product.[13] IT products, such as personal computers and cell phones, are covered by thousands of patents. As discussed in Chapters 2 and 3, the notice function is poorly served in these circumstances, making it unfeasible for manufacturers to identify all patents that might read on a product.[14] Proponents of reform explain that patentees often seek damages based on a percentage of the whole product even though the patent's inventive contribution relates to a very small aspect of the product. One proposed solution calls for damages rules that "apportion" the award.[15]

B. Opposition to Damages Reform

Panelists and commentators representing a variety of industries and business models strongly warned against adopting any change in damages law intended to systematically lower awards. They argued that reducing the value of patents or injecting additional uncertainty and complexity into damages calculations would undermine the patent system's incentives to invest in risky research and development in promising industries. Lower patent values would also encourage infringement rather than licensing, they worried, reducing incentives to invent and the opportunity to engage in technology transfer licensing.[16]

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[13]Cotter at 134, 198 (12/5/08) (describing how hold-up can occur in the context of "a patent on a component"); Lemley at 253 (5/5/09) ("Most of the discussion here has been . . . pointing in the direction that the problem with reasonable royalty damages is that they are too high in many-component industry cases for a variety of reasons."); NERA Economic Consulting Comment at 19-23 (3/9/09).

[14]*See* Chapter 2, Section III.A; Chapter 3, Section III.

[15]Doyle at 210 (5/5/09) ("it seems to me that apportionment, just by itself, as a rule standing alone is the only thing that anyone's come up with that has half a chance of focusing the discussion"); Schlicher at 210 (5/5/09) (agreeing with Doyle, explaining that the award should be an "approximation of the value of the invention given its advantages"); Squires at 167-68 (12/5/08) ("where the inventive contribution is one of many components in a complex product or service, . . . then valuation should be correlated to the component"); Software & Information Industry Association Comment at 7 (2/5/09); Coalition for Patent Fairness and Business Software Alliance Comment at 6 (2/5/09). *Cf.* Lemley at 215 (5/5/09) ("courts always already do apportionment in a reasonable-royalty case, they just don't do it very well"); Thomas at 149 (12/5/08) ("Apportionment is part of our law . . . . Many of us believe that it's been unevenly applied . . . .").

[16]Rhodes at 196 (2/11/09) (if you "decrease damages, you do lose part of the deterrent [e]ffect against infringement"); Layne-Farrar at 51 (2/11/09) (observing that we "don't want to . . . encourage under-the-radar infringement"); PhRMA Comment at 14, 18-20 (2/10/09); BIO Comment at 2 (5/15/09); NanoBusiness Alliance Comment (2/5/09) ("Changes which reduce our ability to receive adequate compensation for infringement of those patents will make it difficult to protect our intellectual property, and therefore will discourage investment in our field."); National Venture Capital Association Comment at 2 (2/10/09); Epstein at 169 (5/4/09) ("I think passing significant changes to damages law is the fastest way to shut down the overall licensing and secondary patent marketplace.").

Panelists opposed to changes in damages law dispute the argument that recent awards indicate any problem. They point out that median damage awards (adjusted for inflation) have remained stable since 1995 at approximately $5 million, an amount that is modest compared to litigation costs.[17] They also explain that where a jury's damage award is excessive, courts can and have corrected it.[18] The current legal rules are effective and flexible for addressing the wide variety of fact scenarios that arise in damages calculation, they maintain. In particular, those factors track the considerations that influence real-world licensing negotiations[19] and allow consideration of the value added by a patented component in an infringing product.[20]

C. The Need to Review Damages Law

Aggregated statistics alone cannot answer the question of whether patent damages law appropriately compensates patentees. As one commentator cautioned, relying too much on

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[17]PricewaterhouseCoopers, *supra* note 8, at 2, Chart 2a (reporting that the "median annual damages award has remained fairly stable over the last 13 years," and that "[t]he median was $3.9 million from 1995 through 2000, and $3.8 million from 2001 through 2007" in 2007 dollars). *See also* PricewaterhouseCoopers, *supra* note 5, at 2, Chart 2a (reporting that between 1995 and 2009 annual median awards averaged $5.2 million and ranged from $2.2 million to $10.5 million (in 2009 dollars), but showed "no discernable trend" over that period); Janicke at 10 (2/11/09) (reporting a median jury verdict of $5.3 million for the period January 2005 through January 2009); PhRMA Comment at 17 (2/10/09); Innovation Alliance Comment at 10 (2/6/09).

[18]Innovation Alliance Comment at 10 (2/6/09); Innovation Alliance, *Moving Beyond the Rhetoric, Jury Damage Verdicts in Patent Infringement Cases 2005-2007* (2008), *available at* http://www.innovationalliance.net/files/JURY%20DAMAGE%20VERDICTS%20IN%20PATENT%20INFRINGEMENT%20CASES%5B1%5D.pdf (reporting that from 2005 to 2007, there were 47 patent cases where the jury found damages of $2 million or more, and in 12 cases, the damage verdict was set aside or the trial judge found the damages were not supported by the evidence); PhRMA Comment at 13, 17 (2/10/09); Chief Judge Paul R. Michel of the Court of Appeals for the Federal Circuit argued that judicial review of excessive jury awards shows that the system is working, not that it is broken. C.J. Michel at 116-17 (12/05/08); *but see* Daralyn J. Durie & Mark A. Lemley, *A Structured Approach to Calculating Reasonable Royalties*, 14 LEWIS & CLARK L. REV. 627, 634 (2010) (surveying 267 cases in which damages were awarded, and finding only three in which the district court granted JMOL on the issue of damages).

[19]Rhodes at 237-38 (2/11/09) (the *Georgia-Pacific* factors "mirror a lot of the considerations that take place in actual licensing negotiations" and "are trying to replicate what type of dynamic" would exist in the hypothetical negotiation); Johnson at 243-44 (2/11/09) (pharmaceutical company representative explaining that when his company "sit[s] down to negotiate [licences], we use methodologies that are very much like the *Georgia-Pacific* factors").

[20]Johnson at 268 (2/11/09) (pharmaceutical company representative suggesting that the award should be based on "compar[ing the invention] with its closest non-infringing alternat[ive]"); PhRMA Comment at 20 (2/10/09) (when the patented invention is a small component of a product, "a reasonable royalty would be determined by assessing the value to the infringer of using the patented invention over the closest non-infringing substitute").

medians "tell[s] you very little about the awards that matter most, those for the very few, very valuable inventions."[21] Moreover, it is an impossible and unproductive task to attempt to determine whether a sampling of awards is incorrect in the sense that they made a patent holder better or worse off in court than it would have been in the marketplace.[22]

That said, a review of the available statistics on reasonable royalty awards, combined with the recent controversy in the patent community, suggests that a study of the relationship between the legal rules governing damages and the economic principles that should guide damages calculations would be beneficial. On the one hand, it is essential to ensure that the laws governing patent damage awards protect incentives to invent and innovate by affording compensation equal to the loss caused by infringement. On the other hand, recent very large damage awards for minor components of complex products and dramatic, industry-specific increases in patent litigation do raise questions of whether damages law is sufficiently economically grounded. The question seems most pressing in that subset of cases where the invention is one component of a complex product. Some panelists asserted that excessive reasonable royalty awards result from a failure to use economically correct approaches to calculation and legal rules that "obscure[] the effort to match damage awards to the economic values of inventions."[23]

III. OVERVIEW OF REASONABLE ROYALTY DAMAGES LAW

Section 284 of the patent statute mandates that patentees 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 . . . ."[24] A reasonable royalty is available as a remedy in all cases where the patentee has not proven entitlement to lost profits caused by the infringement.[25] Reasonable royalties may be awarded to a patent owner that was injured and competed but was unable to establish lost sales, one that licensed exclusively, or one that licensed broadly, leading one author to call them a "catch-all category of patent damages."[26]

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[21]John Schlicher Comment at 39 (5/15/09).

