Inc. v. Integrated Network Solutions, Inc., 609 F.3d 1308, 1318-19 (Fed. Cir. 2010); Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538, 1554-55 (Fed. Cir. 1995); Unisplay, S.A. v. Am. Elec. Sign Co., 69 F.3d 512, 517 (Fed. Cir. 1995); ePLUS, Inc. v. Lawson Software Inc., 764 F. Supp. 2d 807, 809 (E.D. Va. 2011); Avocent Huntsville Corp. v. Clearcube Tech., Inc., No. CV-03-S-2875-NE, 2006 U.S. Dist. LEXIS 55307, at *47-50 (N.D. Ala. July 28, 2006); Total Containment, Inc. v. Environ Prods., Inc., 921 F. Supp. 1355, 1403-04 (E.D. Pa. 1995).

[as to what the infringer] would have agreed to, at the time of the hypothetical negotiation."[109]

Other courts, however, have suggested that the aim of a hypothetical negotiation is to calculate what the parties *should have* agreed to (the normative approach)—i.e., a payment that would be acceptable for a similarly-situated willing licensor and willing licensee. In fact, in the 1970 *Georgia-Pacific* decision, Judge Tenney acknowledged this perspective:

> In fixing damages on a royalty basis against an infringer, the sum allowed should be reasonable and that which would be accepted by a prudent licensee who wished to obtain a license but was not so compelled and a prudent patentee, who wished to grant a license but was not so compelled.[110]

Following a normative approach, the "bargainers" are not the actual parties in suit, but a "prudent" patentee and "prudent" licensee. The District of Rhode Island described this approach as reflecting a negotiation between the parties' "perfectly reasonable avatars."[111]

i. *Positive Approach*

Attempting to predict what two litigating parties *would have agreed to* in a hypothetical negotiation is often an unproductive exercise. In most cases, it is the parties' inability to reach any kind of agreement that caused them to turn to litigation to resolve their differences.[112] In other cases, the parties did not even try. In either event, ongoing litigation suggests substantial differences in the parties' views as to the compensation that should be paid to the patent holder for use of the patented invention. The adversarial posturing encouraged by the litigation process, unfortunately, creates incentives for the parties to accentuate their differences in the hope of realizing a favorable litigation outcome. Such

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109. Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1325 (Fed. Cir. 2009); *see also* Brandeis Univ. v. Keebler Co., No. 1:12-cv-01508, 2013 U.S. Dist. LEXIS 18948, at *25 (N.D. Ill. Jan. 18, 2013).

110. *Georgia-Pacific 1970*, 318 F. Supp. at 1121 (citations omitted).

111. Uniloc USA, Inc. v. Microsoft Corp., 632 F. Supp. 2d 147, 150 (D.R.I. 2009); *see also* Hanson v. Alpine Valley Ski Area, Inc., 718 F.2d 1075, 1081 (Fed. Cir. 1983) ("Whether . . . [the] defendant . . . [was] never willing to pay a reasonably royalty[] is irrelevant. . . . The willing-buyer/willing-seller concept is . . . employed by the court as a means of arriving at reasonable compensation and its validity does not depend on the actual willingness of the parties to the lawsuit to engage in such negotiations." (alterations in original) (quoting Tektronix, Inc. v. U.S., 552 F.2d 343, 349 (Ct. Cl. 1977))); *Oracle I*, 798 F. Supp. 2d 1111, 1118 (N.D. Cal. 2011) (eschewing "Soviet-Style Negotiation" and writing that the test is "what *reasonable* parties would have negotiated").

112. *Rite-Hite*, 56 F.3d at 1576 ("The hypothetical negotiation is often referred to as a 'willing licensor/willing licensee' negotiation. . . . [T]his is an inaccurate, and even absurd, characterization when, as here, the patentee does not wish to grant a license."); *see also* Bowling v. Hasbro, Inc., 582 F. Supp. 2d 192, 207 (D.R.I. 2008) ("The [hypothetical negotiation] method requires the jury effectively to ignore the reality of a situation in which warring parties cannot agree to the terms of a license, and to hypothesize as to the terms to which they might agree at another time and place.").

posturing provides little guidance for assessing the amount of compensation that would be fair in light of an infringement.

(a) Patent Holder's Negotiating Posture

A patent holder's declared position in litigation is often that it would never have agreed to license the patent,[113] or that it would never accept anything appreciably less than the profit that it makes on its competing product.[114] While these positions might accurately reflect the dynamics of a real-world negotiation, they are not particularly helpful in a damages context.[115]

Regardless of the patent holder's unwillingness to license, the fact that the patent has been infringed means that use has *already taken place*. Consequently, for damages, the relevant question to consider is what amount would represent fair compensation to the patent holder in light of the unauthorized use.[116] Absent evidence that the infringer chose to infringe the patent *because* it knew it would be unable to obtain permission from the patent holder, compensation for the nonwillful, but unauthorized, use of a patent should not be affected by the fact that the patent holder would have preferred that no one use the patented invention in the first place.[117]

The negotiating position that the patent holder would never have licensed the patent for less than the profit that it would have received on a competing product also provides little insight to a determination of reasonable royalty damages. Even though such a position might be reasonable (and even common) in a real-world licensing negotiation, the consideration of the profits that the patent holder makes on products that compete with the infringing product is inappropriate in the context of a reasonable royalty damages determination. As noted above, reasonable royalty damages are appropriate only where the patent

113. *See, e.g.*, Bendix Commercial Vehicle, Sys., LLC v. Haldex Brake Prods. Corp., No. 1:09 CV 176, 2011 U.S. Dist. LEXIS 138, at *5-6 (N.D. Ohio Jan. 3 2011); Telemac Corp. v. US/Intelicom Inc., 185 F. Supp. 2d 1084, 1101-02 (N.D. Cal. 2001).

114. *See, e.g.*, Mitutoyo Corp. v. Central Purchasing, LLC, 499 F.3d 1284, 1292 (Fed. Cir. 2007).

115. *See* Cummins-Allison Corp. v. SBM Co., 584 F. Supp. 2d 916, 917 (E.D. Tex. 2008) (cautioning against allowing for a situation in which "[p]laintiff's expert drones on about a punitive royalty rate based on the absolute unwillingness of his client to license the patent-in-suit to the Defendant for a host of reasons which could realistically include jealousy, hatred, or greed"); Total Containment, Inc. v. Environ Prods., Inc., 921 F. Supp. 1355, 1403-04 (E.D. Pa. 1995) ("[It] is difficult, if not impossible to evaluate [a reasonable royalty], because TCI might have been unwilling to grant a license regardless of the royalty offered . . . .").

116. *See* Bensen & White, *supra* note 5, at 7.

117. *See, e.g.*, Fromson v. W. Litho Plate & Supply Co., 853 F.2d 1568, 1576 (Fed. Cir. 1988) ("[T]he law is not without means for recognizing that an infringer is unlike a true 'willing' licensee; nor is the law without means for placing the injured patentee 'in the situation he would have occupied if the wrong had not been committed.'"), *overruled by* Knorr-Bremse Systeme Fuer Nutzfahrzeuge GMBH v. Dana Corp., 383 F.3d 1337 (Fed. Cir. 2004).

holder is unable or unwilling to demonstrate that the infringing sales caused the patent holder to lose sales and, therefore, profits.[118] Accordingly, reasonable royalty damages are only for infringing sales that were *not* lost by the patent holder.[119] Under these circumstances, there are no patent holder profits that were displaced. Basing the determination of reasonable royalty damages on such profits may be inappropriate, but is often argued.[120]

(b) Infringer's Negotiating Posture

An infringer's declared position often is that it either never would have agreed to license the patent, or that it would never agree to pay more than a nominal amount for a license to use the patented invention. Once again, the first position ignores the fact that infringement has occurred and damages are owed (i.e., the patent has been found to be valid, enforceable, and infringed). And a preference not to pay any compensation is not particularly relevant to the determination.[121] With regard to the second position, the infringer is required to provide fair and adequate compensation to the patent holder for the use made of the patent holder's invention—and an infringer's purported unwillingness to provide such compensation may, again, be largely irrelevant to this obligation.

In *Georgia-Pacific 1970*, Georgia-Pacific Vice President James Buckley "testified that he would have been willing to pay as a royalty for a . . . license '[not] over 2 1/2 per cent' and then '[only] if our [Georgia-Pacific's] net profit were 5 per cent or more.'"[122] While this may have been the *negotiating position* that Georgia-Pacific would have adopted (i.e., the most it would have been willing to pay in a licensing negotiation), this position was not considered consistent with the circumstances of Georgia-Pacific's infringement and was, essentially, ignored by the court.[123] Simply put, compensation to be paid should be determined by the benefits received, not the preferences to pay. Yet

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118. Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538, 1576 (Fed. Cir. 1995) (Newman, J., dissenting in part) ("[W]here a patentee is not entitled to lost profits damages, lost profits may not, in effect, be awarded by merely labeling the basis of the award a reasonable royalty."); *see also* THE EVOLVING IP MARKETPLACE, *supra* note 4, at 20, 167-68, 172-73.

119. THE EVOLVING IP MARKETPLACE, *supra* note 4, at 172 ("Concerns about compensating unproven lost profits damages should not be allowed to inflate a reasonable royalty damage award . . . .").

120. In some circumstances, however, licensor profits can be used to measure the value of a patented invention. But the patent holder's profits should be a consideration, not a beginning or ending point of the analysis.

121. Bensen & White, *supra* note 5, at 36 ("[T]he price that the patentee and infringer would have individually negotiated is irrelevant . . . were you to convert and inadvertently destroy a car, the sole measure of the owner's damages would be the market value of the car. The fact that you could have negotiated a lower price under different circumstances is irrelevant.").

122. *Georgia-Pacific 1970*, 318 F. Supp. 1116, 1141 (S.D.N.Y. 1970).

123. The court interpreted the testimony as "some indication, though slight, that GP would have been willing to pay a royalty equal to one-half of the net profit that GP could expect to make on its striated fir plywood sales." *Id.*

these arguments are still often made in litigation.

In light of the foregoing, there is little justification to consider what the two parties would have preferred in analyzing reasonable royalty damages.[124] Yet, use of the hypothetical negotiation construct often invites, and even mandates, that consideration.[125] As noted by the District of Colorado, a proper damages determination is controlled by neither the willingness of the parties to negotiate nor their preferences to pay.[126] It wrote, "the hypothetical reasonable royalty is a tool for the Court to use in accomplishing the mandate of 35 U.S.C. § 284, which is to adequately compensate the plaintiff for infringement."[127]

ii. *Normative Approach*

The consideration of what a reasonable patent holder and a reasonable infringer *should have agreed to* provides a more sensible foundation for analyzing a hypothetical negotiation. It is not clear, however, that a hypothetical negotiation process aids in that determination.

As an economic matter, the minimum amount that the patent holder should be willing to accept as reasonable royalty damages is any amount above zero, given the setting in which reasonable royalty damages are appropriate (i.e., where, in the absence of sales by the infringer, the patent holder would not have enjoyed *any benefits* from the infringing sales). Economic reasoning further suggests the amount that the infringer should be *willing to pay* is up to the incremental benefits that the infringer realized as a result of the infringement that are specifically attributable to the patent.[128] The determination of this

124. *Oracle I*, 798 F. Supp. 2d 1111, 1117 (N.D. Cal. 2011) (explaining that introducing "parties' subjective preferences and history . . . improperly [fights] the hypothetical").

125. *See, e.g.*, Cauley, *supra* note 47, at 13 ("[T]he [*Georgia-Pacific*] court gave thoughtful parties the opportunity to bring virtually any economic factor the parties might have considered to the table.").

126. Golight, Inc. v. Wal-Mart Stores, Inc., 216 F. Supp. 2d 1175, 1182 (D. Colo. 2002).

127. *Id.* at 1183.

128. The Federal Circuit has appeared in some instances to allow reasonable royalty damages awards that exceed the benefits attributable to the infringed patent—going so far as to say that the infringer need not be permitted to earn a positive return on the infringing product. In *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1384 (Fed. Cir. 2004), the Federal Circuit pointed to the proposition that "the law does not require that an infringer be permitted to make a profit." *See also* Powell v. Home Depot U.S.A, Inc., 663 F.3d 1221, 1238-39 (Fed. Cir. 2011); Mars, Inc. v. Coin Acceptors, Inc., 527 F.3d 1359, 1373 (Fed. Cir. 2008) ("[A]n infringer may be liable for damages, including reasonable royalty damages, that exceed the amount that the infringer could have paid to avoid infringement."); *Golight*, 355 F.3d at 1338 ("[T]here is no rule that the royalty not exceed the infringer's net profit margin."). In each case, the Federal Circuit did not appear to have reliable evidence on the infringer's benefits from infringement. Moreover, in each case, the court seemed to place great weight on what the patent holder would have demanded at a hypothetical negotiation. *See, e.g.*, *Mars*, 527 F.3d at 1373; *Monsanto*, 382 F.3d at 1384; State Indus., Inc. v. Mor-Flo Indus., Inc., 883 F.2d 1573, 1580 (Fed. Cir. 1989). Such decisions make limited economic

amount with sufficient accuracy and specificity can be challenging, particularly in circumstances in which the patented invention is only one of many contributing factors to the profits generated by the infringing product. Nonetheless, the infringer should be willing to pay up to this amount, and any amount below this may provide it with a windfall.[129]

The imposition of a hypothetical bargaining process provides a means for selecting an outcome, but, as noted above, tends to enshrine (often subjective) relative bargaining power as the ultimate driver of a reasonable royalty.[130] It usually does not constitute an objective basis for establishing the amount of compensation that is fair or adequate in light of the infringement.

b. *Presumed Strength of the Patent*

The second disputed area is how to properly account for the presumed strength of the underlying patent. Disputes surround the significance of a finding of infringement and the significance of the patent holder's ability to exclude others from using the patented invention. Hypothesizing a negotiation process does not minimize the disagreements about those issues. It often accomplishes the opposite.

i. *Valid, Enforceable, and Infringed (VEI) Rights*

In a hypothetical negotiation construct, a fundamental presumption is that the negotiation is over rights to a valid, enforceable, and infringed patent. It is axiomatic that such a patent is more valuable than one for which there are

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sense, given that the aim of reasonable royalty damages is to compensate a patent holder for the use of an invention, not to provide compensation for bargaining prowess or to punish the infringer. THE EVOLVING IP MARKETPLACE, *supra* note 4, at 167-70; Bensen & White, *supra* note 5, at 4; Thomas F. Cotter, *Patent Holdup, Patent Remedies, and Antitrust Responses*, 34 J. CORP. L. 101, 127-28 (2009); Landers, *Let the Games Begin*, *supra* note 5, at 472; Landers, *Patent Claim Apportionment*, *supra* note 5, at 347-54; Mark A. Lemley, *Distinguishing Lost Profits From Reasonable Royalties*, 51 WM. & MARY L. REV. 655, 661, 670 (2009); Love, *supra* note 87, at 916-20; Seaman, *supra* note 5, at 1722-23. Moreover, these decisions contradict the basic logic articulated in *Georgia-Pacific 1970* that "the very definition of a reasonable royalty assumes that, after payment, 'the infringer will be left with a profit.'" 318 F. Supp. 1116, 1122 (S.D.N.Y. 1970); *see also Georgia-Pacific 1971*, 446 F.2d 295, 299 (2d Cir. 1971) ("[U]nder the willing buyer-willing seller rule a reasonable 'royalty must be fixed so as to leave the infringer, or suppositious licensee, a reasonable profit."). *But see* SynQor, Inc. v. Artesyn Techs., Inc., No. 2:07-CV-497-TJW-CE, 2011 U.S. Dist LEXIS 91697, at *26-27 (E.D. Tex. Aug. 17, 2011) (finding that a reasonable royalty could exceed actual infringer prices because there was sufficient evidence that the infringer could have increased its prices in a world without infringement).

