

## BARGAINING FOR RAND ROYALTIES IN THE SHADOW OF PATENT REMEDIES LAW

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A patent owner that asserts a patent against a standardized product may have monopoly power in a relevant technology market solely by virtue of the patented technology having been incorporated into the standard. Although multiple alternative technologies may have competed to be chosen during the standard-setting process, once the standard is set, those alternatives will no longer offer viable options because of industry-wide investments made to implement the standard. Consumers will be harmed by higher prices if patentees are able to exercise monopoly power by obtaining licensing fees based on those investments rather than the economic value of the patented technology as determined by competition among alternatives. Such licensing fees can also deter innovation by increasing the costs and uncertainty of other innovators and by discouraging adoption of standards. Antitrust law can protect consumers if the patent owner acquired monopoly power through deception or conspiracy,<sup>1</sup> but other legal doctrines, especially those of contract and patent law,<sup>2</sup> also play a critical role in ensuring that consumers benefit from competition among alternative technologies.

Remedies for patent infringement are particularly important because they set the framework for licensing negotiations and provide the source of the

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<sup>1</sup> See *Broadcom Corp. v. Qualcomm, Inc.*, 501 F.3d 297, 314 (3d Cir. 2007) (denying motion to dismiss allegation that standard-setting organization (SSO) participant had violated antitrust law by deceptively making a commitment to license on fair, reasonable, and nondiscriminatory terms); *Allied Tube & Conduit Corp. v. Indian Head, Inc.*, 486 U.S. 492, 509–11 (1988) (affirming court of appeals' reinstatement of a jury verdict awarding damages for a Sherman Act violation where producers and sellers of steel conduit had packed a meeting with new members whose sole function was to vote against a proposal to allow the use of equally viable plastic conduit in the building industry).

<sup>2</sup> *Qualcomm, Inc. v. Broadcom Corp.*, 548 F.3d 1004, 1022 (Fed. Cir. 2008) (affirming district court determination that failure to disclose patents to an SSO rendered the patents unenforceable under doctrine of waiver).

patentee's power to extract monopoly rents from standardized products. Incorporating more careful economic analysis into the law of patent remedies would mitigate monopoly power created solely by standardization rather than the inherent value of the patented technology. The Federal Trade Commission's March 2011 report, *The Evolving IP Marketplace*, provides extensive analysis and recommendations for how courts in all patent cases can better ground patent damages calculations in economics.<sup>3</sup> The report explains that doing so would appropriately compensate patentees for infringement while avoiding overcompensation that can increase the costs of innovation, encourage litigation, deter beneficial validity challenges, and disrupt the ability of technology markets to efficiently allocate research and development resources.<sup>4</sup> The report also explains that injecting economic concerns into permanent injunction determinations can protect the patent exclusivity that drives innovation while lessening the potential for patents on minor features of complex products to raise prices unduly.<sup>5</sup>

This article applies the analysis and recommendations of *The Evolving IP Marketplace* report in the context of patents asserted against industry standards. A patent damages calculation that fully accounts for the competition that technologies face to be chosen for incorporation into a standard could limit a patent owner's ability to demand licensing fees exceeding the economic value of the patented technology. That outcome would be consistent with and provide definition to a patentee's promise, frequently made to standard-setting organizations (SSOs), to license at reasonable and nondiscriminatory (RAND) rates. Moreover, an injunction determination that fully takes into account the standard-setting context and a RAND promise would limit a patentee's ability to obtain an injunction and decrease its leverage based on investments in the standard. Both outcomes allow consumers to benefit from the competition among technologies to be chosen for the standard while appropriately compensating patentees for the value of their inventions.

This article discusses the use of RAND commitments as a response to the potential for holdup and the relationships between patent infringement remedies and RAND commitments. It offers suggestions for rules governing patent damage awards to align them with the ex ante value of the patented technology and appropriate RAND royalties. It also offers suggestions for how a RAND commitment should impact the assessment of whether to award a permanent injunction to a patentee.

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<sup>3</sup> FED. TRADE COMM'N, *THE EVOLVING IP MARKETPLACE: ALIGNING PATENT NOTICE AND REMEDIES WITH COMPETITION* 137 (2011) [hereinafter 2011 FTC PATENT REPORT], available at <http://www.ftc.gov/os/2011/03/110307patentreport.pdf>.

<sup>4</sup> *Id.* at 145–46 (explaining how patent damages that exceed the value of the technology in a technology market prior to sunk costs can deter innovation and harm consumers).

<sup>5</sup> *Id.* at 223–28.

## I. THE ROLE OF RAND IN SSOs

## A. RESPONSES TO POTENTIAL PATENT HOLDUP OF STANDARDS

The procompetitive benefits of standard setting have been acknowledged by the antitrust agencies and have been widely discussed.<sup>6</sup> Industry standards can benefit consumers by promoting innovation and increasing competition. In many information technology (IT) industries, interoperability among products and their components made possible by standardization is critical to the development of innovative products.<sup>7</sup> In addition, competition among the standardized products of different manufacturers increases choice and decreases prices for consumers.