[22]Douglas G. Kidder & Vincent E. O'Brien Comment at 1 (5/5/09).

[23]Schlicher Comment at 4, 38 (5/15/09); *see also* NERA Economic Consulting Comment at 19-20 (3/9/09) (discussing specific unreliable approaches to determining reasonable royalty damages).

[24]35 U.S.C. § 284.

[25]Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538, 1554 (Fed. Cir. 1995) ("A patentee is entitled to no less than a reasonable royalty on an infringer's sales for which the patentee has not established entitlement to lost profits.") (en banc); JOHN M. SKENYON, CHRISTOPHER S. MARCHESE & JOHN LAND, PATENT DAMAGES LAW AND PRACTICE § 1:3 (2008).

[26]SKENYON et al., *supra* note 25, § 3:2, at 3-3.

Courts invoke the hypothetical negotiation framework when calculating reasonable royalty damages. The seminal case, *Georgia-Pacific Corp. v. United States Plywood Corp.*, described the proper measure of such damages: "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."[27] The case law recognizes that the central tenet of this framework is the willing licensor/willing licensee model, under which the awarded amount must be acceptable to both parties.[28] The royalty must adequately compensate the patentee for permitting the use and still leave the infringer an appropriate level of anticipated profits from using the invention.[29] As discussed below, however, some recent cases seem to reject or ignore that the requirement of a willing licensee places an upper bound on reasonable royalty damages.[30]

Courts apply two assumptions when implementing the hypothetical negotiation. First, the 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.[31] 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."[32] Subsequent events may be considered as evidence (a "book of wisdom") shedding light on the expectations that

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[27]Georgia-Pacific Corp. v. United States Plywood Corp., 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), *modified and aff'd*, 446 F.2d 295 (2d Cir. 1971). Chapter 7, Section II lists the *Georgia-Pacific* factors.

[28]*See, e.g.*, Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1325 (Fed. Cir. 2009) ("The hypothetical negotiation tries, as best as possible, to recreate the ex ante licensing negotiation scenario and to describe the resulting agreement.").

[29]Applied Med. Res. Corp. v. U.S. Surgical Corp., 435 F.3d 1356, 1361 (Fed. Cir. 2006) ("A reasonable royalty is the amount that 'a person, desiring to manufacture [, use, or] sell a patented article, as a business proposition, would be willing to pay as a royalty and yet be able to make [, use, or] sell the patented article, in the market, at a reasonable profit.'") (*quoting* Trans-World Mfg. Corp. v. Al Nyman & Sons, Inc., 750 F.2d 1552, 1568 (Fed. Cir.1984)).

[30]*See* Section IV, *infra*. Monsanto Co. v. Ralph, 382 F.3d 1374, 1383 (Fed. Cir. 2004) (rejecting infringer's argument that a "reasonable royalty deduced through a hypothetical negotiation process can never be set so high that no rational self-interested wealth-maximizing infringer acting ex ante would have ever agreed to it").

[31]Riles v. Shell Exploration and Prod. Co., 298 F.3d 1302, 1313 (Fed. Cir. 2002) (reasonable royalty determination "must relate to the time infringement occurred, and not be an after-the-fact assessment."); Unisplay S.A. v. American Elec. Sign Co., 69 F.3d 512, 518 (Fed. Cir. 1995) (rejecting a royalty based on evidence of likely value at time of trial).

[32]Hanson v. Alpine Valley Ski Area, Inc., 718 F.2d 1075, 1081 (Fed. Cir. 1983).

would have guided the parties during negotiation,[33] but the focus remains on the value at the time infringement began.

Second, courts require the finder of fact to assume that at the time of the negotiation the parties know with certainty that the patent is valid and infringed by the defendant's product or process.[34] This assumption ensures that the patentee, having incurred the risk and burden of trial and prevailed, is fully compensated.[35] As one panelist explained, if the hypothetical negotiation incorporated the risk that the patentee might lose on liability, the damages award would effectively "discount[] twice for the legal risk." The patentee would have run the legal risk once by going through trial to a judgment, and then had its recovery discounted by the legal risk in the determination of the reasonable royalty.[36]

IV. CONCERNS WITH THE HYPOTHETICAL NEGOTIATION FRAMEWORK

As discussed in Chapter 4, the goal of compensatory damages is to put the patentee in the position it would have been but for the infringement by providing the market reward for the invention. The case law rightly equates this goal with the statutory mandate that the patentee receive "damages adequate to compensate for the infringement." The law allows a patentee to show lost profits caused by the infringement. And, as discussed in Chapter 5, the law should allow patentees flexibility in creating the "but for" world so that they can be fully compensated.

However, when a patentee fails to prove lost profits caused by infringement, his legal redress is limited to compensation for the lost opportunity to license the infringer. It is the return available from the right to license the patent that is injured in this case, not the return from the exclusive opportunity to sell a product incorporating the patented invention. A patentee who would not have lost sales or suffered other direct damages from infringement would rationally

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[33]Sinclair Refining Co. v. Jenkins Petroleum Co., 289 U.S. 689, 698 (1933) (post-infringement evidence represents a "book of wisdom" providing "[e]xperience [that] is then available to correct uncertain prophecy").

[34]*See, e.g.*, *Lucent Techs.*, 580 F.3d at 1325 ("The hypothetical negotiation also assumes that the asserted patent claims are valid and infringed.").

[35]*See* Rite-Hite Corp. v. Kelley Co., 774 F. Supp. 1514, 1535 (E.D. Wis. 1991) ("In negotiating a settlement, the typical patentee is constrained by the risk and expense of litigating a patent suit. Risk and expense are not factors in the hypothetical royalty negotiation, because the patentee is presumed to know that the patent is valid and infringed."), *aff'd in part, vacated in part on other grounds*, 56 F.3d 1538, 1554 (Fed. Cir. 1995) (en banc).

[36]Cotter at 85 (2/11/09). *See also id.* at 83-85; Thomas F. Cotter, *Patent Holdup, Patent Remedies, and Antitrust Responses*, 34 J. CORP. L. 1151, 1182-83 & n.156 (2009).

want to license the patent at the maximum rate the infringer would pay.[37] That rate will not be more than the incremental value of the invention compared to available alternatives because, at higher rates, the infringer would choose an alternative.[38] A patentee would be unwilling to license at this rate only if it expected greater returns from marketing the invention itself. But in that case, the patentee would have a claim to lost profits. Thus, absent proof of lost profits caused by infringement, the appropriate measure of compensatory damages is the hypothetical negotiation amount between a willing licensor and willing licensee.