129. *See* Ajinomoto Co., Inc. v. Archer-Daniels-Midland Co., No. 95-218-SLR, 1998 U.S. LEXIS 3833, at *161 (D. Del. Mar. 13, 1998).

130. Subjective evaluations of bargaining power can be, and often are, employed by litigating parties and their experts to support reasonable royalty awards inconsistent with fair compensation.

uncertainties about those issues. There are substantial disagreements, however, about how to incorporate such presumptions into a determination of reasonable royalty damages.

In many instances, no enhancement is appropriate. As a legal matter, a finding of valid, enforceable, and infringed patent rights simply means that liability has been established. That is, the patent holder has established that it is entitled to *some* compensation for use of the patented invention. In most damages contexts, the mere establishment of the fact of liability does not also serve as the basis for enhancing or increasing damages that must be paid.

An enhancement to account for a finding of liability is appropriate, however, in those instances in which real-world licenses are used as a benchmark and when the benchmark licenses reflect a discount due to uncertainties about the strength of the licensed patent. Calculating an *appropriate* adjustment to real-world licenses, however, has proven to be difficult. That is true largely because it is often unclear how patent validity, enforceability, or infringement affected comparator licenses.[131] Consequently, experts in litigation often disagree about the level of enhancement that might be appropriate. Sometimes this disagreement is resolved through resorting to a variety of published studies.[132] Unfortunately, the range of adjustments in those studies is quite broad and emanates from observations across industries, companies, technologies, and time. The application of any of these results to a particular litigation matter is often problematic due to the lack of case-specific connections between the studies and the litigation.[133]

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131. *See, e.g.*, Stephen H. Kalos & Jonathan D. Putnam, *On the Incomparability of "Comparables": An Economic Interpretation of "Infringer's Royalties*," 9 J. PROPRIETARY RIGHTS 2 (1997).

132. *See, e.g.*, John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185, 205 (1998); Paul M. Janicke & LiLan Ren, *Who Wins Patent Infringement Cases?*, 34 AIPLA Q.J. 1, 8 Table 1 (2006); Kimberly A. Moore, *Judges, Juries, and Patent Cases—An Empirical Peek Inside the Black Box*, 99 MICH. L. REV. 365, 390 tbl.4 (2000); Edward F. Sherry & David J. Teece, *Royalties, Evolving Patent Rights, and the Value of Innovation*, 33 RESEARCH. POL'Y 179, 183 (2004).

133. The Eastern District of Texas recently allowed for testimony about a possible tripling of "standard" royalty rates accounting for the "uncertainty" discount, but directed that "sufficient facts or data" be presented in the case at hand to support such a tripling. Mondis Tech., Ltd. v. LG Elecs., Inc., No. 2:08-CV-478-TJW, 2011 U.S. Dist. LEXIS 78482, at *25-26 (E.D. Tex. June 14, 2011). In contrast, the Western District of Washington rejected expert testimony in which the expert trebled a real-world royalty rate to obtain a reasonable royalty based on an argument that "patent holders lose infringement suits in federal court two-thirds of the time, suggesting [the patent holder] was facing a significant downside risk to pursuing litigation and therefore agreed to a discounted royalty rate." Order Granting in Part Belkin's Motion to Exclude the Testimony of William O. Kerr at 7, Avocent Redmond Corp. v. Rose Elecs., No. C06-1711RSL (W.D. Wa. Mar. 11, 2013), *available at* http://patent-damages.com/wp-content/uploads/2013/06/6674dff5-120c-788c-ed12-41026a1486dc.pdf. The court rejected this argument, explaining, "[w]hile the concept of adjusting a settlement-related license agreement to account for litigation risk is not inherently objectionable, the adjustment must have some relationship to the patent at issue. In this case, there is no indication that [the expert's] chosen method of adjustment is

In most cases, experts disagree as to the level of enhancement that should be used to account for uncertainties relating to the strength of a patent.[134] Contemplating a hypothetical negotiation process does nothing to resolve that uncertainty and imprecision. In fact, it allows for, and may encourage, the parties to take quite divergent positions in the hope of, perhaps, ultimately obtaining a favorable split-the-difference outcome in litigation.[135]

ii. *Ability to Exclude*

Another source of conflict is whether and to what extent the patent holder's reasonable royalty damages should include not only compensation for the specific contribution of the patented invention, but also for the violation of the patent holder's right to exclude others from practicing the patent.

As a legal matter, it is often expressed that the most fundamental power of a patent is that it grants its owner the right to exclude.[136] And infringement is a direct violation of that right. In principle, therefore, it might be argued that compensation for the infringer's use of the patented invention should include some amount of damages attributable to the violation of that right to exclude.[137]

Reasonable royalty damages were developed by courts to prevent the "travesty" of having a patent holder whose patent was infringed being unable to receive compensation due to an inability to prove actual damages.[138] In endorsing such damages, the Supreme Court observed that "it was permissible to show the value by proving what would have been a reasonable royalty, considering the nature of the invention, its utility and advantages, and the extent of the use involved."[139] Similarly, 35 U.S.C. § 284 describes the remedy in terms of "the use made of the invention by the infringer." Neither the patent statute nor case law, however, has provided explicit guidance on whether or how to provide compensation for harm relating to the violation of the patent

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anything more than an arbitrary multiplier based on factors and statistics having nothing to do with the patents or parties in this case." *Id.* (citation omitted).

134. *See, e.g.*, *Mondis*, 2011 U.S. Dist. LEXIS 78482 at *23 ("[A]s compared to the 'real-world' in which the licenses to the patents-in-suit were negotiated, the patentee in the 'hypothetical-world' is in a better bargaining position. How much better is debatable . . . .").

135. In that regard, a hypothetical (litigation) negotiation is much like, but no better than, a real-world negotiation.

136. *See, e.g.*, Edwards Lifesciences AG v. CoreValve, Inc., 699 F.3d 1305, 1314 (Fed. Cir. 2012); Love, *supra* note 87, at 927; *see also* 35 U.S.C § 154(a)(1) (2011) ("Every patent shall contain . . . a grant to the patentee, his heirs or assigns, of the right to exclude others from making, using, offering for sale, or selling the invention . . . .").

137. In real-world licensing, even just the threat of an injunction enhances a patentee's position, especially when a licensee has already invested in the business. And, according to Lemley & Shapiro, that may enable "a patent holder to negotiate royalties far in excess of the patent holder's true economic contribution." Lemley & Shapiro, *supra* note 5, at 1993.

138. U.S. Frumentum Co. v. Lauhoff, 216 F. 610, 614-16 (6th Cir. 1914).

139. Dowagiac Mfg. Co. v. Minn. Moline Plow Co., 235 U.S. 641, 648 (1915).

holder's ability to exclude others from use of the patent.

In its 2006 opinion in *eBay v. MercExchange*, the Supreme Court held that a prevailing patent holder is not automatically entitled to injunctive relief.[140] Importantly, it wrote that "the creation of a right [to exclude] is distinct from the provision of remedies for violations of that right."[141] It is not clear that *any* damages should be awarded to compensate for the patent holder's loss of the ability to exclude others from using the patented invention.

Even if it is determined that there should be some compensation for the patent holder's right to exclude, there frequently is no objective way to determine that compensation. The hypothetical negotiation construct provides a context in which the parties argue about the importance of the right to exclude, without providing any objective basis for resolving these differences.[142]

c. *Timing of the Negotiation*

The third area of dispute in implementing the hypothetical negotiation construct surrounds the timing of the negotiation. There are disagreements involving the identification of the specific date of the hypothetical negotiation itself, and there are disagreements within cases and across cases about what information is knowable at the time of the hypothetical negotiation (i.e., the extent to which the analysis is permitted to "look into the future" in analyzing a hypothetical negotiation). For the purposes of determining fair compensation for the patent holder, such controversies are largely unnecessary and unproductive. And hypothesizing a negotiation between the parties does nothing to minimize those disagreements.

i. *Ex Ante vs. Ex Post*

In a real-world license negotiation, neither party is privy to postagreement information. That is, the parties have access to only ex ante facts and expectations. In a hypothetical negotiation, by contrast, the available information is much more robust because damages usually are assessed well after the hypothetical license would have been "negotiated." Consequently, courts and experts have the advantage of seeing how the world has unfolded, ex

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140. 547 U.S. 388, 391-92 (2006) (holding that to be entitled to such relief, an injured party must show that: 1) it suffered an irreparable injury; 2) the remedies available at law, such as monetary damages, are inadequate; 3) the balance of the hardships favor the injured party; and 4) the public interest would not be disserved by a permanent injunction); *Edwards Lifesciences*, 699 F.3d at 1314 (indicating granting of injunctions is governed by traditional principles of equity). *See generally* Douglas Ellis, John Jarosz, Michael Chapman & L. Scott Oliver, *The Economic Implications (and Uncertainties) of Obtaining Permanent Injunction Relief After* eBay v. MercExchange, 17 Fed. Cir. B.J. 437 (2008).

141. *eBay, Inc.*, 547 U.S. at 392.

142. In that regard, a hypothetical (litigation) negotiation is much like, but no better than, a real-world negotiation.

post, when analyzing the hypothetical negotiation. Disputes occur over whether, and the extent to which, such ex post information should be considered in a hypothetical negotiation.

Many courts and commentators have attempted to hold true to the parameters of a real-world license negotiation in implementing that hypothetical negotiation construct by allowing for the consideration of only ex ante information.[143] This approach was described by the Federal Circuit in *Lucent*: "The hypothetical negotiation tries, as best as possible, to recreate the *ex ante* licensing negotiation scenario and to describe the resulting agreement."[144] The FTC, having considered the testimony of numerous industry participants, wrote in support of this approach:

> [T]he finder of fact must assume that the hypothetical negotiation takes place at the time the infringement began. This timing determines the information available to the parties during the negotiation. Thus, in setting a reasonable royalty rate, considerations such as the infringer's expected profit and available alternatives are "to be determined not on the basis of a hindsight evaluation of what actually happened, but on the basis of what the parties to the hypothetical license negotiations would have considered at the time of the negotiations."[145]

This rationale mirrors the expectancy requirement in contract damages—i.e., the patent holder should receive and the infringer should pay compensation in an amount equal the amount that the parties would have deemed "acceptable" based on the information that was available at the time of the (hypothetical) negotiation. From this perspective, the patent holder and the infringer are entitled to the benefits of the hypothetical bargain that would have been struck based on the incomplete information available at the time of the hypothetical negotiation—regardless of whether such expected benefits are consistent with the benefits actually generated by the infringement.

Even at a theoretical level, this rationale appears problematic. As noted above, there was no actual contract between the parties, and there need not be one. Patent infringement is a tort, requiring calculation of general damages,[146]

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143. *See, e.g.*, Applied Med. Res. Corp. v. U.S. Surgical Corp., 435 F.3d 1356, 1363-64 (Fed. Cir. 2006); Integra Lifesciences I, Ltd. v. Merck KGaA, 331 F.3d 860, 870-71 (Fed. Cir. 2003); Riles v. Shell Exploration & Prod. Co., 298 F.3d 1302, 1313 (Fed. Cir. 2002); Interactive Pictures Corp. v. Infinite Pictures, Inc., 274 F.3d 1371, 1385 (Fed. Cir. 2001); Unisplay, S.A. v. Am. Elec. Sign Co., 69 F.3d 512, 518 (Fed. Cir. 1995); Hanson v. Alpine Valley Ski Area, Inc., 718 F.2d 1075, 1081 (Fed. Cir. 1983); Panduit Corp. v. Stahlin Bros. Fibre Works, Inc., 575 F.2d 1152, 1164 (6th Cir. 1978); Avocent Huntsville Corp. v. Clearcube Tech., Inc., No. CV-03-S-2875-NE, 2006 U.S. Dist. LEXIS 55307, at *33, *82-83 (N.D. Ala. July 28, 2006).

144. Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1325 (Fed. Cir. 2009).

145. THE EVOLVING IP MARKETPLACE, *supra* note 4, at 166-67 (citations omitted). *See also* Cotter, *supra* note 5, at 736, 751; Cotter, *supra* note 128, at 126-27; Suzanne Michel, *Bargaining for RAND Royalties in the Shadow of Patent Remedies Law*, 77 ANTITRUST L.J. 891, 898 (2011).

146. U.S. Frumentum Co. v. Lauhoff, 216 F. 610, 614-15 (6th Cir. 1914).

with those damages tied to the use made of the invention. Information generated after the date of the hypothetical negotiation—most notably the extent to which the use of the infringed patented invention actually generated either substantial or minimal benefits—often is essential to rendering a fair and complete assessment of the amount of compensation that should be paid for the unauthorized use of a patented invention. Pretending that such information is not available or relevant to the assessment of reasonable royalty damages may not improve the accuracy or reliability of a reasonable royalty damages determination.

To illustrate the point, consider a situation where the accused product, at the time of launch, was *expected* to generate profits of ten million dollars, but, *in reality*, only generated profits of one hundred thousand dollars. If only ex ante information were used to determine reasonable royalty damages, the expected benefits of infringement would be one hundred times the actual benefits—which is likely to result in reasonable royalty damages award that is inconsistent with and far in excess of an amount that is adequate to compensate the patent holder for infringement in light of the use made of the invention by the infringer. Similarly, if realized profits greatly exceed expected profits, a reasonable royalty determined using only ex ante information may substantially undercompensate the patent holder. In these circumstances, exclusive reliance on ex ante information to determine reasonable royalty damages may not lead to a fair or economically sensible result.

In actual patent litigations, ex post facts are routinely considered despite frequent assertions that only information available at the point of hypothetical negotiation is to be considered.[147] For example, evidence as to actual infringing revenues/shipments and consummated licenses is virtually always considered, as is information concerning actual profit performance. And design-around efforts are often considered. A pure ex ante model is almost never actually observed. In fact, Judge Tenney wrote in the *Georgia-Pacific 1970* decision, "the Court [h]as taken into account the modifying effect of the facts developed subsequent to 1955 and has assessed them together with all other probative evidence so far as they bear upon the reasonableness of the assumptions and

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147. *See, e.g.*, TWM Mfg. Co. v. Dura Corp., 789 F.2d 895, 899 (Fed. Cir. 1986) ("[E]vidence of actual profits is generally admissible."); Third Wave Techs., Inc. v. Stratagene, Corp., 405 F. Supp. 2d 991, 1011-12 (W.D. Wisc. 2005) (approving of the patent holder's expert undertaking an pure ex ante evaluation, yet also approving of consideration of ex post facts); Alpex Computer Corp. v. Nintendo Co., No. 86 Civ. 1749, 1994 U.S. Dist. LEXIS 17515, at *133 (S.D.N.Y. Dec. 2, 1994) (approving of a "flexible hypothetical negotiation analysis" which is "anchor[ed] . . . with facts at the time of infringement"); AM. INTELLECTUAL PROP. LAW ASS'N, MODEL PATENT JURY INSTRUCTIONS § 11.18 (2012) ("Although the relevant date for the hypothetical license negotiation is just before the infringement began, you may consider any actual profits made by [the defendant] due to its infringement and any commercial success of the patented invention or the infringing products after that date. You may only consider this information, however, if those sales and profits were foreseeable just before the infringement began.").

expectations of the parties in their hypothetical negotiations in 1955."[148]

Consideration of and reliance on ex post information in the determination of reasonable royalty damages was embraced and endorsed by the Federal Circuit in *Fromson v. Western Litho* through a concept known as the "book of wisdom":

> The [*Georgia-Pacific*] methodology encompasses fantasy and flexibility: fantasy because it requires a court to imagine 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 to events and facts that occurred thereafter and that could not have been known to or predicted by the hypothesized negotiators.
>
> As has been said by the Supreme Court:
>
>> At times the only evidence available may be that supplied by testimony of experts as to the state of the art, the character of the improvement, and the probable increase of efficiency or savings of expense. . . . This will generally be the case if the trial follows quickly after the issue of the patent. But a different situation is presented if years have gone by before the evidence is offered. Experience is then available to correct uncertain prophecy. Here is a book of wisdom that courts may not neglect. We find no rule of law that sets a clasp upon its pages, and forbids us to look within. . . .[149]

The District Court of Delaware in *Honeywell v. Hamilton Sundstrand* explained the merits of considering ex post facts in reasonable royalty determinations. It wrote that the "ascertainment of [the hypothetical negotiation] date does not rigidly foreclose the factfinder from considering subsequent events. To enforce such rigidity would be to ignore a limitation inherent to the hypothetical negotiation method"[150]—namely, that the extent of the use of the patent "will not be known until after infringement."[151] According to the court, consideration of the "book of wisdom" discourages infringement, because it does not force the analysis to consider only information that was available at "a point in time before the patent has proven its worth."[152] In fact, the court went so far as to conclude that "information not available as of that date *must necessarily be considered* by the factfinder."[153]

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148. 318 F. Supp. 1116, 1122 (S.D.N.Y. 1970).