To achieve these benefits, industry participants frequently work together in SSOs to jointly adopt industry-wide technical standards. SSOs establish extensive procedures for evaluating and choosing among alternative technologies to incorporate into the standard. Before the standard is set, technologies often compete for inclusion in the standard, but once a particular technology is incorporated, its adoption eliminates alternatives. Although firms may not formally commit to using the standard in producing their products, as a practical matter they will generally find it necessary to do so if the standardized technology becomes successful in the marketplace.

At that point, a firm with a patent reading on the standard may have monopoly power in the relevant technology market. If so, the patentee can demand a royalty that reflects not only the *ex ante* value of the technology compared to alternatives, but also the value associated with investments made to implement the standard. Accused infringers will pay royalties based on the costs of switching to another technology, but switching costs may be prohibitively high due to the expense of retooling a manufacturing facility or ensuring interoperability with related products. Indeed, it is often difficult, or even impossible, to modify a standard due to the need for newly manufactured products to be backward-compatible and interoperable with similar products

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<sup>6</sup> See, e.g., U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, ANTITRUST ENFORCEMENT AND INTELLECTUAL PROPERTY RIGHTS: PROMOTING INNOVATION AND COMPETITION 33 (2007) [hereinafter FTC/DOJ IP ANTITRUST REPORT], available at <http://www.ftc.gov/reports/innovation/P040101PromotingInnovationandCompetitionrpt0704.pdf>; ANTITRUST MODERNIZATION COMM'N, REPORT AND RECOMMENDATIONS 119–20 (2007), available at [http://govinfo.library.unt.edu/amc/report\\_recommendation/amc\\_final\\_report.pdf](http://govinfo.library.unt.edu/amc/report_recommendation/amc_final_report.pdf).

<sup>7</sup> CARL SHAPIRO & HAL R. VARIAN, INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY 228 (1999) (“Most companies need to cooperate with others to establish standards and create a single network of compatible users.”); Joseph Farrell et al., *Standard-Setting, Patents and Hold-Up*, 74 ANTITRUST L.J. 603, 607 (2007) (“Standards and patents are very important in information technology, but not only there.”).

already owned by consumers, resulting in industry “lock in.”<sup>8</sup> The ability of patentees to demand the “holdup”<sup>9</sup> value based on sunk costs could raise prices for consumers beyond the competitive level, while undermining efficient choices made among technologies competing for inclusion in a standard. Consumers would be deprived of the benefit of competition among technologies during the standard-setting process. Licensing fees based on holdup value can also slow adoption of the standard, to the detriment of consumers, as higher prices reduce output of new products.

Many SSOs attempt to address this problem through disclosure and licensing rules. Disclosure rules typically require participants to disclose patents or patent applications during the standard-setting process before a standard is chosen.<sup>10</sup> With knowledge of the patent, the potential licensor and licensee might negotiate a royalty *ex ante*, before the licensee has made investments to use the patented technology and the industry has become locked in. In that situation, the availability of alternative technology will constrain the royalty that the patentee can demand.<sup>11</sup>

In other situations, the standard-setting process may progress too quickly for the parties to negotiate a license before lock in. In these scenarios, the parties often leave the details of royalty negotiation to a later date. The constraint most frequently applied by SSO rules in response to this reality is a requirement that participants agree to license disclosed patents on RAND terms.<sup>12</sup> However, whether RAND commitments can effectively prevent patent owners from demanding a patent’s holdup value from licensees is a matter

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<sup>8</sup> See FTC/DOJ IP ANTITRUST REPORT, *supra* note 6, at 37–38 (noting that “switching to an alternative standard would require significant additional costs” and could “delay the introduction of new products”); Farrell et al., *supra* note 7, at 612, 616.

<sup>9</sup> “Holdup” is used in this article to describe a patentee’s ability to extract a higher licensing fee after an accused infringer has sunk costs into implementing the patented technology than the patentee could have demanded at the time of design decisions, when the patented technology competed with non-infringing alternatives. “Holdup” is sometimes used in a narrower sense, not intended here, to describe situations in which a patent owner fails to disclose its patents to an SSO and attempts to license after an industry is locked into using the standard. See, e.g., FTC/DOJ IP ANTITRUST REPORT, *supra* note 6, at 36.

<sup>10</sup> *Id.* at 42.

<sup>11</sup> See Business Review Letter from Thomas O. Barnett, Assistant Att’y Gen., U.S. Dep’t of Justice, to Robert A. Skitol, Drinker Biddle & Reath, LLP (Oct. 30, 2006) (reviewing policy that required *ex ante* disclosures of maximum royalties and default license terms), available at <http://www.usdoj.gov/atr/public/busreview/219380.pdf>; Business Review Letter from Thomas O. Barnett, Assistant Att’y Gen., U.S. Dep’t of Justice, to Michael A. Lindsay, Dorsey & Whitney, LLP (Apr. 30, 2007) (reviewing policy that permitted *ex ante* disclosures of maximum royalties and default license terms), available at <http://www.usdoj.gov/atr/public/busreview/222978.pdf>.