Despite this reasoning, two lines of cases allow or comment favorably on damage awards that arguably added to or exceeded a reasonable royalty determined using the hypothetical negotiation framework. In the first line of cases, the Federal Circuit affirmed awards adding to the hypothetical negotiation amount. In *H.M. Stickle v. Heublein*, the court stated that a "trial court may award an amount of damages greater than a reasonable royalty so that the award is 'adequate to compensate for the infringement.'"[39] In *Maxwell v. J. Baker, Inc.*, the court upheld a damage award where the district court had instructed the jury to determine two awards – a reasonable royalty award based on the hypothetical negotiation, and an additional award to the extent needed to provide "adequate compensation."[40] The opinions do not, however, describe the economic basis of any harm that the patentee might have suffered for which compensation is required beyond the absence of royalty payments for the infringing use.[41]

A second line of cases purports to apply the hypothetical negotiation framework, but arguably allows damage awards exceeding amounts to which a willing licensee would have

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[37]The negotiated royalty between the patentee and licensee (hypothetical or otherwise) may be less than the maximum amount the licensee is willing to pay, depending on the bargaining power of the parties. *See* SUZANNE SCOTCHMER, INNOVATION AND INCENTIVES 137 (2004).

[38]*See* Chapter 7, Section III.A.

[39]H. M. Stickle v. Heublein, Inc., 716 F.2d 1550, 1563 (Fed. Cir. 1983); *see also*, King Instruments Corp. v. Perego, 65 F.3d 941, 951 n.6 (Fed. Cir. 1995) (listing "discretionary awards of greater than a reasonable royalty" as one response to the problem of inadequate reasonable royalty awards); *but see* Mahurkar v. C.R. Bard, Inc., 79 F.3d 1572, 1579-80 (Fed. Cir. 1996) (rejecting augmentation of a reasonable royalty damage award to cover litigation expenses).

[40]Maxwell v. J. Baker, Inc., 86 F.3d 1098, 1109-10 (Fed. Cir. 1996). The court also described the jury verdict as consistent with a reasonable royalty. *Id.* at 1110.

[41]Mark A. Lemley, *Distinguishing Lost Profits from Reasonable Royalties*, 51 WM. & MARY L. REV. 655, 666-67 (2009) (identifying the damages calculation in the *H.M. Stickle* and *Maxwell* cases as "problematic"); Brian J. Love, *The Misuse of Reasonable Royalty Damages as a Patent Infringement Deterrent*, 74 MO. L. REV. 909, 920 (2009) (criticizing *Maxwell* decision for allowing damage award that was double what a jury identified as a reasonable royalty).

agreed.[42] In *Golight, Inc. v. Wal-Mart Stores, Inc.*,[43] the Federal Circuit affirmed a reasonable royalty award that was nearly four times greater than the infringer's forecasted profit. The court explained that "'[t]here is no rule that a royalty be no higher than the infringer's net profit margin.'"[44] In *Monsanto v. McFarling* and *Monsanto v. Ralph*, the Federal Circuit affirmed a single use royalty rate that made it more expensive for a farmer to save infringing soybean seeds from crops that he grew and replant them than it would have been to buy new seeds and plant those.[45] Certainly a willing licensee farmer would reject that licensing offer and buy new seeds instead.[46]

The cases identify two concerns that may motivate courts to allow damage awards beyond what a willing licensor and licensee would have agreed to in a hypothetical negotiation: the counterfactual nature of the hypothetical negotiation and the insufficient deterrent to infringement provided by reasonable royalty damages. As described below, these concerns do

[42]One commentator notes that "recent cases have highlighted that, as a legal matter, reasonable royalty awards may exceed the amount the parties would have agreed to" in the hypothetical negotiation. He explains that such "decisions make no economic sense." Cotter, *supra* note 36, at 1185 n.163 (*citing* Mars, Inc. v. Coin Acceptors, Inc., 527 F.3d 1359 (Fed. Cir. 2008)), Golight, Inc. v. Wal-Mart Stores, Inc., 355 F.3d 1327 (Fed. Cir. 2004), and Monsanto Co. v. Ralph, 382 F.3d 1374 (Fed. Cir. 2004)). *See also* Amy L. Landers, *Let the Games Begin: Incentives to Innovation in the New Economy of Intellectual Property Law*, 46 SANTA CLARA L. REV. 307, 347-354 (2006) (describing *Ralph* and *Golight* cases as ignoring constraints that the requirement of a willing licensor should place on damage awards); Love, *supra* note 41, at 918-19 (criticizing *Monsanto* cases for awarding inflated damages that were higher than the purchase price of seeds).

[43]355 F.3d 1327 (Fed. Cir. 2004).

[44]*Id.* at 1338 (*quoting* State Indus., Inc. v. Mor-Flo Indus., Inc., 883 F.2d 1573, 1580 (Fed. Cir.1989)) (rejecting defendant's contention that the royalty award "left Wal-Mart selling the accused product well below cost" and "should be capped at . . . Wal-Mart's profit forecast for the product," and explaining that defendant's evidence showed what it "might have preferred to pay, which is not the test for damages."). *See also Mars*, 527 F.3d at 1373 (stating "an infringer may be liable for damages . . . that exceed the amount that the infringer could have paid to avoid infringement" and rejecting counter-argument as "wrong as a matter of law"); Chapter 7, Section III.A (discussing *Mars* and the role of alternative technologies in the hypothetical negotiation).

[45]Monsanto Co. v. McFarling, 488 F.3d 973, 978-81 (Fed. Cir. 2007) (affirming $40 royalty per bag of soybean seed costing between $26 and $29); Monsanto Co. v. Ralph, 382 F.3d 1374, 1384 (Fed. Cir. 2004) (affirming royalties of $52-55 per bag of soybeans). The court applied the reasonable royalty damage award in both cases to every bag of infringing seed replanted over a two-year period of infringement. The royalty was based on a single planting of infringing seeds, so it did not encompass the right to save and grow multiple generations of seeds. Thus, the damages royalty is analogous to the purchase of a bag of seed and not an unlimited license to grow multiple generations of seed. *McFarling*, 488 F.3d at 977, 981; *Ralph*, 382 F.3d at 1383 (describing damage award of $52-55 per bag of saved seed as "reasonable royalties for licenses to save and replant for a single year").

[46]*See* additional discussion of *Ralph* in Section IV.A., *infra*.

not justify inflating the reasonable royalty award beyond the maximum amount a willing licensee would have paid, assuming a valid and infringed patent. Doing so can overcompensate patentees by awarding more than the economic value of the invention, which leads to the problems described in Chapters 2 and 4.

A. The Counterfactual Nature of the Hypothetical Negotiation

The case law and some commentators and panelists worry that, due to its counterfactual nature, the hypothetical negotiation is unreliable.[47] The Federal Circuit has characterized the notion of a voluntary agreement between parties in litigation as "absurd,"[48] and "a pretense that the infringement never happened."[49] Indeed, the fact that the parties have litigated the matter through trial is evidence of their inability to reach agreement on payments for use of the patented technology. These points are of course true, and they raise many practical issues for implementing the hypothetical negotiation, which are discussed in Chapter 7. Determining an accurate reasonable royalty award to fully compensate a patentee can be very difficult. But the fact that the parties litigated through trial rather than reaching a licensing agreement does not justify giving short shrift to the willing licensor/willing licensee model or inflating reasonable royalty damages beyond the economic value of the invention.