149. Fromson v. W. Litho Plate & Supply Co., 853 F.2d 1568, 1575-76 (Fed. Cir. 1988) (second and third alterations in original) (quoting Sinclair Ref. Co. v. Jenkins Petroleum Co., 289 U.S. 689, 698-99 (1933) (citations omitted)), *overruled by* Knorr-Bremse Systeme Fuer Nutzfahrzeuge GMBH v. Dana Corp., 383 F.3d 1337 (Fed. Cir. 2004); *see also* Harris Corp. v. Ericsson, Inc., No. 3:98-CV-2903-M, 2003 U.S. Dist. LEXIS 12284, at *14-15 (N.D. Tex. July 17, 2003).

150. Honeywell Int'l, Inc. v. Hamilton Sundstrand Corp., 378 F. Supp. 2d 459, 464 (D. Del. 2005).

151. *Id.* (emphasis omitted).

152. *Id.* at 465.

153. *Id.* (emphasis added); *see also* Arista Records LLC. v. Lime Group LLC, No. 06 CV 5936, 2011 U.S. Dist. LEXIS 47416, at *40 (S.D.N.Y. Apr. 29, 2011) ("By allowing a royalty based on a hypothetical negotiation based upon 20/20 hindsight as to the patent's real value, a court can ensure that a patent holder is sufficiently compensated for the infringement."); Schlicher, *supra* note 5, at 57 ("[An ex ante] approach to determining damages is unnecessary and misleading given the availability of historical facts that may

The Federal Circuit appears to be in agreement. In *ResQNet*, it wrote that a royalty analysis "may also consider the panoply of 'events and facts that occurred thereafter and that could not have been known to or predicted by the hypothesized negotiators.'"[154] In *Lucent*, it concluded that "neither precedent nor economic logic requires us to ignore information about how often a patented invention has been used by infringers. . . . [O]ur case law affirms the availability of post-infringement evidence as probative . . . ."[155]

In spite of logic and much case law, disputes continue over the consideration of ex post information. In the *ActiveVideo* opinion issued in 2012, the Federal Circuit noted that the Eastern District of Virginia did not allow for the infringer's expert to rely upon a particular agreement because it postdated the hypothetical negotiation by four years.[156] Yet, the plaintiff's expert was allowed to rely upon an agreement that postdated the negotiation by two years.[157] The Federal Circuit found there to be no abuse of discretion.[158]

Putting aside the merits of ignoring potentially relevant information, disputes and uncertainties about use of ex post information do not appear to be resolved through construction of a hypothetical negotiation. Rather, conflicts over the proper use of the tool appear to be exacerbated, as the competing/negotiating parties often strategically select which ex post information should be considered and which ex post information should be ignored. Such disputes add uncertainty to the determination of reasonable royalty damages without providing any corresponding benefit in terms of the accurate determination of fair compensation for the patent holder.

ii. *Date of the Hypothetical Negotiation*

A critical input to any negotiation (hypothetical or otherwise) is the specific time at which it is to have taken place.[159] Generally, a late-in-time hypothetical negotiation tends to favor the patent holder and to result in a high royalty rate, holding all else constant, because a late date tends to limit the

permit the necessary data to be obtained with greater accuracy.").

154. ResQNet.com, Inc. v. Lansa, Inc., 594 F.3d 860, 872 (Fed. Cir. 2010).

155. Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1333 (Fed. Cir. 2009). *Lucent* appears to conflict somewhat with the Federal Circuit's opinion in *Integra* where the Court found that the results of a hypothetical negotiation in 1995 could differ drastically from that of one in 1994. Integra Lifesciences I, Ltd. v. Merck KGaA, 331 F.3d 860, 870 (Fed. Cir. 2003). Presumably, *ex post* facts were not to be considered in the 1994 negotiation.

156. ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc., 694 F.3d 1312, 1332 (Fed. Cir. 2012).

157. *Id.*

158. *Id.*

159. *See, e.g.*, LaserDynamics, Inc. v. Quanta Computer, Inc., 694 F.3d 51, 75 (Fed. Cir. 2012).

alternatives to infringement available to the infringer.[160] Conversely, an early-in-time hypothetical negotiation tends to increase the ability of the infringer to avoid investments that could lead to hold-up and to implement infringement-avoiding design-around alternatives. In this way, an earlier hypothetical negotiation tends to favor the infringer and to result in a lower royalty rate.

The patent damages statute provides no real guidance about the timing of a hypothetical negotiation. Courts have defined it to be at, or immediately prior, to the date of "first infringement."[161] On the surface, this appears to provide adequate guidance for selecting the date. In practice, however, identification of the date is challenging.

Most courts and analysts use the point of first infringing *sale* as the negotiation date.[162] Understanding, however, that patent infringement covers the unauthorized manufacture, use, offer for sale, and/or sale of products,[163] many courts have set the point of hypothetical negotiation earlier. In *Oracle I*, the court set it at the point of first *use* (*i.e.*, development and testing), though that suggested a variety of dates, depending upon which particular claims were found to be infringed.[164] In *Georgia-Pacific 1970*, the court adopted the date of first *manufacture* as the date of the hypothetical negotiation.[165] In *Medtronic Sofamor Danek*, the court set the hypothetical negotiation at the point at which the infringing products were first "*available* for use and sale."[166]And in spite of the law, the FTC has advocated, as a matter of policy, for a hypothetical negotiation associated with *contemplated infringement*.[167] The "guidance" to set the hypothetical negotiation date at the date of "first infringement" has meant different things in different settings, with most not appearing to be incorrect as a matter of law. The result, however, is uncertainty as to the proper date of hypothetical negotiation in any particular patent infringement proceeding. Disputes inevitably occur.[168]

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160. *See* THE EVOLVING IP MARKETPLACE, *supra* note 4, at 189-90; Michel, *supra* note 145, at 904; Schlicher, *supra* note 5, at 58.

161. Integra Lifesciences I, Ltd. v. Merck KGaA, 331 F.3d 860, 870 (Fed. Cir. 2003); *see also* Riles v. Shell Exploration & Prod. Co., 298 F.3d 1302, 1311 (Fed. Cir. 2002); Hanson v. Alpine Valley Ski Area, Inc., 718 F.2d 1075, 1079 (Fed. Cir. 1983); Panduit Corp. v. Stahlin Bros. Fibre Works, Inc., 575 F.2d 1152, 1158 (6th Cir. 1978); Leonard & Stiroh, *supra* note 13, at 57.

162. *See, e.g.*, Applied Med. Res. Corp. v. U.S. Surgical Corp., 435 F.3d 1356, 1361 (Fed. Cir. 2006).

163. 35 U.S.C. § 271.

164. *Oracle I*, 798 F. Supp. 2d 1111, 1116 (N.D. Cal. 2011).

165. *Georgia-Pacific 1970*, 318 F. Supp. 1116, 1123 (S.D.N.Y. 1970).

166. Medtronic Sofamor Danek USA, Inc. v. Globus Med., Inc., 637 F. Supp. 2d 290, 310 n.26 (E.D. Penn. 2009) (emphasis added).

167. THE EVOLVING IP MARKETPLACE, *supra* note 4, at 22.

168. In *LaserDynamics, Inc. v. Quanta Computer, Inc.*, the Federal Circuit remanded the case back to the district court for a new trial on damages "because [its] decision [altered] the time period when the analysis under *Georgia-Pacific* [was] to take place." 694 F.3d 51, 76 (Fed. Cir. 2012). It wrote that "[o]ur holding is consistent with the purpose of the

In many, if not most, cases, it is not clear that the uncertainties and resulting disputes about the negotiation date are of substantive consequence. In *Parker-Hannifin*, the parties disagreed as to whether the hypothetical negotiation date should be June 16, 2005 or September 12, 2005.[169] The court used the former, adding that the infringer's expert failed to explain how the latter date would have resulted in a different royalty outcome. In *Applied Medical*, the parties argued vigorously about whether the hypothetical negotiation should be set in 1994 or 1997.[170] The Federal Circuit chose the latter, but pointed to neither evidence nor argument about why it mattered.[171] In the lower court's opinion in *Lucent*, the Southern District of California reported that the patent holder's expert set the date of hypothetical negotiation as of 1988, yet the expert admitted that his results would be the same if the date was 1997 or 2004.[172] In *Sun Studs*, the Federal Circuit wrote that the patent holder "has not shown that the jury verdict could have been significantly changed by any reasonable variation in the postulated date of the hypothetical negotiation."[173] Often, disputes concerning the date of the hypothetical negotiation are unproductive from the perspective of determining adequate compensation for an infringement.

In other cases, the choice of date may matter, but the arguments adopted by the parties with regard to the "proper" date often appear to be driven by the result it will yield. In *Fromson*, for example, the Federal Circuit noted that "the parties emphasize either the May 1965 date of first infringement or selected later events, depending on which they see as best serving their interests."[174]

Disputes and uncertainties about the date of the hypothetical negotiation are compounded when multiple patents are asserted, with multiple issue dates and multiple dates of "first infringement."[175] Under these circumstances, issues

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hypothetical negotiation framework, which seeks to discern the value of the patented technology to the parties in the marketplace when infringement began." *Id.* It is unclear how this characterization accounts for the ultimate purpose of using a hypothetical negotiation framework, which is to determine fair compensation for the patent holder in light of the infringement (which may or may not correspond to the value of the technology at the time infringement began).

169. Parker-Hannifin Corp. v. Champion Labs., Inc., No. 1:06-CV-2616, 2008 U.S. Dist. LEXIS 61108, at *23-24 (N.D. Ohio Aug. 4, 2008).

170. Applied Med. Res. Corp. v. U.S. Surgical Corp., 435 F.3d 1356, 1361-62 (Fed. Cir. 2006).

171. *Id.* at 1362-64.

172. Lucent Techs. Inc. v. Gateway Inc., 509 F. Supp. 2d 912, 938 (S.D. Cal. 2007).

173. Sun Studs, Inc. v. ATA Equipment Leasing, Inc., 872 F.2d 978, 994 (Fed. Cir. 1989).

174. Fromson v. W. Lito Plate & Supply Co., 853 F.2d 1568, 1577 (Fed. Cir. 1988), *overruled by* Knorr-Bremse Systeme Fuer Nutzfahrzeuge GMBH v. Dana Corp., 383 F.3d 1337 (Fed. Cir. 2004).

175. *See* Christopher Marchese, Justin Barnes, Michael Florey and John Skenyon, *Single Damages Verdict, Multi-Patent Case*, FISH & RICHARDSON, http://www.fr.com/singledamagesverdict/Generic.aspx (last visited July 5, 2013) ("Patent litigation concerning single patents is becoming increasingly rare, as litigants opt to utilize a

of the timing of the hypothetical negotiation take on additional complexity and trigger even greater disputes between the litigating parties.

Strict application of the hypothetical negotiation construct would seem to require a new hypothetical negotiation at the point of first infringement for each infringed patent.[176] However, in many cases involving multiple patents, the asserted patents are examined in a single hypothetical negotiation, with the assumption that the parties to the negotiation would have been aware of the later-infringed patents at the time of the hypothetical negotiation and incorporated this knowledge into their negotiations.[177] The Federal Circuit wrote in *LaserDynamics*, "[i]t . . . makes sense that in each case there should be only a single hypothetical negotiation date, not separate dates for separate acts of infringement . . . ."[178] The Federal Circuit, however, provided neither case law nor reasoning for its position.

To the extent that such omnibus negotiations are adopted in lieu of "infringed-patent-by-infringed-patent" negotiations, experts and courts appear to be embracing analytical simplicity (and the book of wisdom) over strict fidelity to the hypothetical negotiation construct.[179] Though sensible and practical, this approach compromises fidelity to the analytic tool, and can trigger further litigation disputes over the manner in which the later-infringed patents are incorporated into the omnibus negotiation (*i.e.*, there can be and are disputes about use of ex post versus ex ante information).

The determination of the appropriate date of a hypothetical negotiation also can be complicated by the fact that the infringing product line (or process) often changes over time. Strict application of the hypothetical negotiation construct may suggest that each new product (or process) triggers a new

litigation strategy incorporating multiple patents.").

176. Dataquill Ltd. v. High Tech Computer Corp. (*Dataquill I*), 2011 U.S. Dist. LEXIS 138565, at *68 (S.D. Cal. Dec. 1, 2011) ("Here, because there are three different effective dates for the asserted claims, there are three different dates when DataQuill asserts that infringement began: September 2008, October 27, 2009, and April 13, 2010. Therefore, there should be three different hypothetical negotiations. In addition, DataQuill contends that the asserted claims that were added during the reexamination proceedings cover additional features of the accused products that were not covered by the original claims in the '304 Patent. Therefore, [plaintiff's expert] may apply different royalty rates to the different infringements that occurred at the three different times." (citations omitted)).

177. *See, e.g.*, Medtronic Sofamor Danek USA, Inc. v. Globus Med., Inc., 637 F. Supp. 2d 290, 310 (E.D. Penn. 2009).

178. LaserDynamics, Inc. v. Quanta Computer, Inc., 694 F.3d 51, 76 (Fed. Cir. 2012). *But see* Applied Med. Res. Corp. v. U.S. Surgical Corp., 435 F.3d 1356, 1362 (Fed. Cir. 2006). ("Because the determination of reasonable royalty damages is tied to the infringement being redressed, a separate infringement beginning at a different time requires a separate evaluation of reasonable royalty damages.").

179. *See, e.g.*, Mobil Oil Corp. v. Amoco Chems. Corp., 915 F. Supp. 1333, 1353 (D. Del. 1994); Procter & Gamble Co. v. Paragon Trade Brands, Inc., 989 F. Supp. 547, 607 (D. Del. 1997); FMT Corp., Inc. v. Nissei ASB Co., No. 1:90-cv-786-GET, 1993 U.S. Dist. LEXIS 19625, at *14 (N.D. Ga. Sept. 27, 1993).

hypothetical negotiation.[180] However, experts and courts often bundle such products (or processes) together for negotiation purposes, assuming that all subsequent infringements would be subsumed in a single negotiation.[181] The key rationale for such consolidation, again, is analytical simplicity and tractability, which makes sense in most patent litigations. Again, fidelity to the tool is questionable in light of the sensible and consistent violation of one of its most important foundations—the date of negotiation.

In sum, disputes abound in litigation about the goal of the construct, the importance of a finding of valid, enforceable, and infringed patent rights, and the significance of the date of negotiation. The disputes are largely unnecessary and unproductive for the purpose of determining fair and adequate compensation for an infringement. Moreover, disputes about the parameters used in the hypothetical negotiation construct are likely to distract the parties from the real purpose of a reasonable royalty damages analysis.[182] As the Northern District of California has written, "the license . . . must compensate the licensor for the actual infringement that took place – no more and no less. . . .The hypothetical license . . . must be tailored to the amount and type of alleged infringement that actually occurred."[183] Consideration of a hypothetical negotiation process does not necessarily lead to a hypothetical license that is tailored in the manner dictated by the court.

3. *Results*

The hypothetical negotiation is poorly grounded and loosely defined.[184] At best, it provides that a reasonable royalty analysis hypothesizes the results of a willing licensor and willing licensee negotiation, allowing for consideration of a wide range of factors. The factors used are mostly those from *Georgia-Pacific 1970*. Unfortunately, the individual and collective flexibility of the factors often has impeded the hypothetical negotiation from leading to an objectively fair and reasonable outcome.[185]

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180. *See, e.g.*, *Applied Med. Res. Corp.*, 435 F.3d at 1363; Boston Scientific Corp. v. Cordis Corp., 777 F. Supp. 2d 783, 791-92 (D. Del. 2011).

181. *See, e.g.*, Accentra, Inc. v. Staples, Inc., No. 07-5862 ABC, 2011 U.S. Dist. LEXIS 154692, at *58-61 (C.D. Cal. Dec. 19, 2011), *aff'd in part and rev'd in part by* 500 F. App'x 922 (Fed. Cir. 2013).

182. At least one court has explained that the hypothetical negotiation is a "'book of wisdom' framework, that employs a modified *ex post* examination of what the [litigating parties] would have agreed to in a hypothetical bilateral negotiation," and does not assess the objective market value of an IP asset. Mattel, Inc. v. MGA Entm't, Inc., No. CV 04-9049 DOC, 2011 U.S. Dist. LEXIS 26995, at *21 (C.D. Cal. Mar. 4, 2011).

183. *Oracle I*, 798 F. Supp. 2d 1111, 1117 (N.D. Cal. 2011).

184. *See, e.g.*, DAN B. DOBBS, DOBBS LAW OF REMEDIES 324 (2d ed. 1993) ("[T]he willing licensee/willing licensor framework does not help much in itself." (internal citation marks omitted)).

185. *See, e.g.*, Apple, Inc. v. Motorola, Inc., No. 1:11-cv-08540, 2012 U.S. Dist. LEXIS 89960, at *37-38 (N.D. Ill. May 22, 2012) ("This is a formidable list. . . . And could a judge

In many cases, the *Georgia-Pacific* Factors are used as nothing more than a checklist of considerations in undertaking a hypothetical negotiation. Commonly, each factor is evaluated and assigned an "up," "down," or "neutral" score. "Up" raises the royalty; "down" lowers it. Often unsatisfyingly, a royalty mysteriously emerges from the analysis.[186] In many other cases, a negotiation baseline is identified, and the *Georgia-Pacific* factors are used to adjust that baseline up or down.[187] Adjustments, however, often are made regardless of the precise starting point (e.g., the competitive nature of the parties' relationship often suggests an upward impact whether the baseline is $1 or $1 million).[188] Finally, most of the factors (e.g., the nature of the patented invention and the opinion testimony of qualified experts) are poorly defined and explained. As a result, many can be and are used to suggest virtually any outcome in a hypothetical negotiation, often favoring the party sponsoring the testimony.[189]

The net result is that *Georgia-Pacific's* hypothetical negotiation approach has been used to support a wide range of reasonable royalty damages.[190] Courts

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or a jury really balance 15 or more factors and come up with anything resembling an objective assessment?"); THE EVOLVING IP MARKETPLACE, *supra* note 4, at 21 ("[*Georgia-Pacific* does] not provide a conceptual framework for calculating damages. Rather, [the factors] are properly understood as a non-exhaustive list of evidence categories that may be, but are not necessarily, relevant to a specific calculation."); *id.* at 182; Devlin, *supra* note 6, at 564 ("Some consider this mode of computing damages, which asks what the parties would have agreed to had they bargained for a license ex ante, to be intolerably abstract."); Durie & Lemley, *supra* note 5, at 628 (The *Georgia-Pacific* test "overloads the jury with factors to consider that may be irrelevant, overlapping, or even contradictory."); Landers, *Patent Claim Apportionment*, *supra* note 5, at 492 ("The *Georgia-Pacific* test fails to provide [a] framework. Rather, the test resembles a parts list—a starting point of considerations that provide the types of questions that may illuminate the value of an invention but fails to instruct how those factors must be applied to accomplish the statute's purpose. As currently implemented, *Georgia-Pacific* does not provide any incontrovertible valuation principles." (citation omitted)).

186. *See, e.g.*, Ball Aerosol & Specialty Container, Inc. v. Limited Brands, Inc., 514 F. Supp. 2d 1051, 1061-65 (N.D. Ill. 2007).

187. *See, e.g.*, Whitserve, LLC v. Computer Packages, Inc., 694 F.3d 10, 31 (Fed. Cir. 2012).

188. *See, e.g.*, i4i Ltd. P'ship v. Microsoft Corp., 589 F.3d 1246, 1269 (Fed. Cir. 2009).

189. In *Whitserve*, the Federal Circuit wrote, "[Patent holder's expert] testified that . . . it is appropriate to adjust . . . [a starting royalty rate] up or down using the *Georgia-Pacific* factors. He did not explain how much each factor affected the rate, however, and he testified that almost all the factors justified an increase in the applicable rate, a few were neutral in terms of their impact, and none justified a decreased rate." *Whitserve*, 694 F.3d at 31 (citation omitted).

190. F. Russell Denton, *Rolling Equilibriums at the Pre-Commons Frontier: Identifying Patently Efficient Royalties for Complex Products*, 14 VA. J.L. & TECH. 48, 83-84 (2009). *See also* Bensen & White, *supra* note 5, at 34 ("[T]he fact-finder is usually presented with the testimony of two experts applying the *Georgia-Pacific* factors in such divergent ways that their respective proposed royalties provide nothing more than the outer limits for what becomes a 'split-the-difference' decision."); Cauley, *supra* note 47, at 4 ("The hypothetical negotiation . . . provides myriad opportunities for each side to maximize its leverage in increasing or decreasing the eventual award."); Cotter, *supra* note 5, at 730 ("[T]he

have acknowledged, with some disdain, the tremendous uncertainty provided by that "flexibility."[191]

The Appendix here shows that, for opinions issued since 1978 in which a suggested royalty rate was reported for both the patent holder and the infringer, the range has been as high as three hundred to one. That is, in *Intex Plastic Sales Co.*, the plaintiff's proposed running royalty rate was 8.62% of infringer revenues, while the defendant's proposed rate was as low as 0.025% of infringer revenues.[192] In many cases, the difference has been more than twenty to one.[193] And the range has not declined over time. A *Georgia-Pacific* hypothetical negotiation was likely "faithfully followed" by both experts in each of these matters. The result, however, has been widely divergent royalty recommendations (and outcomes) at trial.[194]

Compounding the problem is that the *Georgia-Pacific* hypothetical negotiation construct provides an inadequate basis for juries, district courts, and the Federal Circuit to evaluate reasonable royalty evidence and expert opinions.[195] Flexibility has had its drawbacks.

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individual factors are often sufficiently vague as to provide almost limitless discretion to the trier of fact." (citations omitted)); Durie & Lemley, *supra* note 5, at 628, 632 ("With at least fifteen factors, a complex interaction between them, and little limit on expert testimony on damages, there is likely to be evidence somewhere in the case that could be construed to support virtually any number the jury might settle on."); Roy J. Epstein & Alan J. Marcus, *Economic Analysis of the Reasonable Royalty: Simplification and Extension of the* Georgia Pacific *Factors*, 85 J. PAT. & TRADEMARK OFF. SOC'Y 555, 555 (2003) ("[T]he factors typically can be used to justify a very wide range of outcomes."); Edward F. Sherry & David J. Teece, *Some Economic Aspects of Intellectual Property Damages*, 573 PRAC. L. INST./PAT. 399, 408 (1999) ("We have seen many cases when 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."); Zeng, *supra* note 5, at 333-34 ("In essence, *Georgia-Pacific's* hypothetical, individually-negotiated approach complicated reasonable royalty determinations . . . . [The] factors can give experts great power to justify extreme positions . . . . [E]xperts vary widely in their estimations of reasonable royalties, which juries tend to address by splitting the difference. This, in turn, causes experts to become even more extreme in their opinions.") .

191. *See, e.g.*, Micro Chemical, Inc. v. Lextron, Inc., 317 F.3d 1387, 1394 (Fed. Cir. 2003); Fromson v. W. Lito Plate & Supply Co., 853 F.2d 1568, 1575 (Fed. Cir. 1988), *overruled by* Knorr-Bremse Systeme Fuer Nutzfahrzeuge GMBH v. Dana Corp., 383 F.3d 1337 (Fed. Cir. 2004); Polaroid Corp. v. Eastman Kodak Co., No. 76-1634-MA, 1990 U.S. Dist. LEXIS 17968, at *211-12 (D. Mass. Oct. 12, 1990).

192. Intex Plastic Sales Co. v. Hall, No. C-85-2987-JPV, 1991 U.S. Dist. LEXIS 20476, at *9-10 (D. Cal. July 10, 1991).

193. We are drawing here no observation as to whether that range differs from that in other commercial litigation settings.

194. Even without a hypothetical negotiation process, disagreements and uncertainties about the evidence in a case will lead to disagreements between the parties and their experts. The hypothetical negotiation, however, does little to minimize the disagreements, and usually diverts the court's attention from the goal of fair compensation.

195. Many other observers agree, including Durie & Lemley:

> [T]he fifteen-factor test. . . is likely to give little or no practical guidance to a jury. Juries are good at finding facts. . . . [But] [j]uries are unlikely to know—and unlikely to hear evidence that helps them decide—whether and how to weigh the [various *Georgia-Pacific* factors].

IV. ASSET VALUATION APPROACH

Reasonable royalty damages estimation need not be wildly unpredictable in either perception or reality. Unfortunately, the use of a hypothetical negotiation construct to calculate such damages has contributed to a lack of certainty and predictability. We suggest here an approach that is centered on the footprint (and use) of the patent and is guided by the fundamental objective of providing fair compensation in light of unauthorized use, rather than being guided by an overriding need to model a malleable and somewhat unnecessary *hypothetical negotiation process*. We suggest a consideration and assessment of a patent's (1) incremental benefits, (2) licensing comparables, and (3) design-around costs.[196] We do not believe that a hypothetical negotiation should necessarily be at the heart of such an exercise.[197]

Our approach flows from standard valuation considerations (i.e., the Income, Market, and Cost Approaches) typically used in assessing a wide range of assets.[198] And our approach is consistent with, and informed by, the considerations identified in *Georgia-Pacific* and a host of recent Federal Circuit and lower court reasonable royalty decisions.

As a practical matter, our approach does not suggest a specific formula or algorithm for determining reasonable royalty damages, but a set of factors that should be systematically evaluated in such determinations. This approach is

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> The breadth of the available factors also means that it is difficult to exclude evidence or expert testimony espousing virtually any theory of reasonable royalty damages, no matter how outlandish. The multi-factor test makes it difficult for the court to exercise a gate-keeping function .... And because it is exceedingly rare for all fifteen factors to point in the same direction, and *Georgia-Pacific* provides little guidance as to which factors must be accorded the most weight in any given case, the expert's ultimate conclusion, no matter how extreme, can usually be justified.

Durie & Lemley, *supra* note 5, at 631-32.

196. Durie & Lemley have suggested a somewhat similar evaluation of three elements: (1) the patent's marginal contributions over the prior art, (2) the relative significance of other non-patented contributions, and (3) any concrete market evidence that might trump (1) and (2). Durie & Lemley, *supra* note 5, at 629, 635-42; *see also* Landers, *Patent Claim Apportionment*, *supra* note 5 (focusing on the patent's contribution over the prior art). Our approach focuses on the economic—rather than just the technical—advantages of the patent, deems market evidence to be virtually always relevant, and calls for evaluation of the infringer's ability to design around. Seaman has suggested focus on only the last consideration. Seaman, *supra note* 5, at 1667-68. Our approach recognizes inherent limitations in gathering necessary data and the value of robustness.

197. Unless and until courts and/or Congress no longer allow for use of a hypothetical negotiation construct, the authors will continue to use the tool for evaluating reasonable royalty damages, but in a manner that focuses on fair and reasonable compensation for use of the patented invention.

198. *See, e.g.*, Phillip A. Beutel, *Economic Approaches to Intellectual Property: Policy, Litigation, and Management* 95 (2005); Shannon P. Pratt, Robert F. Reilly & Robert P. Schweihs, *Valuing a Business: The Analysis and Appraisal of Closely Held Companies* 149-258 (McGraw-Hill 2000); Robert F. Reilly and Robert P. Schweihs, *Valuing Intangible Assets* 95-202 (McGraw-Hill 1999); Gordon V. Smith & Russell L. Parr, *Valuation of Intellectual Property and Intangible Assets* 151-73 (John Wiley & Sons 2000).

consistent with the original purpose of the reasonable royalty damages measure, including the opinion of the court in *Georgia-Pacific 1970*:

> [A] multiplicity of inter-penetrating factors bear[s] upon the amount of a reasonable royalty. But there is no formula by which these factors can be rated precisely in the order of their relative importance or by which their economic significance can be automatically transduced into their pecuniary equivalent. In discharging its responsibility as fact finder, the Court has attempted to exercise a discriminating judgment reflecting its ultimate appraisal of all pertinent factors in the context of the credible evidence.[199]

A. *Overview of Approach*

In framing a reasonable royalty analysis, the primary consideration should be the obligation to provide the patent holder with fair and adequate compensation in light of a particular unauthorized use of a patented invention. At the same time, the framework should address two challenges: (1) the circumstances in which reasonable royalty damages must be calculated are likely to involve uncertainty due to the inherent difficulties involved with any asset valuation and (2) reasonable royalty damages must not be speculative.

In order to meet these dual challenges, we propose elimination of the hypothetical negotiation as the primary (and often, only) analytic framework for reasonable royalty determination.[200] That eliminates the necessity to determine (or argue about) process parameters, such as what would have been acceptable to each party, the timing of a hypothetical negotiation, what was known or knowable at the point of negotiation, and the bargaining prowess of each party.[201] In fact, deemphasizing the hypothetical negotiation is consistent with recent Federal Circuit cases. The court wrote in *Whitserve* that "[w]e do not require that witnesses use any or all of the *Georgia-Pacific* factors,"[202]

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199. *Georgia-Pacific 1970*, 318 F. Supp. 1116, 1120-21 (S.D.N.Y. 1970).

200. According to Opderbeck, our proposal appears to be consistent with the continued evolution of patent damages law:

> Remedies can reflect either a "property rule" or a "liability rule." Under a property rule, a person "who wishes to remove the entitlement from its holder must buy it from him in a voluntary transaction in which the value of the entitlement is agreed upon by the seller." Under a liability rule, a person "may destroy the initial entitlement if he is willing to pay an objectively determined value for it." . . .
>
> Taking together the various opinions in the Federal Circuit[] . . . , the Supreme Court's recent patent law jurisprudence, and the damages reform proposals before Congress, it seems that patent law in the United States over the past few years has begun progressing fitfully from a property rule to a liability rule.

David W. Opderbeck, *Patent Damages Reform and the Shape of Patent Law*, 89 B.U. L. REV. 127, 160-62 (2009) (citing Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089 (1972) and Louis Kaplow & Steven Shavell, *Property Rules Versus Liability Rules: An Economic Analysis*, 109 HARV. L. REV. 713 (1996)).