There are two reasons why the parties may have failed to reach agreement before trial where both otherwise would have been open to a licensing arrangement. Neither should undermine the hypothetical negotiation analysis. First, one or both parties could have had unrealistic expectations about the likely size of the reasonable royalty award. The patentee may overvalue the invention, or the infringer may undervalue it. Since one would expect a license in this situation but for one party's imperfect information, it is appropriate for the court to award a reasonable royalty based upon information offered by the parties about the value of the invention. It falls to the court to set the award based on the expectations of more realistic negotiators.[50]

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[47]Panelists worried about the ability of factfinders to implement the hypothetical negotiation. *See, e.g.*, Rooklidge at 157-58 (5/5/09) (discussing how results from mock trials suggested that juries were not constrained by the structure of the hypothetical negotiation in setting an award); Robinson at 146 (2/11/09) (asking "whether th[is] artificial legal construct really resonates to a typical juror"); Thomas at 146 (12/5/08) ("One of the big questions now is: Is th[e hypothetical negotiation] framework essentially useless?").

[48]Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538, 1554 (Fed. Cir. 1995) (en banc).

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

[50]*See* Roger D. Blair & Thomas F. Cotter, *Rethinking Patent Damages*, 10 TEX. INTELL. PROP. L. J. 1, 76 (2001); Vincent E. O'Brien, *Economics and Key Patent Damages Cases*, 9 U. BALT. INTELL. PROP. L.J. 1, 27 (2000) (criticizing *Rite-Hite* for justifying a high royalty on the basis that the patentee did not wish to grant a license).

Second, even if the parties had similar views on the value of the invention, they may have had very different views on the validity and infringement of the patent that made them unable to compromise on a litigation risk discount for the reasonable royalty. Again, it appropriately falls to the court to resolve the patent merits and award damages based on ascertained validity and infringement.[51] The parties' failure to reach agreement in either circumstance does not make it necessary to supplement the hypothetical negotiation amount or award more than a willing licensee would pay (assuming validity and infringement) to fully compensate the patentee.

Another important source of courts' unease with the willing licensor/willing licensee model is a concern that the patentee would never accept the maximum royalty the infringer would have paid in a hypothetical negotiation. In some cases, courts have been willing to determine reasonable royalty damages based on what the patentee would have accepted with less concern for what the infringer would pay.[52] That might happen when the patentee could make more selling the invention exclusively than through licensing, but the patentee fails to prove lost profits or chooses not to. One treatise explains that "in the vast majority of damage cases today, the reasonable royalty *damages* awarded are rarely the 'floor' represented by a negotiated royalty."[53] The Federal Circuit, the treatise continues, "routinely affirms 'reasonable royalty awards' that are obviously well in excess of what the parties would have actually" negotiated.[54] Arguably, in these circumstances, the court considers a "reasonable royalty" as not just the award based on the hypothetical negotiation, but as "the money awarded to the patent owner (however it is computed)" in cases where "the patent owner is unable to prove actual damages (i.e. lost profits)."[55] One commentator posits that courts have expanded reasonable royalty damages beyond the hypothetical negotiation amount in order to adequately compensate patentees that fail to meet overly rigorous requirements for proving lost profits damages.[56]

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[51]*See, e.g.*, Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1325 (Fed. Cir. 2009) ("The hypothetical negotiation also assumes that the asserted patent claims are valid and infringed.").

[52]See discussion of *Monsanto Co. v. Ralph*, *infra* notes 59-63.

[53]SKENYON et al., *supra* note 25, § 3:2 at 3-3.

[54]SKENYON et al., *supra* note 25, § 3:5 at 3-18. These include a number of cases in which the award was a substantial percentage of the revenues from the infringing sales. SmithKline Diagnostics, Inc. v. Helena Labs. Corp., 926 F.2d 1161, 1168 (Fed. Cir. 1991) (refusing to award a competing patentee lost profits but upholding a reasonable royalty award of 25% of the infringing product's sales price); Minco, Inc. v. Combustion Eng'g, Inc., 95 F.3d 1109, 1119 (Fed. Cir. 1996) (emphasizing that the patentee and infringer "competed head-to-head" in awarding reasonable royalty of 20% of the infringer's sales price for sales beyond 95% of the patentee's production capacity).

[55]SKENYON et al., *supra* note 25, § 3:2 at 3-3.

[56]Lemley, *supra* note 41, at 661-69. As discussed in Chapter 5, the law of lost profits must be flexible in allowing patentees to demonstrate the harm caused by infringement. Rigid rules that reject claims to lost profits damages based on a lack of precision in proving the amount of damages, rather than entitlement to them, undermines the ability of damages law to fully compensate patentees. *See id.* at 657-61.

Concerns about compensating unproven lost profits damages should not be allowed to inflate a reasonable royalty damage award beyond the maximum amount that a willing licensee would have paid. Arguments that the patentee would reject that maximum amount are based on an assumption that the patentee could have made more by not licensing, which means it sold a product. But if the patentee were better off selling or licensing the invention exclusively, it should be entitled to damages based on lost profits. When a patentee has failed or chosen not to prove its lost profits,[57] allowing amorphous or unproven claims of harm to override the hypothetical negotiation's requirement of a willing licensee risks damage awards that are unconnected to the economic value of the invention.[58] This result misaligns the patent system and competition policy by overcompensating patentees compared to a market absent infringement.

Monsanto v. Ralph[59] illustrates how reasonable royalty calculations that reject the requirement of a willing licensee can overcompensate patentees whose harm is better measured through lost profits. Monsanto developed and patented a series of "Roundup Ready" seeds that it sold to farmers with the restriction that they not save and replant harvested seeds. Ralph did just that, however, and infringed Monsanto's patents. Each time the farmer replanted a bag of saved seed, Monsanto and its distributors lost a sale. Thus, satisfying patent law's overarching goal of putting Monsanto in the position it would have been but for the infringement should have involved calculating its lost profits based on the number of saved bags.[60] In spite of this, Monsanto pursued, and the Federal Circuit affirmed, a reasonable royalty damage award of about $55 applied to each bag of saved infringing soybean seed. That royalty significantly exceeded the approximately $25 cost per bag of new seed, the amount a willing licensee would have paid and, presumably, any profits that Monsanto lost due to the infringement.[61]

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[57]One commentator has asserted that some patentees that have lost profits claims choose to pursue reasonable royalty damages in hope of a larger award. Lemley, *supra* note 41, at 667-68. "Reasonable royalty has now become the more prevalent measurement of damages." Levko at 19 (2/11/09); Aron Levko, *2009 Patent Damages Study: Preliminary Results* 9, presented at FTC Hearing: The Evolving IP Marketplace (Feb. 11, 2009), *available at* http://www.ftc.gov/bc/workshops/ipmarketplace/feb11/docs/alevko.pdf (reporting that reasonable royalties account for 54% of awards since 2000, an increase over prior years).

[58]Lemley, *supra* note 41, at 667-68 ("By importing compensation concepts from lost profits into the reasonable royalty context without importing the strict elements of proof, these courts have turned the reasonable royalty from a floor on patent damages designed to avoid undercompensation into a windfall that overcompensates patentees.").

[59]382 F.3d 1374 (Fed. Cir. 2004).

[60]Ralph did argue that lost profits were shown and those should have been the measure of damages. The court did not respond to this argument. *Id.* at 1383.

[61]*Id.* at 1377-79; *see* n.45, *supra*.

The court reached this result by accepting the "limits" of the hypothetical negotiation where Monsanto was unwilling to license farmers to save and replant seed "at any price."[62] Those limits freed the court to affirm a reasonable royalty award without concern for whether a willing licensee would have paid it.[63] But the impossibility of identifying a bargain between a willing licensor and willing licensee in this case stems not from a flaw in the hypothetical negotiation framework, but from the fact that lost profits are the more appropriate measure of damages for patentees that wish to market their inventions exclusively rather than license them.

In at least one case, *Rodime v. Seagate*,[64] the Federal Circuit rejected a patentee's attempt to incorporate unproven direct harm into a reasonable royalty calculation. The patentee, Rodime, sought consequential business damages beyond the reasonable royalty amount. The patentee argued that the infringer's refusal to take a license deprived it of a revenue stream that would have prevented bankruptcy. The court explained that allowing both consequential business damages and reasonable royalty damages would be improper: "The 'consequential damages' Rodime [the patentee] seeks are merely a species of lost profits. Having elected to pursue only a reasonable royalty, Rodime cannot, in the district court's words, 'bootstrap evidence of its lost profits back into the case by reference to 'reasonable royalties.''"[65] Courts should not allow such "bootstrapping" to support reasonable royalty awards beyond what a willing licensee would pay in the hypothetical negotiation.

B. Deterrents to Infringement

Closely related to the concern about the counterfactual nature of the hypothetical negotiation is the worry that reasonable royalty damages do not deter infringement, but rather allow a patentee's competitor to simply "elect[] to infringe" and thereby "impose a 'compulsory license.'"[66] The case law explains that "the infringer would have nothing to lose, and everything to gain [from choosing to infringe] if it could count on paying only the normal, routine royalty

[62]*Id.* at 1384.

[63]Ralph argued that the reasonable royalty awarded exceeded his anticipated profits and violated the hypothetical negotiation framework. The Federal Circuit rejected that argument: "[A]lthough an infringer's anticipated profit from use of the patented invention is among the factors to be considered in determining a reasonable royalty, the law does not require that an infringer be permitted to make a profit." *Id.* at 1383.

[64]174 F.3d 1294 (Fed. Cir. 1999).

[65]*Id.* at 1308.

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

non-infringers might have paid."[67] Some cases contain overtones of punishing infringers[68] even though compensatory damages for the strict liability offense of infringement are not meant to be punitive. This argument ignores several other deterrents to infringement incorporated within the patent system, and it presents an inappropriate reason to inflate reasonable royalty awards beyond the market reward for the invention.[69]

First, the argument incorrectly assumes that damages following trial will be the "normal, routine royalty." The law, however, requires that the hypothetical negotiation amount incorporate the assumption that the patent is valid and infringed.[70] Therefore, a reasonable royalty should be higher following trial than it would have been before because uncertainties regarding liability have been resolved. Regular licensees would have bargained for a royalty rate reflecting a discount for the probability that they would not have been found liable. The higher royalty paid following litigation will provide some deterrent to infringement and encourage settlement. The cases sometimes call for an "infringer's royalty."[71] A royalty that is higher than established rates because liability is ascertained is appropriate, but inflating damage awards for other reasons unrelated to economic proof is not.

Second, the primary mechanism for deterring intentional infringement is the award of enhanced damages and attorneys fees for willful infringement, which target only intentional and not inadvertent infringement.[72] Attempts to adjust compensatory damages to increase their deterrence value risks making such damages punitive, which is inappropriate for the strict liability offense of infringement in a patent system that suffers from significant uncertainty and

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[67]H.M, Stickle v. Heublein, Inc., 716 F.2d 1550, 1563 (Fed. Cir. 1983) (*quoting Panduit*, 575 F.2d at 1158).

[68]*Ralph*, 382 F.3d at 1384 ("the 'imposition on a patent owner who would not have licensed his invention for [a given] royalty is a form of compulsory license, against the will and interest of the person wronged, in favor of the wrongdoer'") (*quoting Rite-Hite*, 56 F.3d at 1554 n.13) (en banc).

[69]*See generally* Love, *supra* note 41.

[70]*See, e.g.*, Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1325 (Fed. Cir. 2009) ("The hypothetical negotiation also assumes that the asserted patent claims are valid and infringed.").

[71]King Instruments Corp. v. Perego, 65 F.3d 941, 951 n.6 (Fed. Cir. 1995) ("Such an increase, which may be stated by the trial court either as a reasonable royalty for an infringer . . . or as an increase in the reasonable royalty determined by the court, is left to its sound discretion.") (*quoting H.M. Stickle*, 716 F.2d at 1563).

[72]*In re* Seagate Tech., LLC, 497 F.3d 1360, 1371 (Fed. Cir. 2007) (en banc) ("[T]o establish willful infringement, a patentee must show by clear and convincing evidence that the infringer acted despite an objectively high likelihood that its actions constituted infringement of a valid patent . . . . If this threshold objective standard is satisfied, the patentee must also demonstrate that this objectively-defined risk . . . was either known or so obvious that it should have been known to the accused infringer.").

lack of notice. That result could lead to the market distortions of overcompensation discussed in Chapters 2 and 4 and deter innovation by potential targets of infringement suits.

Third, other significant costs and risks of infringement deter intentional infringement and provide motivation to avoid inadvertent infringement. Infringement can lead to substantial litigation costs, including potentially onerous discovery demands and business uncertainty.[73] Moreover, the threat of an injunction provides an especially significant deterrent to knowing infringement. If an adjudged infringer has sunk costs into research and development, or a plant and equipment, to produce the infringing product, it risks losing that investment if it cannot obtain a license.[74]

Some participants raised the concern that, in the wake of the Supreme Court's *eBay, Inc. v. MercExchange, LLC*[75] decision, permanent injunctions will no longer be available to firms that do not practice their patents, and therefore provide less of a deterrent to infringement.[76] As discussed in Chapter 8 and Appendix B, a careful review of the cases demonstrates that the injunction analysis is more refined and nuanced than this argument suggests, allowing non-manufacturing patent owners to obtain injunctions in many scenarios.[77] Moreover, Chapter 8 advocates an injunction analysis that supports the deterrence value of injunctions. Thus, the change in injunction law brought by *eBay* and other concerns that reasonable royalty damages do not deter infringement cannot justify awarding damages beyond the amount resulting from the hypothetical negotiation analysis.

V. CONCLUSION AND RECOMMENDATION

The construct of a hypothetical, voluntarily negotiated agreement is widely used in reasonable royalties determinations. Several panelists agreed that it was a "useful tool,"[78] and perhaps there is no "alternative that is any better."[79] The willing licensor/willing licensee model can provide a patentee with the market reward based on the economic value of the invention by

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[73]Rooklidge at 180 (5/5/09).

[74]*See* Chapter 8, Section IV.B.

[75]547 U.S. 388 (2006).

[76]Innovation Alliance Comment at 10 (2/5/09); Maghame at 233 (2/11/09) (representative of R&D firm expressing concern "that injunctions may no longer be available in a lot of instances"); Lasersohn at 183-84 (2/11/09) (venture capitalist representative stating that "the fact that injunctive relief is less available is a huge issue for us").

[77]*See* Chapter 8, Section II.B. *See also eBay*, 547 U.S. at 393 (explicitly warning against an analysis that would automatically deny injunctions to patentees that do not practice the invention).