201. Undoubtedly, disagreements will still exist. But hopefully those will be limited to substantive issues, not process ones, and will not take center stage.

202. Whitserve, LLC v. Computer Packages, Inc., 694 F.3d 10, 31 (Fed. Cir. 2012).

presumably including Factor 15. And, in *Energy Transport*, it concluded that "this court does not endorse *Georgia-Pacific* as setting forth a test for royalty calculations, but only as a list of admissible factors informing a reliable economic analysis."[203]

Instead of relying primarily on a hypothetical negotiation, our approach to the determination of reasonable royalty damages calls for the systematic consideration of *all available evidence* from three different perspectives. The first perspective considers the incremental benefits generated by the infringement relative to the benefits that would be available if the infringer had used the noninfringing, next best alternative. This perspective is referred to as an Incremental Benefits analysis. The second perspective considers the amounts that have been paid in licenses that are similar to the hypothetical license for the use of technologies that are similar to the patented technology and for uses that are similar to the infringing use made of the patented technology by the infringer. This perspective is referred to as a Licensing Comparables analysis. The third perspective considers the costs the infringer would have incurred if it had sought to develop and implement a new noninfringing alternative in lieu of practicing the infringed patented technology after the infringer learned the patent in question was valid, enforceable, and infringed.

Individually, each of these perspectives provides insights into the magnitude and nature of the benefits associated with and generated by the infringement of the patented technology. When considered together, these perspectives can provide particularly useful guidance for the ultimate issue in a reasonable royalty determination—namely, the amount of compensation that is needed to adequately compensate the patent holder for an infringement. Moreover, the consideration of all available relevant evidence from multiple and complementary perspectives should lead to reliable and robust findings. The application of such an approach, with the explicit goal of providing adequate compensation in light of the infringement, should satisfy the Federal Circuit's call for increased economic rigor in reasonable royalty damages determinations.

In the ultimate determination of a proposed reasonable royalty damages award, we support a continued consideration of a *hypothetical license* heuristic as a means to evaluate the reasonableness of a proposed damages award. This heuristic can be a useful reminder that compensatory damages should be fair to both parties in light of the infringer's unauthorized use of the patented invention—i.e., ensuring that the patent holder is fully compensated for the contribution of the patented invention and that the infringer is not forced to pay damages for value generated by the accused products that is not attributable to the patented invention.

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203. Energy Transp. Group, Inc. v. William Demant Holdings A/S, 697 F.3d 1342, 1357 (Fed. Cir. 2012).

B. *Incremental Benefits*

An Incremental Benefits analysis examines the gains enjoyed by the infringer attributable to use of the patent. Specifically, it calls for an evaluation of the benefits of practicing the patent versus the benefits of practicing the noninfringing, next best alternative. The legal and economic communities have long acknowledged the value of such an examination.[204] In fact, for some, an Incremental Benefits analysis is the only way to properly value/price a patent.[205]

Incremental patent benefits can take several forms. The patent may have allowed the infringer to charge higher *prices* than it otherwise would have. It may have allowed the infringer to generate increased *volumes*. And it may have allowed the infringer to incur lower *costs* of manufacture or sale. In short, an Incremental Benefits analysis focuses on the added profits that the infringement allowed.[206]

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204. *See, e.g.*, THE EVOLVING IP MARKETPLACE, *supra* note 4, at 185-87; RICHARD B. TROXEL & WILLIAM O. KERR, ASSETS AND FINANCES: CALCULATING INTELLECTUAL PROPERTY DAMAGES § 5:21 (West 2011); Bailey, Leonard & Lopez, *supra* note 101, at 259; Elizabeth M. Bailey, Alan Cox & Gregory K. Leonard, *Three Cases Reshaping Patent Licensing Practice*, MANAGING INTELL. PROP., March 2010, at 2, 3; Jeffrey Cohen, Divya Mathur & David Giardina, *Some Economics of Royalty Building*, LANDSLIDE, May-June 2012, at 18, 19; Cotter, *supra* note 5, at 133-34; Durie & Lemley, *supra note* 5, at 638; Epstein & Marcus, *supra* note 190, at 557-58; Roy J. Epstein & Paul Malherbe, *Reasonable Royalty Patent Infringement Damages After* Uniloc, 39 AIPLA Q.J. 3, 28-29 (2011); Lemley, *supra* note 129, at 670; Lemley & Shapiro, *supra* note 5, at 2000, 2039; Christine Meyer & Bryan Ray, *A Critique of Noneconomic Methods of Reasonable Royalty Calculation*, *in* ECONOMIC APPROACHES TO INTELLECTUAL PROPERTY POLICY, LITIGATION, AND MANAGEMENT 83 (Gregory K. Leonard & Lauren J. Stiroh, eds., 2005); Michel, *supra* note 145, at 901 ; Schlicher, *supra* note 5, at 23, 39; Sarah Butler and Mario A. Lopez, *Meeting the New Standard for Reasonable Royalties*, LAW360 (Feb. 3, 2011, 3:39 PM ET), http://www.law360.com/articles/222805/meeting-the-new-standard-for-reasonable-royalties; J. Gregory Sidak, Apple v. Motorola*: Implications For Patent Damages*, LAW360 (June 29, 2012, 1:17 PM ET), http://www.law360.com/articles/355556/apple-v-motorola-implications-for-patent-damages.

205. *See, e.g.*, Seaman, *supra* note 5, at 1711, 1718; Lemley & Shapiro, *supra* note 5, at 2039; Lemley, *supra* note 128, at 670.

206. Our approach does not base a royalty on the infringer's total profits, but on its incremental profits. In *Georgia-Pacific 1965*, the Southern District of New York considered the relevance of the infringer's profits in light of then-recent Supreme Court language that "under the present statute only damages [but not profits] are recoverable." 243 F. Supp. 500, 541-44 (S.D.N.Y. 1965). It ultimately concluded that infringer's profits could, in appropriate circumstances, provide useful guidance for the determination of reasonable royalty damages:

> Although the infringer's profits were no longer to be a distinct item of recovery, Congress apparently did not intend to relegate them to the limbo occupied by irrelevant and useless data. The House Report states that "the bill would not preclude the recovery of profits as an element of general damages[,]" . . . [which] simply means that proof of the infringer's profits may . . . be probative of the patentee's damages or a reasonable royalty. The admissibility of the evidence of the infringer's profits would be governed by ordinary standards of relevancy in the context of the particular case.

Id. at 526-28; *see also* Lee, *supra* note 35, at 10-13 (noting that the legislative changes replacing disgorgement of infringer profits with general damages were motivated by

The noninfringing, next best alternative, which is the baseline against which to measure incremental benefits, can take several forms.[207] It may involve licensing-in of alternative technology. It may entail practicing a different product or process. Or it may encompass exiting the business altogether.

An Incremental Benefits analysis is described in *Georgia-Pacific* Factor 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."[208] And it is consistent with the Analytical Approach that was adopted *TWM v. Dura*.[209] There, the Federal Circuit held that a reasonable royalty can be determined by assessing the difference between the expected returns for a product incorporating a patent and a patent holder's normal returns.[210]

1. *Isolating Incremental Benefits*

When the infringer sells a product that is *identical* to the infringing product *except for the inclusion of the patented technology*, the identification and quantification of incremental benefits is straightforward. That is, the difference in financial performance between the two products provides a direct measure of the amount of compensation that may be due to the patentee (i.e., the value of the "use [of the patent] made of the invention by the infringer."[211] A payment equivalent to that difference arguably allows a patent holder to be fully compensated for its contribution (i.e., the patented invention) to the infringing product, yet still allows the infringer a normal return associated with its own contributions.[212]

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procedural, rather than substantive, concerns). The *Georgia-Pacific 1965* court wrote that "[t]he size of an infringer's profits is often an influential factor in the determination of the amount of a reasonable royalty." 243 F. Supp. at 529. And because those profits are one of many components to consider in a royalty determination, they "need not be assessed with the same degree of exactitude that would be necessary if they were to function as the sole measure . . . of the patent owner's monetary recovery," as they had in the past. *Id.* at 530.

207. *See, e.g.*, Epstein & Marcus, *supra* note 190, at 558.

208. *Georgia-Pacific 1970*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970). In *Georgia-Pacific 1971*, the court determined the baseline to be the "reasonable" profit rate on noninfringing products. 446 F.2d 295, 299-300 (2d Cir. 1971).

209. TWM Mfg. Co. v. Dura Corp., 789 F.2d 895, 899 (Fed. Cir. 1986).

210. *Id.* (holding the baseline to be standard industry returns). In *Caluori v. One World Technologies, Inc.*, CV-07-2035-CVS , 2012 U.S. Dist. LEXIS 25508, at *5-6 (C.D. Cal. Feb. 27, 2012), the purported baseline was the return associated with a "non-infringing alternative." *See also* Wordtech Sys., Inc. v. Integrated Network Solutions, Inc., 609 F.3d 1308, 1321 (Fed. Cir. 2010).

211. *But see* Durie & Lemley, *supra* note 5, at 639.

212. Some commentators have suggested that this difference represents the *maximum* amount of payment. THE EVOLVING IP MARKETPLACE, *supra* note 4, at 189 ("Courts should recognize that when it can be determined, the incremental value of the patented invention

In most cases, however, it is extremely difficult to completely isolate and/or precisely quantify the incremental benefits of an infringed patent. Part of that is because such benefits, standing alone, are inherently difficult to measure.[213] And the difficulties are compounded in complex and dynamic product and process environments where the benefits provided by a patent are often intertwined with scores, even hundreds, of other value drivers.[214] In spite of the difficulties, a royalty payment needs to reflect the benefits *attributable* to the infringement and should not include compensation for the use of non-patented contributors of value. The exercise of attributing value has come to be known as "apportionment."[215]

Considerations in apportionment often include disentangling joint effects,[216] providing an adequate return for the infringer's own contributions (i.e., other intellectual property, technical know-how, business acumen, and marketing and sales infrastructure),[217] and recognizing the obligations associated with inputs provided by other intellectual property owners (i.e., royalty stacking/Cournot complements).[218] In the context of a reasonable

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over the next-best alternative establishes the maximum amount that a willing licensee would pay in a hypothetical negotiation. Courts should not award reasonable royalty damages higher than this amount."); *see also* SCHLICHER, *supra* note 10, § 1:96; Cotter, *supra* note 5, at 742; Durie & Lemley, *supra* note 5, at 639; Epstein & Malherbe, *supra* note 204, at 27-28; Michel, *supra* note 150, at 903; Seaman, *supra* note 5, at 1667. In fact, if properly computed, it may represent *the* appropriate payment. In an ex post damages setting, it is not clear that the patent holder should forfeit (and the infringer should retain) any of the benefits that are attributable only to the patent. *See, e.g.*, Bailey, Leonard, & Lopez, *supra* note 101, at 256-57.

213. Cotter, *supra* note 5, at 742.

214. *See, e.g.*, Cotter, *supra* note 5, at 744-46; Devlin, *supra* note 6, at 544 (noting an anti-commons effect, whereby many separate property rights must be aggregated in order to allow for the commercialization of a single product); Damien Geradin & Anne Layne-Farrar, *Patent Value Apportionment Rules for Complex, Multi-Patent Products*, 27 SANTA CLARA COMPUTER & HIGH TECH L.J. 763, 768 (2011); Lemley & Shapiro, *supra* note 5, at 1992.

215. *See, e.g.*, Geradin & Layne-Farrar, *supra* note 214, at 768; Landers, *Patent Claim Apportionment*, *supra* note 5, at 476, 512; Love, *supra* note 5, at 268; Seaman, *supra* note 5, at 1697-98. Bensen and White have argued that "apportionment should be the *threshold* question in every reasonable royalty analysis." Bensen & White, *supra* note 5, at 1, 32. Though increasingly important of late, apportionment is deeply rooted in case law. In 1884, the U.S. Supreme Court wrote that "[t]he patentee . . . must in every case give evidence tending to separate or apportion the defendants profits and the patentee's damages between the patented feature[s] and the unpatented features." *Garretson v. Clark*, 111 U.S. 120, 121 (1884); *see also Westinghouse Elec. & Mfg. Co. v. Wagner Elec. & Mfg. Co.*, 225 U.S. 604, 615 (1912); Dowagiac Mfg. Co. v. Minn. Moline Plow Co., 235 U.S. 641, 646 (1915).

216. *See* Bailey, Leonard, & Lopez, *supra* note 101, at 260-62; Cohen, Mathur, & Giardina, *supra* note 204, at 20; Geradin & Layne-Farrar, *supra* note 214, at 773-76; Richard S. Higgins & Donald L. Martin, The Economics of the Entire Market Value Rule: As Applied to Complex Products 23-24 (Nov. 17, 2011) (manuscript), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1961276; Landers, *Let the Games Begin*, *supra* note 5, at 369; Seaman, *supra* note 5, at 1698.

217. *See* Love, *supra* note 5, at 278; Lemley, *supra* note 128, at 663.

218. *See* Cotter, *supra* note 5, at 744; Devlin, *supra* note 6, at 549, 552-53; Geradin & Layne-Farrar, *supra* note 214, at 765-66; Lemley & Shapiro, *supra* note 5, at 1993, 2013-17;

royalty damages determination, disentanglement of the effects of various contributors of value to the infringing product can be challenging. The degree to which the contributions of the patent at issue can be accurately and objectively isolated will determine the extent to which this approach provides useful guidance for the determination of reasonable royalty damages.

2. Georgia-Pacific *Guidance*

Although the decision in *Georgia-Pacific 1970* was not specifically framed in terms of an Incremental Benefits analysis, the building blocks of such an analysis are embedded in several of the factors besides *Georgia-Pacific* Factor 13.

One set of factors identifies the benefits *associated with* infringement. *Georgia-Pacific* Factor 8 calls for a consideration of the historical success and profitability of the accused product. *Georgia-Pacific* Factor 11 calls for an assessment of the relative significance to the infringer of the infringement. *Georgia-Pacific* Factor 6 invites consideration of profits associated with sales of non-patented products that might have been derived from the infringement. Taken together, these considerations may establish an upper bound on the amount of reasonable royalty damages that might be awarded to the patent holder, as these considerations seek to quantify *all of the benefits* to the alleged infringer that are *associated with* the alleged infringement.

A second set of factors guides the isolation of benefits that are *attributable to* the patent. *Georgia-Pacific* Factor 9 invites a comparison of the benefits associated with the patent to the benefits provided by earlier products or processes that do not incorporate the patent. *Georgia-Pacific* Factor 10 calls for consideration of the specific contribution of the patented invention to the accused product, as distinct from other features or characteristics of the accused product that provide value to the accused product. These factors seek to determine the portion of overall benefits that are associated with the patented invention are also attributable to the inventions.

3. *Recent Case Law Guidance*

Over the past several years, the Federal Circuit and a host of district courts have issued decisions in reasonable royalty cases that rely, in large part, on underlying Incremental Benefits analyses. One lesson that has emerged is that a reasonable royalty payment, whether expressed as a running royalty (i.e., a royalty rate times a royalty base)[219] or as a lump-sum payment, should be tied,

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Love, *supra* note 5, at 280; Opderbeck, *supra* note 200, at 143-44; Seaman, *supra* note 5, at 1689-97.