[78]Underweiser at 219-21 (2/11/09); *see also* Cotter at 41 (2/11/09).

[79]Loeb at 224-25 (2/11/09); Lasersohn at 232 (2/11/09); O'Brien at 174 (5/5/09).

determining the bargain the parties would have struck in light of competition from alternatives. Admittedly, the calculation is difficult due to its hypothetical nature. But as discussed in Chapter 7, courts and the parties can bring greater economic discipline to this analysis, thereby enhancing its usefulness as a tool for determining the market reward.

> ***Recommendation.*** The Commission recommends that courts award reasonable royalty damages consistent with the hypothetical negotiation analysis and willing licensor/willing licensee model. Concerns about punishing infringement, deterring infringement, the counterfactual nature of the analysis or unproven lost profits that the patentee may have suffered should not inflate the reasonable royalty damage award beyond what a willing licensee would have paid for a patent known to be valid and infringed. Doing so risks awarding patentees more than the economic value of their inventions compared to alternatives and creating problems of overcompensation and market distortion.

CHAPTER 7
CALCULATING REASONABLE ROYALTY DAMAGES

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I. INTRODUCTION

The goal of a reasonable royalty damages calculation is to replicate the market reward (assuming a valid and infringed patent) for the invention in the absence of infringement for a patentee that would not have, or cannot prove that it would have, made the infringer's sales. As discussed in Chapter 6, the proper measure of damages in this case depends on what a willing licensee and licensor would have agreed to in a hypothetical negotiation.

Accurately calculating reasonable royalty damages based on a hypothetical negotiation presents numerous challenges for litigants and courts. An economically grounded approach that reflects an appreciation of the role of competition in establishing the economic value of an invention would increase the accuracy of that determination. Such analysis is important for avoiding undercompensation of patentees, which can undermine incentives to innovate and discourage innovation models based on technology transfer, as described in Chapter 1. Accurate damage determinations are also important for avoiding overcompensation of patentees, which can distort competition among technologies and deter innovation by raising costs and risks for innovators, as described in Chapters 2 and 4. This Chapter suggests several steps courts should take to increase the accuracy of reasonable royalty damage awards. They include: treating the *Georgia-Pacific* factors appropriately; recognizing that alternatives cap the royalty a willing licensee would pay; excluding unreliable expert testimony from evidence; and eliminating the entire market value rule.

II. OVERVIEW OF THE GEORGIA-PACIFIC FACTORS AND THEIR IMPLEMENTATION

A. The Factors

Awards of reasonable royalty damages typically have been based on a list of 15 factors identified by the district court in the *Georgia-Pacific* case.[1] Factor 15 is the hypothetical negotiation amount and the other 14 factors list categories of evidence. The factors are:

1. The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty.

2. The rates paid by the licensee for the use of other patents comparable to the patent in suit.

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[1]Georgia-Pacific Corp. v. United States Plywood Corp., 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), *modified and aff'd*, 446 F.2d 295 (2d Cir. 1971); *see also* JOHN M. SKENYON, CHRISTOPHER S. MARCHESE & JOHN LAND, PATENT DAMAGES LAW AND PRACTICE § 3:6, at 3–25 (2008) (hypothetical negotiation is "almost always" based on *Georgia-Pacific* factors).

3. The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold.

4. The licensor's established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly.

5. The commercial relationship between the licensor and licensee, such as, whether they are competitors in the same territory in the same line of business; or whether they are inventor and promoter.

6. The effect of selling the patented specialty in promoting sales of other products of the licensee; that existing value of the invention to the licensor as a generator of sales of his non-patented items; and the extent of such derivative or convoyed sales.

7. The duration of the patent and the term of the license.

8. The established profitability of the product made under the patent; its commercial success; and its current popularity.

9. The utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results.

10. The nature of the patented invention; the character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention.

11. The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use.

12. The portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions.

13. The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer.

14. The opinion testimony of qualified experts.

15. The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement.

This list has become "virtually codified" by the Federal Circuit, and serves as a "touchstone" for expert testimony and courts reviewing an award.[2] As one commentator observed, "some courts described the law governing so-called 'reasonable royalty' damages solely by reference to the *Georgia-Pacific* list."[3] Courts frequently cite the district court decision as authoritative.[4] Indeed, standard jury instructions often recite a list of all or nearly all of these factors.[5] Expert witnesses often structure testimony around them, and may feel compelled to opine on each factor to protect their overall assessment from attack.[6]

B. Reactions to the *Georgia-Pacific* Factors

Several panelists and commentators strongly supported the prominence of the *Georgia-Pacific* factors in calculating reasonable royalty damages.[7] They identified the factors' flexibility

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[2] RICHARD F. CAULEY, WINNING THE PATENT DAMAGES CASE: A LITIGATOR'S GUIDE TO ECONOMIC MODELS AND OTHER DAMAGE STRATEGIES 6–7 (2009).

[3] JOHN W. SCHLICHER, PATENT LAW: LEGAL AND ECONOMIC PRINCIPLES § 13:146 (1992).

[4] *See, e.g.*, Minks v. Polaris Indus., Inc., 546 F.3d 1364, 1372 (Fed. Cir. 2008) ("A determination of the royalty stemming from a hypothetical negotiation is often made by assessing factors such as those set forth in *Georgia-Pacific* . . . .").

[5] *See, e.g.*, Skenyon at 103 (2/11/09); Mitchell G. Stockwell, *Implementing eBay: New Problems in Guiding Judicial Discretion and Enforcing Patent Rights*, 88 J. PAT. & TRADEMARK OFF. SOC'Y 747, 759 n.58 (2006) ("Many standard jury instructions for determining a reasonable royalty reference the multi-factor test set forth in *Georgia-Pacific* . . . ."); *see also* Pattern Jury Instructions: Fifth Circuit, Civil Cases § 9.8 (Comm. on Pattern Jury Instructions Dist. Judges Ass'n Fifth Circuit 2006) (*citing* the *Georgia-Pacific* factors) *available at* http://www.lb5.uscourts.gov/juryinstructions/fifth/2006CIVIL.pdf; Uniform Jury Instructions for Patent Cases in the United States District Court for the District of Delaware Instruction 6.11 (1993) (Factors for Determining Reasonable Royalty) (repeating the *Georgia-Pacific* factors); Am. Intell. Property Law Ass'n, Model Patent Jury Instructions, 45–47 (listing substantially all of the *Georgia-Pacific* factors and "[a]ny other economic factor that a normally prudent business person would, under similar circumstances, take into consideration in negotiating the hypothetical license."). *But cf.* Model Patent Jury Instructions for the Northern District of California (Nov. 29, 2007), *available at* http://www.cand.uscourts.gov/filelibrary/5/Model-Patent-Jury-Instructions.pdf (citing *Georgia-Pacific* but not listing factors and advising jury to use the general hypothetical negotiation framework applying the evidence presented).

[6] Brian C. Riopelle, *Direct and Cross-examination of a Damages Expert*, 766 PLI/Pat 781, 806 (2003) (to "bolster [a damages expert's] credibility . . . he should say he considered all the factors set forth in the *Georgia-Pacific* case").