219. Although these components are often discussed as two distinct elements of analysis, they are highly interdependent. A royalty rate is appropriate in reference to the royalty base to which it will be applied. *See* Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d

as closely as possible, to the specific advantages of the infringed patent. In *ResQNet v. Lansa*, the Federal Circuit directed that "the trial court must carefully tie proof of damages to the claimed invention's *footprint in the marketplace* . . . . [E]vidence unrelated to the claimed invention does not support compensation for infringement but punishes beyond the reach of the statute."[220] And the footprint of the patent needs to be assessed from an economic perspective.[221] That is, the patented invention must be shown to have incremental benefits from the perspective of the marketplace.[222] In *LaserDynamics*, the Federal Circuit affirmed exclusion of the patent holder's expert, in part, because he "never conducted any market studies or consumer surveys to ascertain whether demand for a laptop . . . is driven by the patented technology."[223]

Recent case law also has emphasized that royalty determinations should not be based on rules of thumb or other extrinsic evidence. In *Uniloc*, for instance, the Federal Circuit addressed use of the 25 Percent Rule, which provides that, as one input to a more complete analysis, a reasonable royalty payment may be initially pegged at 25% of the infringer's product profits.[224] The court was unsatisfied by the rule's rigor and wrote "that the 25 percent rule of thumb is a fundamentally flawed tool for determining a baseline royalty rate in a hypothetical negotiation."[225] It wrote that the Rule should not be relied upon in litigation when it is not shown to be supported by the facts of the particular case at hand.[226]

The Nash Bargaining Solution (NBS), though recently emerging, is another tool that has encountered resistance. As commonly applied, the NBS provides that excess profits are to be split 50/50 between the patent holder and infringer if their bargaining power is deemed equal.[227] Though not yet addressed by the

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1301, 1338-39 (Fed. Cir. 2009).

220. 594 F.3d 860, 869 (Fed. Cir. 2010) (emphasis added); *see also* Uniloc USA, Inc. v. Microsoft Corp., 632 F.3d 1292, 1318-1319 (Fed. Cir. 2011); *Lucent*, 580 F.3d at 1336-37; *Oracle I*, 798 F. Supp. 2d 1111, 1115 (N.D. Cal. 2011).

221. *See, e.g.*, IP Innovation LLC v. Red Hat Inc., 705 F. Supp. 2d 687, 690 (E.D. Tex. 2010).

222. James Farrand, Seth Weisberg, Rickard Killworth & Victoria Shapiro, *"Reform" Arrives in Patent Enforcement: The Big Picture*, 51 IDEA 357, 391 (2011).

223. 694 F.3d 51, 69 (Fed. Cir. 2012).

224. *See* Robert Goldscheider, John Jarosz & Carla Mulhern, *Use of the 25 Percent Rule in Valuing IP*, 37 LES NOUVELLES 123 (2003).

225. *Uniloc*, 632 F.3d at 1315.

226. *Id.* at 1317. *But see* Energy Transp. Group, Inc. v. William Demant Holdings A/S, 697 F.3d 1342, 1356-57 (Fed. Cir. 2012) (finding the expert's use of 25 Percent Rule did not merit a new trial because the expert relied more prominently on considerations other than the Rule).

227. Jarosz & Chapman, *supra* note 102, at 254-56 ; *see also* Order Granting Motion to Exclude Testimony, Suffolk Technologies LLC v. AOL, Inc., No. 1:12cv625, at 4-5 (E.D. Va. Apr. 12, 2013), *available at* http://www.iplawalert.com/uploads/file/Suffolk%20Order.pdf ("[The expert's] use of the NBS to opine that the hypothetical negotiation of the parties would result in a '50/50 split of

Federal Circuit, the Northern District of California in *Oracle I* found the 50/50 split of profits to be unsatisfactory. It found that, because there was "no anchor for this fifty-percent assumption in the record of actual transactions," it was inappropriate to use.[228]

Courts have been similarly unsatisfied with use of imprecise "haircuts" to a royalty rate that are aimed at adjusting for an overly-inclusive royalty base. According to the Eastern District of Texas in *Mirror Worlds*, "[a]pportionment cannot be achieved by the mere downward adjustment of the royalty rate in a purported effort to reflect the relative value of the accused features . . . . Mirror Worlds cannot simply apply 'haircuts' adjusting the royalty rate to apportion damages."[229]

In short, courts have recognized the value of considering the incremental benefits associated with infringing activity in assessing reasonable royalty damages. They have emphasized, however, that the focus of such an analysis needs to be on the specific benefits of the patent, measured from the perspective of the relevant marketplace. To the extent that such evidence is available, it can provide very useful guidance for the determination of reasonable royalty damages.

C. *Licensing Comparables*

A Licensing Comparables analysis examines existing license agreements and proposed agreements to determine adequate compensation. From this perspective, the amount of compensation that should be paid for an infringement can be discerned from the consideration of the amount of compensation that has been paid in similar circumstances for licenses to similar technologies. In effect, it applies the financial terms of such agreements, to the extent appropriate, to the hypothetical license between the patent holder and infringer.

The use of this approach is suggested in *Georgia-Pacific* Factor 1, which calls for an evaluation of "[t]he royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty;" *Georgia-Pacific* Factor 2, which calls for an evaluation of "[t]he rates paid by the licensee for the use of other patents comparable to the patent in suit;" and *Georgia-Pacific* Factor 12, which calls for an evaluation of "[t]he 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

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the incremental profits attributable to the patent-in-suit' is not adequately tied to the facts of the case.").

228. *Oracle I*, 798 F. Supp. 2d 1111, 1119 (N.D. Cal. 2011); *see also* Order Granting Motion to Exclude Testimony, No. 1:12cv625, at 4-.5

229. Mirror Worlds, LLC v. Apple, Inc., 784 F. Supp. 2d 703, 727 (E.D. Tex. 2011); *see also* LaserDynamics, Inc. v. Quanta Computer, Inc., 694 F.3d 51, 67 (Fed. Cir. 2012); *Uniloc*, 632 F.3d at 1320.

invention or analogous inventions." The wisdom of considering Licensing Comparables has been recognized by many commentators.[230]

1. *Evaluating Comparability*

The basic idea behind a Licensing Comparables analysis is simple and familiar. If someone intends to sell a home and is seeking to determine a fair price, a Comparables analysis suggests that the homeowner (or his/her real estate agent) gather information on other home sales in the neighborhood in the recent past. If four homes have sold for $200,000 in the past year, that information provides a priori evidence that the next home should be priced at roughly $200,000, with some adjustments upward or downward depending on the characteristics of the "comparable" homes relative to the next home on the market.

Under ideal circumstances, a Licensing Comparables analysis is based on a real-world license that is essentially identical to the hypothetical license. Such a real-world license would be naked, nonexclusive, and cover only the infringed patent. It would also have been entered into at around the time the infringement began and would involve a licensee that was situated comparably to the infringer. Assuming such a real-world match existed, the terms of this license (or these licenses) would provide particularly strong evidence of the value of use of the infringed patent.[231]

In most cases, however, there is no perfectly comparable real-world license to serve as the model for the hypothetical license.[232] This should not preclude the use of a Licensing Comparables analysis. Rather, it simply means that relevant differences between the hypothetical license and the imperfectly comparable (comparator) licenses must be considered and accounted for in the analysis of the likely terms of the hypothetical license.[233]

2. Georgia-Pacific *Guidance*

Several of the *Georgia-Pacific* factors identify important aspects of comparability that should be considered in evaluating and applying comparator licenses. *Georgia-Pacific* Factor 3 suggests that a royalty derived from an exclusive license, all else equal, may tend to overestimate the reasonable royalty rate for a hypothetical license. A royalty obtained from an existing

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230. *See, e.g.*, THE EVOLVING IP MARKETPLACE, *supra* note 4, at 200-02; GORDON V. SMITH & RUSSELL L. PARR, INTELLECTUAL PROPERTY: VALUATION, EXPLOITATION, AND INFRINGEMENT DAMAGES 169-84 (John Wiley & Sons 2005); Cauley, *supra* note 47, at 41-42; Cotter, *supra* note 5, at 741-42.

231. If a sufficient number of such licenses had been entered into, this might actually suggest the existence of an Established Royalty.

232. Geradin & Layne-Farrar, *supra* note 214, at 783.

233. *See also* Chapman, *supra* note 21, at 337-40.

license that bore territorial or use restrictions may tend to underestimate the reasonable royalty for the hypothetical license.

Georgia-Pacific Factor 4 suggests that a royalty reflected in an existing license granted by an "unwilling" licensor may overestimate the royalty terms that should be provided in a willing licensor/willing licensee hypothetical license.

Georgia-Pacific Factor 5 suggests that a patent holder would be less inclined to provide a patent license to a direct competitor (and, therefore, would seek a higher royalty) than it would be to license a third party with whom the patent holder did not compete. In the latter case, any licensing revenues from a non-competitor effectively permit the patent holder to generate revenues in new business segments that would not have been available in the absence of infringement – which tends to moderate royalty demands. As noted above, however, any sales for which reasonable royalty damages (as opposed to lost profits damages) are appropriate represent sales that the patent holder *would not have made* in the absence of infringement.

Georgia-Pacific Factor 7 has a somewhat uncertain impact in a Licensing Comparables analysis. It is not clear whether a relatively long patent life or relatively long license term should increase or decrease the expected rate. And courts have not provided clear guidance as to how this factor should affect reasonable royalty damages determinations.

3. *Recent Case Law Guidance*

The value of considering comparable licenses emerged from very early reasonable royalty damages decisions.[234] Of late, the Federal Circuit and a host of district courts have issued quite a number of decisions dealing with the application of such analysis. Those decisions reflect the significance and widespread use of a Licensing Comparables analysis. They also reflect the importance of accounting for the degree of comparability.[235]

a. *Dimensions of Comparability*

Courts have been reluctant to accept analyses based on insufficiently comparable licenses. And comparability has been assessed on three dimensions: (1) the technology to be licensed, (2) the terms of the license, and (3) the circumstances surrounding the establishment of the license.[236]

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234. *See, e.g.*, U.S. Frumentum Co. v. Lauhoff, 216 F. 610, 616-17 (6th Cir. 1914).

235. *See, e.g.*, *LaserDynamics*, 694 F.3d at 60-61; Broadcom Corp. v. Emulex Corp., No. SACV 09-01058-JVS, 2011 U.S. Dist. LEXIS 154416, *11-15 (C.D. Cal. Dec. 13, 2011).

236. *See, e.g.*, *LaserDynamics*, 694 F.3d at 70; IP Innovation LLC v. Red Hat Inc., 705 F. Supp. 2d 687, 690-91 (E.D. Tex. 2010); *Dataquill I*, 2011 U.S. Dist. LEXIS 138565, at *57-59 (S.D. Cal. Dec. 1, 2011).

i. *Technology*

The first dimension of comparability is the similarity of the underlying *technology*. Ideally, the comparator licenses cover the same technology (i.e., patented invention) as that at issue. That is often hard to find.

In *ResQNet*, the Federal Circuit found that the "majority of the licenses on which ResQNet relied" were insufficiently related to the hypothetical negotiation because many of the licenses had "no relationship to the claimed invention."[237] In *IP Innovation*, the Eastern District of Texas, with Federal Circuit Chief Judge Rader sitting by designation, noted that IPI's expert relied upon royalties from a variety of broad "Software industry" and "Computer and Electronic Products Manufacturing industry" licenses.[238] The court found that the expert, however, offered "no evidence that the alleged industry agreements are in any way comparable to the patents-in-suit."[239] And in *Lucent*, the Federal Circuit found that the jury's award could not be supported by license agreements for which the patentee's expert "supplied no explanation . . . about the subject matter or patents covered."[240]

ii. *License Terms*

The second dimension of comparability is the similarity of the *license terms*. Ideally, the comparator license is a nonexclusive, naked patent license (i.e., no additional patents, know-how, or other intellectual property); provides the infringer with a license "to manufacture and sell a particular article embodying the patented invention" in the U.S.; covers a patent that is known to be valid, enforceable, and infringed; and is entered into by the two parties in suit. Such a set of circumstances is rare.

In *Lucent*, the Federal Circuit found that running royalty agreements were not sufficiently similar to a lump-sum damages award to support the jury's verdict.[241] The *ResQNet* court found that the majority of the licenses were "re-

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237. ResQNet.com, Inc. v. Lansa, Inc., 594 F.3d 860, 869-71 (Fed. Cir. 2010); *see also* Wordtech Sys., Inc. v. Integrated Network Solutions, Inc., 609 F.3d 1308, 1320 (Fed. Cir. 2010).

238. *IP Innovation*, 705 F. Supp. 2d at 691.

239. *Id.*

240. Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1328 (Fed. Cir. 2009); *see also* Dataquill Ltd. v. High Tech Computer Corp. (*Dataquill II*), No. 08cv543, 2012 U.S. Dist. LEXIS 53164, at *14-15 (S.D. Cal. Apr. 16, 2012).

241. *Lucent*, 580 F.3d at 1329-30 ("For a jury to use a running-royalty agreement as a basis to award lump-sum damages . . . some basis for comparison must exist in the evidence presented to the jury."); *see also* ePLUS, Inc. v. Lawson Software Inc., 764 F. Supp. 2d 807, 813-14 (E.D. Va. 2011); *Dataquill II*, 2012 U.S. Dist. LEXIS 53164 at *21-23. *But see* Broadcom Corp. v. Emulex Corp., No. SACV 09-01058-JVS, 2011 U.S. Dist. LEXIS 154416, *12-13 (C.D. Cal. Dec. 13, 2011) (finding that lump-sum and running-royalty agreements can be comparable to each other as long as some basis for such comparison exists in the evidence presented to the jury).

branding or re-bundling licenses" that were quite different from a hypothetical bare license transfer.[242] And in *Wordtech v. INS*, the Federal Circuit found flaws similar to those in *Lucent* and *ResQNet*. It found that the lump-sum verdict was not supported—only two of the thirteen licenses were lump sum agreements, and "neither license describes how the parties calculated each lump sum, the licensees' intended products, or how many products each licensee expected to produce."[243] It also found that the licenses offered the jury "little more than a recitation of royalty numbers."[244] And it found that the eleven running royalty licenses "can be relevant to lump-sum damages, but 'some basis for comparison must exist in the evidence presented to the jury.' The remaining licenses reveal no such basis." [245]

iii. *Circumstances*

The third dimension of comparability is the *circumstances* surrounding the establishment of the comparator licenses. Ideally, the comparator license was not entered into under the threat of litigation and reflects an identical relationship of the parties; an identical use to which the patent will be put; the same extent of licensee contributions; and the same likelihood of technology design-around. Such a set of circumstances is rare.

In *Lucent*, the Federal Circuit deemed licenses "created from events far different from a license negotiation to avoid infringement of the one patent here" to be insufficiently comparable.[246] The Federal Circuit reached a similar conclusion in *Wordtech*, declining to find licenses comparable because "they arose from divergent circumstances."[247]

Circumstances need not be identical, however. In fact, in some cases, like

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242. *ResQNet*, 594 F.3d at 870. Judge Newman, however, wrote in her partial concurrence, partial dissent that "my colleagues['] . . . new rule whereby no licenses involving the patented technology can be considered, in determining the value of the infringement, if the patents themselves are not directly licensed or if the licenses include subject matter in addition to that which was infringed . . . is unprecedented, and incorrect." *Id.* at 876-77 (Newman, J., concurring in part and dissenting in part); *see also* Tentative Order Addressing Motion to Exclude Revised Damages Report, *Oracle I*, 2011 U.S. Dist. LEXIS 141399, at *15-21 (N.D. Cal. July 22, 2011); Order Addressing Motion to Exclude Revised Damages Report, *Oracle I*, No. C 10-03561, 2012 U.S. Dist. LEXIS 2500, at *1600 (N.D. Cal. Jan. 9, 2012).

243. Wordtech Sys., Inc. v. Integrated Network Solutions, Inc., 609 F.3d 1308, 1319-20 (Fed. Cir. 2010).

244. *Id.* at 1320.