[7] Loeb at 180 (2/11/09); Johnson at 244 (2/11/09); Rhodes at 166 (2/11/09); PhRMA Comment at 16 (2/10/09); Innovation Alliance Comment at 11 (2/5/09) ("*Georgia-Pacific* simply restated the basic principles and methodology that have historically guided courts in matters of patent damages . . . . [They] are rooted in well-established (and arguably incontrovertible) legal and economic principles of compensatory damages generally.").

as an important benefit.[8] The conditions under which parties enter licensing negotiations vary tremendously, and flexibility is important in properly considering them.[9] The discussions of technology transfer licensing in Chapter 1 and ex post licensing in Chapter 2 illustrate how licensing covers an extremely diverse range of technology and economic conditions. Several panelists agreed that the *Georgia-Pacific* factors allow consideration of issues that would govern real-world negotiations in a variety of contexts. For instance, one panelist praised the *Georgia-Pacific* factors as "mirror[ing] a lot of the considerations that take place in actual licensing negotiations," and "replicat[ing] what type of dynamic there would be between the patent holder and one wanting to use the patented invention."[10]

Other panelists, however, were highly critical of the *Georgia-Pacific* case and the manner in which the factors are used in litigation today.[11] In particular, many argued that the list of factors provides little or no guidance to juries.[12] One panelist stated, "the judge throws the grab bag with all the factors to the jury and says, 'Do what you think is right.'"[13] Another explained, "*Georgia-Pacific* provides a list of sometimes overlapping factors (the 'GP factors'), without giving a framework in which to evaluate those factors."[14]

The lack of guidance and framework in the *Georgia-Pacific* approach creates two related problems, according to panelists. First, it permits the patentee to introduce or emphasize information that leads the jury away from an economically grounded analysis based on facts that

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[8]Maghame at 234 (2/11/09) ("you need the flexibility to do a market based evaluation"); Burton at 77, 94 (2/11/09); Levko at 137 (2/11/09); Gauri Prakash-Canjels, Ph.D. Comment at 3 (4/16/09).

[9]Innovation Alliance Comment at 11 (2/5/09) (flexibility is needed so that "courts and juries . . . [can] consider any and all evidentiary factors that would have been deemed relevant by the parties in a hypothetical negotiation"); Lasersohn at 231 (2/11/09) (experts rely on the *Georgia-Pacific* factors because determining economic value is "complicated," varying according to company, competitor, and economic environment); Loeb at 225 (2/11/09).

[10]Rhodes at 237-38 (2/11/09); *id.* at 166 ("the 15 *Georgia-Pacific* factors really do replicate [] real world licensing negotiation"); Johnson at 243-44 (2/11/09) (In negotiating hundreds of licenses per year, one panelist's firm uses "methodologies that are very much like the *Georgia-Pacific* factors.").

[11]Schlicher at 201 (5/5/09) (characterizing the case as a "historical tragedy"); Simon at 243 (2/11/09) (observing that the Second Circuit reduced the award since the *Georgia-Pacific* district court had failed to leave an appropriate profit for the infringer).

[12]Leonard at 47 (2/11/09) (calling the *Georgia-Pacific* factors a "grab bag"); Levine at 37, 132 (2/11/09); Simon at 200 (2/11/09); Chaikovsky at 195 (5/5/09) (describing "the *Georgia-Pacific* factors where I have so many factors and anyone can kind of pick or choose"); Verizon Comment at 8 (3/20/2009).

[13]Janicke at 15 (2/11/09).

[14]NERA Economic Consulting Comment at 18 (3/9/09).

would have informed the licensing decision.[15] One panelist drew a distinction between the facts necessary to support lost profits and reasonable royalty damages: "[L]ost profits tend[] to be constrained by the facts, and reasonable royalty isn't constrained by the facts, but by the imagination of the expert witness."[16] Second, the lack of guidance leads to "basically a free for all"[17] in which juries may render highly unreliable awards[18] that courts may not be able to overturn, given deferential standards for reviewing jury verdicts.[19] One academic stated, "the *Georgia-Pacific* factors . . . can be so easily manipulated by the trier of fact to reach virtually any outcome."[20]

C. The Role of the *Georgia-Pacific* Factors

Courts can improve reasonable royalty damages calculations by emphasizing the hypothetical negotiation and willing licensor/willing licensee model as the conceptual framework against which conduct of the damages trial should be tested.[21] The first fourteen *Georgia-Pacific* factors do not supply that conceptual framework. Rather, they are properly understood as a non-

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[15]Schlicher at 202 (5/5/09) (emphasizing that the *Georgia-Pacific* factors permit evidence on the infringer's total profits and revenue); *see also* O'Brien at 205 (5/5/09) (*Georgia-Pacific* "emphasi[zes] [] the profitability of the product" even though "the value of a component has little to do with the profitability of the product"). *Cf.* Rooklidge at 192 (5/5/09) (emphasizing the substantial prejudicial impact of permitting evidence on the "company's gross revenues or market capitalization").

[16]McKelvie at 193-94 (12/5/09).

[17]Reines at 82 (2/11/09).

[18]Doyle at 209 (5/5/09) (declaring that "*Georgia-Pacific* is notoriously empty of any real meaning here. It certainly hasn't led to predictability of results.").

[19]*See infra* Section IV.B (describing standards of review for jury verdicts).

[20]Cotter at 39 (2/11/09); *see also* Schlicher at 201 (5/5/09) ("Any rule that says consider 15 things and anything else you think is relevant and arrive at a number permits any number."); Simon at 200 (2/11/09) ("[W]hatever a jury comes back [with] can be supported . . . because you can choose all, some or none of those 15 factors.").

[21]Several panelists and commentators suggested the need for a conceptual economic framework to guide reasonable royalty calculations. *See, e.g.*, O'Brien at 205 (5/5/09) ("it would be much better having a conceptual framework . . . as opposed to this list"); Agisim at 254-55 (2/11/09) ("ultimately . . . you need to create an objective standard"); 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, 46 (2009) ("Factors are useless without a coherent theory of reasonable royalty damages that enables judges and juries to understand what they are trying to accomplish by an award and how to go about doing so."); Levine at 37 (2/11/09) (suggesting courts consider "governing principles"); Leonard at 37 (2/11/09) ("What we really need is a framework, a conceptually sound and coherent framework that lays out . . . how you do it, and the valuation principles.").

exhaustive list of categories of evidence potentially relevant to computing a reasonable royalty.[22] Evidence within one of these categories may or may not be useful in proving the willing licensor/willing licensee amount in any particular case.

An increased emphasis on the hypothetical negotiation, with its requirement of a willing licensee,[23] and a better appreciation for the appropriate role of the *Georgia-Pacific* factors will have practical consequences that courts should implement. First, courts should make damages determinations as the trier of fact or review the sufficiency of jury determinations with a focus on what a willing licensee and licensor would have agreed to in the hypothetical negotiation. Second, as further discussed in section IV of this Chapter, courts should not treat evidence as reliable and admissible only because it falls into one of the *Georgia-Pacific* categories. Third, courts should aid juries with instructions that focus attention on the hypothetical negotiation, including the requirement of a willing licensee, as the touchstone for their determination. When jury instructions present a complete or partial list of the *Georgia-Pacific* factors, they provide little guidance. Simply admitting evidence that corresponds to any of the *Georgia-Pacific* categories and charging the jury to use it to come up with a royalty can lead to confusion for juries in making awards[24] and difficulty for courts in reviewing them.[25]

The wide variety of fact scenarios to which the hypothetical negotiation model may apply counsels for a flexible approach when identifying evidence that may inform that determination. However, flexibility must be combined with a framework for testing and using the available evidence. Without such discipline, the *Georgia-Pacific* factors provide a grab bag for use by parties seeking to establish whatever reasonable royalty serves their purposes. Their competing claims may bear little or no relationship to each other or to a credible effort to implement the hypothetical negotiation model.[26] Many courts and parties already apply this discipline, but broader application would help increase the accuracy of reasonable royalty damage awards.