245. *Id.* at 1320 (citing *Lucent*, 580 F.3d at 1330); *see also* Whitserve, LLC v. Computer Packages, Inc., 694 F.3d 10, 30 (Fed. Cir. 2012).

246. *Lucent*, 580 F.3d at 1327.

247. *Wordtech*, 609 F.3d at 1319; *see also* ePLUS, Inc. v. Lawson Software Inc., 764 F. Supp. 2d 807, 813-14 (E.D. Va. 2011) ("The disparity of circumstances between the settlement agreement lump sum licenses and the hypothetical negotiation for a running royalty and the temporal differences make it difficult to find that the 'fit' component is met.").

ResQNet, settlement licenses are found to be the most useful comparators.[248] In others, like *LaserDynamics*, they are deemed to be the "least reliable . . . by a wide margin."[249] Regardless, comparability needs to be evaluated and discussed before such licenses can be relied upon for guidance in predicting the terms of a hypothetical license.[250]

b. *Degree of Comparability*

It is almost never the case that a real-world license is identical to a hypothetical license.[251] And the differences have led several courts to exclude evidence of "non-comparable" licenses altogether.

Importantly, in virtually all of the decisions in which consideration of certain licenses was not allowed, better evidence was deemed available and properly relied upon. The decisions do suggest that an evaluation of comparability should be conducted in each case[252] and that reliance cannot be placed on license agreements that are "radically different from the hypothetical agreement under consideration."[253] Recently, the Federal Circuit held, in *ActiveVideo*, that the "degree of comparability . . . [is a] factual issue[] best addressed by cross examination and not by exclusion."[254] Comparability is, in fact, a matter of degree. And various courts have provided that an adequate level of comparability must be shown, not presumed.

D. *Design-Around Costs*

The third perspective that should be used to determine reasonable royalty damages, if possible, is a Design-Around Cost analysis. It examines the costs that the infringer would have incurred to generate the benefits of the patent, as closely as possible, without practicing the patent. In essence, it evaluates the cost of avoiding infringement by adopting the noninfringing, next best

248. *See* ResQNet.com, Inc. v. Lansa, Inc., 594 F.3d 860, 872 (Fed. Cir. 2010); *see also* Chapman, *supra* note 21, at 313.

249. LaserDynamics, Inc. v. Quanta Computer, Inc., 694 F.3d 51, 77-78 (Fed. Cir. 2012).

250. *See, e.g., id.*

251. If there were, an Established Royalty likely would be found to exist. For purposes of estimating a reasonable royalty, Lemley and Shapiro have argued that reliance on private license deals is problematic. They argue that there is circularity because real-world licenses often are a function of what a patent holder could expect to receive in court and that rates in publicly available deals tend to be biased upward. Lemley & Shapiro, *supra* note 5, at 2021-23.

252. Whitserve, LLC v. Computer Packages, Inc., 694 F.3d 10, 29-30 (Fed. Cir. 2012).

253. Uniloc USA, Inc. v. Microsoft Corp., 632 F.3d 1292, 1316 (Fed. Cir. 2011); *see also* Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1327 (Fed. Cir. 2009) (license agreements cannot be "radically different from the hypothetical [license]").

254. ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc., 694 F.3d 1312, 1333 (Fed. Cir. 2012).

alternative. The approach has become increasingly important because of the heightened pace of, and ability to pursue, product and process enhancements and extensions.

Given the emphasis on the adoption of the noninfringing, next best alternative, there is a high degree of similarity between an Incremental Benefit analysis and a Design-Around Cost analysis. The key difference is the degree of availability of the noninfringing, next best alternative. In some cases, infringers have already-commercialized options available to them.[255] These options may include a prior generation product or process or an existing variant of, or reasonable alternative to, the infringing product or process.[256] In those instances, the Incremental Benefit analysis described above can and should be used to determine a reasonable royalty. In other cases, the relevant "next best alternative" is a technology that was not yet "on the market" at the time of infringement – i.e., it is a technology that must be developed after infringement has begun. In those cases, a Design-Around Cost analysis suggests a comparative evaluation of the benefits of infringement versus the benefits of a to-be-developed alternative, where the difference in benefits represents the costs of noninfringement.

As discussed below, the Federal Circuit has provided limited direction on the extent to which a noninfringing alternative that is not yet "on the market" is appropriate for consideration in a reasonable royalty context.[257] As a matter of economics, what an infringer *could have done* instead of continuing infringement through the damages period can be a useful inquiry for assessing the amount that an infringer should pay for the use of an infringed patent.[258] A

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255. *See generally* Grain Processing Corp. v. American Maize-Products Co., 185 F.3d 1341 (Fed. Cir. 1999).

256. *See* Hausman, Leonard & Sidak, *supra* note 89, at 835.

257. *See, e.g.*, Order Denying Motion to Exclude Testimony, LaserDynamics, Inc. v. Quanta Computer, Inc., No. 2:06-CV-348, 2011 U.S. Dist. LEXIS 5422, at *8 (E.D. Tex. Jan. 20, 2011); *see also* Seaman, *supra* note 5, at 1714 (noting that several recent Federal Circuit opinions suggest that the design-around cost approach is likely to be extended to reasonable royalty cases).

258. John D. Culbertson & Roy Weinstein, *Product Substitutes and the Calculation of Patent Damages*, 70 J. PAT. & TRADEMARK OFF. SOC'Y 749, 756 (1988) ("In determining the appropriate royalty rate it is also necessary to consider the cost of designing around the patent, since no competitor is likely to negotiate a royalty rate that produces payments substantially greater than the design-around cost."); *see also* Ned L. Conley, *An Economic Approach to Patent Damages*, 15 AIPLA Q.J. 354, 384 (1987); Leonard & Stiroh, *supra* note 13, at 56. Hausman, Leonard, and Sidak have argued that an increased willingness to allow defendants to point to design-around costs as a possible cap on a royalty payment will grant defendants, in essence, a "free option" to infringe. That is, infringers will choose to infringe if they know that the most they will have to pay is tied to fairly modest design-around costs. Hausman, Leonard & Sidak, *supra* note 89, at 826-27. The authors seem to not have appreciated fully, however, that properly calculated design-around costs need not be modest and that the law has many other tools to address strategic infringement. *See, e.g.*, Fromson v. W. Litho Plate & Supply Co., 853 F.2d 1568, 1576 (Fed. Cir. 1988), *overruled by* Knorr-Bremse Systeme Fuer Nutzfahrzeuge GMBH v. Dana Corp., 383 F.3d 1337 (Fed. Cir. 2004); *see also* Seaman, *supra* note 5, at 1724-26.

variety of commentators have suggested that design-around options are just as important in reasonable royalty cases as they are in lost profits cases, where they have been fully accepted, if adequately proven.[259] In fact, such considerations are often at the heart of the pricing of real-world licenses.[260]

1. *Quantifying Design-Around Costs*

A central challenge in implementing a Design-Around Cost analysis is to identify all of the relevant costs. That means including both *accounting* and *economic* costs.[261] The former include avoided research, development, and product launch expenditures necessary to develop and commercialize the noninfringing, next best alternative. Depending on the facts of the case, they may also encompass expected costs of unsuccessful efforts because there is no guarantee that the first potential design-around will represent a commercially viable alternative to the infringed patent.

Economic costs include those associated with the marketplace frictions that may arise in transitioning to the noninfringing, next best alternative.[262] To the extent that the transition to a noninfringing alternative involves some delay, the accused infringer may, for example, be unable to sell its product during the period in which the noninfringing alternative is developed, or it may suffer impairment of existing customer relationships or consumer goodwill. Further, to the extent that the noninfringing and infringing products are imperfect substitutes, the accused infringer may experience lower sales volumes or prices for its noninfringing products, and others.[263] These costs should, to the extent

259. MARTIN J. ADELMAN, PATENT PERSPECTIVES § 5.2 (2d ed. 1998); ROBERT P. MERGES, PATENT LAW 1080 (2d ed. 1997); JOHN W. SCHLICHER, PATENT LAW: LEGAL AND ECONOMIC PRINCIPLES § 9.05 (1997); D. Joan L. Eads, *Does* Grain Processing *Apply in a Reasonable Royalty Damage Analysis?*, 10:26 ANDREWS INTELL. PROP. LITIG. REP. 13 (2004); Christopher Holly, *The Book of Wisdom: How to Bring a Metaphorical Flourish into the Realm of Economic Reality by Adopting a Market Reconstruction Requirement in the Calculation of a Reasonable Royalty*, 92 J. PAT. & TRADEMARK OFF. SOC'Y 156, 187 (2010); Lemley & Shapiro, *supra* note 5, at 2039-40; Liane M. Peterson, Grain Processing *and* Crystal Semiconductor*: Use of Economic Methods in Damage Calculations Will Accurately Compensate for Patent Infringement*, 13 Fed. Cir. B.J. 41, 64 (2003); Seaman, *supra* note 5, at 1711-15.

260. Stephen A. Degnan and Corwin Horton, *A Survey of Licensed Royalties*, LES NOUVELLES, June 1997, at 91, 94.

261. *See, e.g.*, Apple, Inc. v. Motorola, Inc., No. 1:11-cv-08540, 2012 U.S. Dist. LEXIS 105387, *34 (N.D. Ill. May 22, 2012) (Judge Posner, sitting by designation) (identifying invent-around software development costs and the costs of lost customer goodwill); Seaman, *supra* note 5, at 1667 ("[A] rational accused infringer would pay only the amount that it would cost to obtain (or internally develop) and implement the substitute technology, as well as any lost profits or other costs incurred due to the substitute's adoption."); Sidak, *supra* note 204, at par. 13 ("[A] rigorous methodology identifies noninfringing substitutes based not only on technological differences among alternatives, but also consumer demand for the patented invention and its substitutes.").

262. Seaman, *supra* note 5, at 1718-21.

263. Seaman, *supra* note 5, at 1716 ("A common refrain is that '[a] product lacking the

possible, be considered when analyzing Design-Around Costs.

2. Georgia-Pacific *Guidance*

Although Design-Around Cost issues were not specifically addressed in the *Georgia-Pacific 1970* decision, elements of the approach are reflected in *Georgia-Pacific* Factor 9, which calls for an evaluation of the "utility and advantages of the patent property over the old modes or devices," and in *Georgia-Pacific* Factor 10, which calls for an evaluation of the "nature of the patented invention," the product into which it is incorporated, and "the benefits to those who have used the invention."[264] These factors highlight the importance of considering alternative approaches and of identifying the specific aspects of the allegedly infringed patent that would need to be replicated in a potential design-around.

3. *Recent Case Law Guidance*

The Federal Circuit has written that "patent law encourages competitors to design or invent around existing patents."[265] In the context of lost profits analyses, several Federal Circuit cases, including *Rite-Hite*, have noted the significance of considering the infringer's design-around alternatives, whether or not they have come to commercial fruition.[266] And in *Grain Processing*, the Federal Circuit wrote, with logic that is applicable to reasonable royalty determinations,[267] "[A] fair and accurate reconstruction of the 'but for' market also must take into account, where relevant, alternative actions the infringer foreseeably would have undertaken had he not infringed."[268] Recently, the

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advantages of that patented can hardly be termed a substitute "acceptable" to the customer who wants those advantages." The latter definition of an 'acceptable' substitute is likely too narrow to be useful, because unpatented substitutes often do not have the exact attributes or qualities as validly patented inventions. Rather, '[i]n real markets for actual products, substitution is a matter of degree' because '[s]ome, but not all, customers will substitute a product without the patented technology for one with the technology.' . . . As Judge Easterbrook has explained, '[c]ompetition is not an all-or-none process. There are degrees of substitutability.' Thus, the value of '[p]atented items in an imperfect . . . market will be restrained . . . depending on the degree to which substitutes are functionally equivalent.' . . . '[P]roduct substitution is a matter of degree and occurs across a spectrum.'" (citations omitted)); *see also* Brandeis Univ. v. Keebler Co., No. 1:12-cv-01508, 2013 U.S. Dist. LEXIS 18948, at *10 (N.D. Ill. Jan. 18, 2013) ("But even if there is no perfect substitute, this by itself would not [prevent] the estimation of a reasonable royalty. For that royalty would depend on the cost, in higher production costs and loss of business to competitors, of the best imperfect substitute.").

264. *Georgia-Pacific 1970*, 318 F. Supp. 1116, 1121-22 (S.D.N.Y. 1970).

265. WMS Gaming Inc. v. Int'l Game Tech., 184 F.3d 1339, 1355 (Fed. Cir. 1999).

266. Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538, 1544-49 (Fed. Cir. 1995).

267. Seaman, *supra* note 5, at 1713.

268. Grain Processing Corp. v. American Maize-Products Co., 185 F.3d 1341, 1350-51 (Fed. Cir. 1999); *see* Holly, *supra* note 259, at 185 ("The explicit consideration of

Federal Circuit has recognized the wisdom of encouraging consideration of the infringer's design-around options in reasonable royalty damages determinations.[269]

A variety of lower courts have written that noninfringing alternative technologies should be considered as part of a reasonable royalty analysis.[270]

Consideration of Design-Around Costs increasingly has become an expected and accepted element of reasonable royalty damages analyses. For example, in May 2012, Judge Posner, sitting by designation in the Northern District of Illinois, excluded both sides' damages experts in *Apple v. Motorola* for a stated "failure to consider" all of the "plausible alternatives" available to both parties when faced with the prospect of paying a multi-million dollar hypothetical license fee.[271] Similarly, in January 2013, Judge Posner, again sitting by designation, wrote in *Brandeis University et al. v. Keebler Co. et al* that: "Keebler would not have paid a royalty higher than the cost to it of switching to a noninfringing substitute for the plaintiffs' margarine in its cookies or otherwise reworking its manufacturing process to avoid making the infringing margarine."[272]

Economics, court dicta, and legal reasoning all suggest that properly calculated costs of adopting a design-around can and should be considered in determining the amount of reasonable royalty damages that a patent holder should receive as compensation for an infringement.

E. *Integrating the Analysis*

The Incremental Benefits approach, the Licensing Comparables approach, and the Design-Around Cost approach can provide useful insights into the amount of damages needed to adequately compensate the patent holder for the infringement. But it is unlikely that all three approaches will suggest the same

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alternative actions available to the infringer is a crucial holding developed by the *Grain Processing* court and which necessarily flows from a market reconstruction framework. The necessity to evaluate actions which may have been taken by the infringer assures that the market reconstruction analysis proffered by the court will not be an exercise in asymmetrical skewing." (citations omitted)); *see also* Zygo Corp. v. Wyko Corp., 79 F.3d 1563, 1571-72 (Fed. Cir. 1996); Riles v. Shell Exploration & Prod. Co., 298 F.3d 1302, 1313 (Fed. Cir. 2002).

269. Micro Chemical, Inc. v. Lextron, Inc., 318 F.3d 1119, 1123 (Fed. Cir. 2003); *see also* Spectralytics, Inc. v. Cordis Corp., 649 F.3d 1336, 1346 (Fed. Cir. 2011).

270. SRI Int'l Inc. v. Internet Sec. Systems, Inc., No. 04-1199-SLR, 2011 U.S. Dist. LEXIS 125550, at *5-7 (D. Del. Oct. 31, 2011); Soverain Software LLC v. Newegg Inc., No. 6:07 CV 511, 2010 U.S. Dist. LEXIS 89268, at *54-55 (E.D. Tex. Aug. 11, 2010); *In re* AI Realty Marketing of N.Y., Inc., 293 B.R. 586, 616-17 (Bankr. S.D.N.Y. 2003); *Oracle I*, 798 F. Supp. 2d at 1121. *But see* Rosco, Inc. v. Mirror Lite Co., 626 F. Supp. 2d 319, 336 (E.D.N.Y. 2009).

271. Apple, Inc. v. Motorola, Inc., No. 1:11-cv-08540, 2012 U.S. Dist. LEXIS 105387, *34, *35 (N.D. Ill. May 22, 2012).

272. Brandeis Univ. v. Keebler Co., No. 1:12-cv-01508, 2013 U.S. Dist. LEXIS 18948, at *25 (N.D. Ill. Jan. 18, 2013).

result. As a final step in our proposed approach, the expert and/or court should consider and weigh the results of the three analyses to determine the amount of compensation that is fair in any given case.

The specifics of the weighing process will vary from case to case, depending on such things as the amount of evidence available for implementing each methodology, the quality of data available to support each methodology, and the economic circumstances of each case. For example, if it is possible to perfectly and definitively isolate the incremental contribution of the patented invention in a particular case, the results of the Incremental Benefits analysis should be given particular weight in the final determination. Similarly, if the evidence in the record in a particular case includes multiple licenses to the patented invention that closely mirror the conditions of the hypothetical license, than those licenses should be given substantial weight in the final analysis. Furthermore, if the infringer is able to conclusively prove the existence and costs associated with a design-around alternative to infringement, the costs associated with such a design-around should contribute significantly to the damages determination.

CONCLUSION

Reasonable royalty damages were conceived of as a remedy to ensure that patent holders who were able to prove that their invention had been used without authorization were able to receive fair compensation for that use. The remedy became established in a number of judicial decisions and was eventually incorporated into U.S. patent law.

Since reasonable royalty damages were codified, the 1970 district court opinion in *Georgia-Pacific* has become the most important reasonable royalty damages decision. It appears that *Georgia-Pacific 1970* did not intend to create a new approach for the determination of reasonable royalty damages. Rather, the decision was intended to be a continuation of existing jurisprudence concerning reasonable royalty damages—jurisprudence that unambiguously established reasonable royalty damages as a form of *general damages* intended to ensure that a patent holder whose patent was infringed would receive fair compensation.

In *Georgia-Pacific 1970*, the Court identified a variety of factors that should be considered in attempting to discern fair compensation for an injured patent holder and emphasized the importance of considering all relevant evidence in reaching such a determination. However, its most far-reaching impact has been its presumed blessing of the hypothetical negotiation construct, an analytical construct that purports to determine compensation by postulating and evaluating a negotiation between the patent holder and the unauthorized user of the patented invention to determine the amount that should be paid for such use.

Historically, too much reliance has been placed on the hypothetical negotiation construct and the associated presumption that adhering to good process will necessarily lead to a fair and sensible result. Not only are the tenets underlying that presumption questionable, issues and challenges in implementation can distract and detract from the real objective of reasonable royalty damages by elevating concerns about hypothetical negotiation parameters and mechanics above concern for the determination of fair compensation. In short, too much emphasis is placed on *process*, which can be and often is manipulated, versus *results*.

We propose here an alternative framework. That framework is based on standard approaches undertaken to value a wide range of assets. Our approach focuses on the contributions of the patent, licensing comparables, and design-around costs. Each of those should be assessed objectively, without the distractions and distortions introduced by bargaining drama. That is likely to result in a rigorous and robust estimate of reasonable royalty damages representing fair compensation for the patent holder in light of the unauthorized use of a patented invention.

APPENDIX

TABLE 1: REASONABLE ROYALTY RATES IN LITIGATED CASES

Year	Case	Plaintiff Royalty Rate	Defendant Royalty Rate	Ratio	Outcome
1978	Panduit Corp. v. Stahlin Bros.[i]	35%	2.50%	14.0	
1978	Gore v. Carlisle[ii]	15%	5%	3.0	
1983	Deere & Co. v. Int'l Harvester[iii]	20%	1%	20.0	15%
1985	Schering Corp. v. Precision Cosmet[iv]	30%	5%	6.0	
1986	Smith Int'l v. Hughes Tools Co.[v]	54%	1.8%	30.0	10%
1987	Hartness Int'l v. Simplimatic Engineering[vi]	70%	3-5%	14.0 – 23.3	70%
1987	SGK v. Dart Indus.[vii]	5%	1.50%	3.3	2.50%
1988	Wallace Bus. Forms v. Uarco[viii]	34.66%	3-5%	6.9 – 11.6	6%
1989	State Indus. v. Mor-Flo Indus.[ix]	8-10%	2.10%	3.8 – 4.8	3%
1989	Johns-Manville v. Guardian Indus.[x]	35.8%	7%	5.1	10%
1989	Modine Mfg. v. Allen Group[xi]	28%	3.5-4.3%	6.5 – 8.0	15%
1990	Jensen v. Optical Radiation[xii]	4%	3%	1.3	3.50%
1990	Gore v. IMP[xiii]	40%	3.40%	11.8	8%
1990	Ziggity Sys. v. Val Watering Sys.[xiv]	10-25%	.5-2%	5.0 – 50.0	15%
1990	Polaroid v. Eastman Kodak[xv]	72.5%; 63.4%	5%	12.7 – 14.5	10%
1991	SmithKline Diagnostics v. Helena Labs.[xvi]	48%	3%	16.0	25%
1991	Intex Plastic Sales Co. v. Hall[xvii]	8.62%	0.025%-3.75%	2.3 – 344.8	8.62%
1992	Andrew Corp. v. Gabriel Electronics[xviii]	34.36%	2.80%	12.3	10%
1992	American Medical v. Medical Eng'g[xix]	25%	1%	25.0	8%
1992	Tech. for Energy Corp. v. Computational Sys.[xx]	20%	2%	10.0	8%
1993	Adcon v. Flowdata[xxi]	25%	5-8%	3.1 – 5.0	25%
1994	Schneider AG v. Scimed Life Sys.[xxii]	30%	6%	5.0	15%
1995	Grain Processing v. American Maize-Products[xxiii]	28%	1-3%	9.3 – 28.0	3%
1995	Wisconsin v. GE[xxiv]	6.50%	2%	3.3	3.50%
1995	Total Containment v. Environ Prods.[xxv]	25%	10%	2.5	21%
1996	Pentech Int'l v. Hayduchok[xxvi]	24%	3-5%	4.8 – 8.0	24%
1997	P&G v. Paragon Trade Brands[xxvii]	2.50%	0.20%	12.5	2%
1999	Insituform v. Cat Ctr.[xxviii]	20.50%	1%	20.5	15.28%
1999	Promega v. Lifecodes[xxix]	30%	10%	3.0	22%
2000	Nat'l Research Labs v. Eppert Oil[xxx]	75%-99%	5%	15.0 – 19.8	
2000	Bose Corp. v. JBL[xxxi]	9%	4%	2.3	7%
2001	Transclean Corp. v. Bridgewood Servs.[xxxii]	11%	5%	2.2	
2001	Micro Chemical v. Lextron[xxxiii]	4-6%	1%	4.0 – 6.0	1%
2006	Paymaster v. United States[xxxiv]	5-6%	1.50%	3.3 – 4.0	3.50%
2006	Mitutoyo v. Cent. Purchasing[xxxv]	29.20%	5%	5.8	29.20%
2006	Linear Tech. v. Micrel[xxxvi]	14.40%	2.40%	6.0	4%
2007	BASC v. Limited Brands[xxxvii]	21.25%	0.25%	85.0	20%
2007	Novozymes A/S v. Genencor[xxxviii]	25%	8%	3.1	20%
2007	Cohesive Techs. v. Waters Corp.[xxxix]	15%	4-5%	3.0 – 3.8	10%
2007	Putnam v. Henkel Consumer Adhesives[xl]	9%	2%-2.5%	3.6 – 4.5	
2009	Medtronic USA v. Globus[xli]	15%	6.50%	2.3	15%
2009	Boston Sci. Corp. v. J&J[xlii]	6%	0.50%	12.0	5.10%
2010	Presidio Components v. Am. Tech. Ceramics[xliii]	12%	2-4%	3.0 – 6.0	12%
2010	Bard Peripheral Vascular v. Gore[xliv]	35%; 20%	5.25%; 5.25%	3.8 – 6.7	20%; 15%
2011	ResQNet v. Lansa[xlv]	8-10%	1-1.5%	5.3 – 10.0	3%
2011	Saffran v. J&J[xlvi]	7%	0.70%	10.0	5.60%
2011	ETG v. Sonic Innovations[xlvii]	8.40%	.25-.5%	16.8 – 33.6	4.97%
2011	Metso Minerals v. Powerscreen Int'l[xlviii]	10%	0.27%	37.0	10%
2012	Univ. of Pittsburgh v. Varian Med.[xlix]	12%; 1-3%	2%; no evidence	6.0	

[i] *Panduit*, 575 F.2d at 1155, 1159, 1163-64.

[ii] W. L. Gore & Assocs., Inc. v. Carlisle Corp., No. 4160, 1978 U.S. Dist. LEXIS 17698, at *44, 47 (D. Del. May 17, 1978).

[iii] *Deere & Co. v. Int'l Harvester Co.*, 710 F.2d 1551, 1552, 1554-55 (Fed. Cir. 1983).

[iv] *Schering Corp. v. Precision-Cosmet Co.*, 614 F. Supp. 1368, 1377 (D. Del. 1985).
[v] *Smith Int'l, Inc. v. Hughes Tool Co.*, 1986 U.S. Dist. LEXIS 28247, *57, 79, 82 (D. Cal.).
[vi] *Hartness Int'l, Inc. v. Simplimatic Engineering Co.*, 819 F.2d 1100, 1111-12 (Fed. Cir. 1987).
[vii] *Studiengesellschaft Kohle*, 666 F. Supp. at 686.
[viii] *Wallace Bus. Forms, Inc. v. Uarco, Inc.*, 1988 U.S. Dist. LEXIS 11191, *28 (D. Ill.).
[ix] *State Indus.*, 883 F.2d at 1580-81.
[x] *Johns-Manville Corp. v. Guardian Indus. Corp.*, 718 F. Supp. 1310, 1314-15 (D. Mich. 1989).
[xi] *Modine Mfg. Co. v. Allen Group, Inc.*, 1989 U.S. Dist. LEXIS 16413, *30, 35, 44 (D. Cal.).
[xii] *Jensen v. Optical Radiation Corp.*, 1990 U.S. Dist. LEXIS 20959, *70-72 (D. Cal.).
[xiii] *W.L. Gore & Assoc., Inc. v. International Medical Prosthetics Research Assoc., Inc.*, 1990 U.S. Dist. LEXIS 15497, *58, 60 (D. Ariz.).
[xiv] *Ziggity Sys., Inc. v. Val Watering Sys.*, 769 F. Supp. 752, 828-29 (D. Pa. 1990).
[xv] *Polaroid*, 1990 U.S. Dist. LEXIS 17968 at *212-13, 220.
[xvi] *Smithkline Diagnostics, Inc. v. Helena Labs. Corp.*, 926 F.2d 1161, 1163 (Fed. Cir. 1991).
[xvii] *Intex*, 1991 U.S. Dist. LEXIS 20476 at *9-10.
[xviii] *Andrew Corp. v. Gabriel Electronics, Inc.*, 785 F. Supp. 1041, 1053-54 (D. Me. 1992).
[xix] *Am. Med. Sys. v. Medical Eng'g Corp.*, 794 F. Supp. 1370, 1393-95 (D. Wis. 1992).
[xx] *Tech. for Energy Corp. v. Computational Sys.*, 1992 U.S. Dist. LEXIS 22820, *80-83 (D. Tenn.).
[xxi] *Additive Control & Measurement Sys. v. Flowdata, Inc.*, 1993 U.S. Dist. LEXIS 20214, *18-20 (D. Tex.).
[xxii] *Schneider (Eur.) AG v. Scimed Life Sys.*, 852 F. Supp. 813, 849-50 (D. Minn. 1994).
[xxiii] *Grain Processing Corp. v. American Maize-Products Co.*, 893 F. Supp. 1386, 1389, 1393 (D. Ind. 1995).
[xxiv] *Wisconsin Alumni Research Found. v. General Elec. Co.*, 880 F. Supp. 1266, 1275-76 (D. Wis. 1995).
[xxv] *Total Containment*, 921 F. Supp. at 1403-04.
[xxvi] *Pentech Int'l v. Hayduchok*, 931 F. Supp. 1167, 1173, 1176-77 (D.N.Y. 1996).
[xxvii] *Procter & Gamble*, 989 F. Supp. at 607, 614.
[xxviii] *Insituform Techs., Inc. v. Cat Contr., Inc.*, 1999 U.S. Dist. LEXIS 23372, *43, 53, 67 (D. Tex.).
[xxix] *Promega Corp. v. Lifecodes Corp.*, 1999 U.S. Dist. LEXIS 21094, *29, 44 (D. Utah).
[xxx] *National Research Labs. v. Eppert Oil Co.*, 104 F. Supp. 2d 851, 865 (D. Ohio 2000).
[xxxi] *Bose Corp. v. Jbl, Inc.*, 112 F. Supp. 2d 138, 166-67 (D. Mass. 2000).
[xxxii] *Transclean Corp. v. Bridgewood Servs., Inc.*, 2001 U.S. Dist. LEXIS 24383, *58, 71 (D. Minn.).
[xxxiii] *Micro Chemical, Inc. v. Lextron, Inc.*, 161 F. Supp. 2d 1187, 1200-01 (D. Colo. 2001).
[xxxiv] *Paymaster Techs., Inc. v. United States*, 180 Fed. Appx. 942, 948 (Fed. Cir. 2006).
[xxxv] *Mitutoyo Corp. v. Cent. Purchasing, LLC*, 2006 U.S. Dist. LEXIS 9301, *7, 20 (D. Ill.).
[xxxvi] *Linear Tech. Corp. v. Micrel, Inc.*, 2006 U.S. Dist. LEXIS 96860, *172-75 (D. Cal.).
[xxxvii] *Ball Aerosol*, 514 F. Supp. 2d at 1065.
[xxxviii] *Novozymes A/S v. Genencor Int'l, Inc.*, 474 F. Supp. 2d 592, 605, 607 (D. Del. 2007).
[xxxix] *Cohesive Techs., Inc. v. Waters Corp.*, 526 F. Supp. 2d 84, 122-24 (D. Mass. 2007).
[xl] *Putnam v. Henkel Consumer Adhesives, Inc.*, 2007 U.S. Dist. LEXIS 96166, *6, 8 (D. Ga.).
[xli] *Medtronic Sofamor Danek USA*, 637 F. Supp. 2d at 309, 311.
[xlii] *Boston Sci. Corp. v. Johnson & Johnson*, 2009 U.S. Dist. LEXIS 35372, *7, 24 (N.D. Cal.).
[xliii] *Presidio Components, Inc. v. Am. Tech. Ceramics Corp.*, 2010 U.S. Dist. LEXIS 79039, *17, 24 (D. Cal.).

[xliv] *Bard Peripheral Vascular, Inc. v. W.L. Gore & Assocs.*, 2010 U.S. Dist. LEXIS 144259, *7-8, 27 (D. Ariz.).

[xlv] *ResQNet.com, Inc. v. Lansa, Inc.*, 2010 U.S. Dist. LEXIS 144069, *9-10, 13 (S.D.N.Y.).

[xlvi] *Saffran v. Johnson & Johnson*, 2011 U.S. Dist. LEXIS 34858, *36 (D. Tex.).

[xlvii] *Energy Transp. Group, Inc. v. Sonic Innovations, Inc.*, 2011 U.S. Dist. LEXIS 60716, *71-72 (D. Del.).

[xlviii] *Metso Minerals, Inc. v. Powerscreen Int'l Distrib. Ltd.*, 2011 U.S. Dist. LEXIS 141854, *3-4 (D.N.Y.).

[xlix] *Univ. of Pittsburgh v. Varian Med. Sys.*, 2012 U.S. Dist. LEXIS 17162, *17, 19 (D. Pa.).