> ***Recommendation.*** 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. In particular,

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[22]*See infra* Section II.A for a review of the *Georgia-Pacific* factors.

[23]*See* Chapter 6.

[24]Levine at 37 (2/11/09) ("Sometimes the grab bag of factors is simply presented to the jury, and the jurors have to figure out or sort of divine from that what kind of reward to give.").

[25]Daralyn J. Durie & Mark A. Lemley, *A Structured Approach to Calculating Reasonable Royalties*, 14 LEWIS & CLARK L. REV. 627, 632 (2010) ("the fifteen-factor test makes it extremely difficult for judges to review a jury damage award for substantial evidence, either on judgment as a matter of law (JMOL) or on appeal").

[26]Schlutz at 132 (5/5/08) ("you'll have these experts on the plaintiff side versus the defense side and sometimes the difference in their valuation will be a thousandfold").

courts should recognize that the first fourteen *Georgia-Pacific* factors provide only a list of evidence categories. Implementing this recommendation will have a variety of practical consequences.

III. THE ROLE OF ALTERNATIVE TECHNOLOGIES

The hypothetical negotiation's assumption of a willing buyer and willing seller depends on the existence of royalty rates that are acceptable to both parties. From the patentee's perspective, the damages must at least cover income that would have been earned but for the infringement.[27] From the infringer's point of view, the maximum royalty cannot exceed the increased profits the infringer anticipates based on using the patented invention rather than the next best alternative.[28] A willing licensee and willing licensor would typically reach a price somewhere within this bargaining range, leaving both to profit from the agreement.[29] Even if that is not the case and the licensee pays the bargaining range's maximum amount, competition from alternative technologies plays an important role in establishing the maximum reasonable royalty. Damages determinations that do not give sufficient weight to competition from alternatives risk overcompensating patentees and distorting competition, as discussed in Chapters 2 and 4.

A. Competition from Alternatives Defines a Cap for Reasonable Royalty Damages

In many instances, technologies compete for incorporation into new products, as discussed in Chapters 1 and 2. Product designers choose technologies based in part on technical advantages, consumers' willingness to pay, and costs, some of which may include patent royalties. For some non-core technologies, a high-tech firm "almost invariably ha[s] another option at the time" of its "design decision," which it would choose if a patentee's royalty demand

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[27]It may be that a patentee is only willing to accept an amount that is more than the infringer would pay because the cost of the infringement in terms of lost profits or other direct damages is high. In that case, the patentee should receive lost profits damages rather than an inflated reasonable royalty damages, as discussed in Chapters 4 and 6.

[28]RICHARD B. TROXEL & WILLIAM O. KERR, CALCULATING INTELLECTUAL PROPERTY DAMAGES § 5:18 at 269 (2009) (determining the value of the patented technology requires a comparison of "the gains that the infringer expects to receive from using the infringing technology with the gains that would have been available had the infringer gone forward with the next-best noninfringing alternative").

[29]*See, e.g.,* Gregory K. Leonard & Lauren J. Stiroh, *A Practical Guide to Damages, in* ECONOMIC APPROACHES TO INTELLECTUAL PROPERTY POLICY, LITIGATION AND MANAGEMENT 52-58 (Gregory K. Leonard & Lauren J. Stiroh eds., 2005); *cf.* Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, 1995-96 (2007) (analyzing the negotiation of reasonable royalties under various conditions "[u]sing the standard economic theory of Nash bargaining, [in which] the negotiated royalty rate depends upon the payoff that each party would obtain if the negotiations break down, i.e., on each party's threat point in the licensing negotiations").

was excessive.[30] When substitute technology is not available, a product designer may leave the patented feature off its product if revenues attributable to the feature do not justify the royalty demand.[31] Thus, at the time a company is designing a product, the incremental value that a patented technology provides over alternatives (including an alternative product that lacks the patented feature) constrains the royalty.[32] The most a company would be willing to pay for patented technology is the incremental value (i.e., the incremental profit) of the patented technology over the alternative.

Because the incremental value of patented technology over alternatives plays such a crucial role in licensing negotiations, it must play a commensurate role in the hypothetical negotiation that determines reasonable royalty damages. Commentators explain that evaluating the available alternatives is "[e]conomically . . . crucial to establishing what the parties would have agreed to" in the hypothetical negotiation.[33] Indeed, with "sufficient data" the alternative "can be incorporated directly into determining the licensee's maximum willingness to pay."[34] Academics,[35] practitioners,[36] economists,[37] and business representatives[38] acknowledged the

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[30]Simon at 202-03 (2/11/09) .

[31]O'Brien at 173-74 (5/5/09); Fresenius Med. Care Holdings, Inc., v. Baxter Int'l., Inc., No. C 03-01431, 2006 WL 1646113, at *2 (N.D. Cal. June 12, 2006) (allowing evidence that the infringer could have successfully competed without the patented feature, and therefore would not have been willing to pay a high royalty).

[32]Lance E. Gunderson, Stephen E. Dell & Scott W. Cragun, *The "Analytic Approach" as a Technique to Determine a Reasonable Royalty*, *in* ECONOMIC DAMAGES IN INTELLECTUAL PROPERTY: A HANDS-ON GUIDE TO LITIGATION 181, 182 (Daniel Slottje ed., 2006) ("Generally, the maximum royalty amount that licensee would be willing to pay is the excess profit licensee would expect to earn from the infringing products over the return from its [next best alternative].").

[33]Peter B. Frank, Vincent E. O'Brien & Michael J. Wagner, *Patent Infringement Damages*, *in* LITIGATION SERVICES HANDBOOK: THE ROLE OF THE FINANCIAL EXPERT Ch. 22 at 16 (Roman L. Weil, Peter B. Frank, Christian W. Hughes & Michael J. Wagner eds., 2007).

[34] Leonard & Stiroh, *supra* note 29, at 63-64.

[35]Cotter at 138 (12/5/09) ("hypothetical bargain . . . should wind up reflecting the expected value of the patented technology in comparison to the next best alternative"); Janicke at 42 (2/11/09) (proposing "the value added by a particular patent" as the best criterion for reasonable royalties).

[36]Schlicher, at 230-31 (5/5/09) ("damages ought to be the difference between the profits that a company would have made selling a PDA with that memory chip minus the profits the company would have made . . . using the next-best kind of memory chip it would have"); *cf.* Rooklidge at 180 (5/5/09) (suggesting that "comparing the infringing product to the next-best alternative may very well work in the vast majority of cases, but in some cases there may be alternate evidence that's available").

[37]Gilbert at 221 (5/5/09) (central inquiry is "the incremental contribution [of the patented technology] relative to the next-best noninfringing alternative"); Leonard at 127 (2/11/09) (describing how to estimate