<sup>12</sup> See Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CALIF. L. REV. 1889, 1904–06 (2002).

of debate because SSO rules typically do not define what is meant by “reasonable” and “nondiscriminatory.”<sup>13</sup>

#### B. RAND IN THE SHADOW OF PATENT REMEDIES LAW

It would be wrong to say that RAND is meaningless, however. The point of the RAND commitment is to allow SSO participants to delay licensing negotiations until a later date, after the standard is chosen, while mitigating the risk of holdup based on their ex ante choices among technologies. From an economic perspective, the “reasonable” royalty is one based on an assessment of the patented technology before the standard is chosen,<sup>14</sup> because only the ex ante value will reflect the economic value of the technology due to its advantages over alternatives. Royalties based on ex post leverage cannot be “reasonable” because they reflect the sunk costs of implementers unrelated to the contributions of the patented technology. From a legal perspective, implementing this economic concept of a “reasonable” royalty through ex post negotiations depends on the shadow cast by both contract law and patent law.

When a patentee and implementer of standardized technology negotiate ex post for a RAND licensing rate, they do so “in the shadow of the law.”<sup>15</sup> If negotiations break down, the implementer can bring a contract claim asking the court to enforce the patentee’s promise to license at RAND rates.<sup>16</sup> The patentee can claim patent infringement, seeking remedies, including compensatory damages and a permanent injunction prohibiting future infringement. The decision a court might issue under either party’s claim provides the framework within which the parties bargain for a RAND royalty amount. This

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<sup>13</sup> See *id.* at 1906; see also FTC/DOJ IP ANTITRUST REPORT, *supra* note 6, at 45–47; Joseph S. Miller, *Standard-Setting, Patents, and Access Lock-in: RAND Licensing and the Theory of the Firm*, 40 IND. L. REV. 351, 357 (2007) (“[T]here is a common refrain that the RAND promise’s meaning is unclear to a troubling degree and that SSOs do too little to explain its meaning.”).

<sup>14</sup> See Daniel G. Swanson & William J. Baumol, *Reasonable and Nondiscriminatory (RAND) Royalties, Standards Selection, and Control of Market Power*, 73 ANTITRUST L.J. 1, 10 (2005) (“If the primary goal of obtaining RAND licensing commitments is to prevent IP holders from setting royalties that exercise market power created by standardization, then the concept of a ‘reasonable’ royalty . . . must be defined and implemented by reference to ex ante competition . . . .”); SHAPIRO & VARIAN, *supra* note 7, at 241 (“Reasonable *should* mean the royalties that the patent holder could obtain in open, up-front competition with other technologies, not the royalties that the patent holder can extract once other participants are effectively locked in to use technology covered by the patent.”).

<sup>15</sup> See generally Robert H. Mnookin & Lewis Kornhauser, *Bargaining in the Shadow of the Law: The Case of Divorce*, 88 YALE L.J. 950, 997 (1979) (explaining “[i]ndividuals in a wide variety of contexts bargain in the shadow of the law”).

<sup>16</sup> See *Microsoft Corp. v. Motorola, Inc.*, No. 10-cv-1823-jlr, slip op. at 4–5 (W.D. Wash. May 31, 2011) (holding that Microsoft stated claim for breach of contract for Motorola’s failure to offer licenses on fair, reasonable and non-discriminatory terms after making RAND commitment); *Research In Motion Ltd. v. Motorola, Inc.*, 644 F. Supp. 2d 788, 797 (N.D. Tex. 2008) (holding that plaintiff stated breach of contract claim based on defendant’s failure to offer RAND terms after promise to SSO); Lemley, *supra* note 12, at 1923–27.

article examines only the latter context, including the role of patent infringement damages law in setting the upper bound for a licensor's ability to extract royalties and the bargaining leverage imparted by the credible threat of a permanent injunction.

The damages that a court would award a successful patentee in patent litigation will influence the parties' RAND negotiations by establishing the implementer's potential liability. (This statement assumes that the implementer does not fear a permanent injunction—the import of which is discussed below.) Through bargaining, the parties will likely agree to a royalty that is less than the potential damages because they will divide the gains from trade and discount the implementer's potential liability based on the risk that the patentee will lose on validity or infringement.<sup>17</sup> In that way, potential patent damages provide a benchmark and a cap from which a RAND royalty is negotiated.

The economic theories underlying the calculation of compensatory patent damages support this close relationship. Those theories are based on an important benefit of the patent system as a means of encouraging innovation—the fact that it allows each invention to be valued directly through a market mechanism.<sup>18</sup> The market reward earned by the patentee through the sale of a patented product or by licensing will depend on the invention's economic value; that is, as determined by the extent to which consumers prefer it over alternatives.<sup>19</sup> Some patents will protect “disruptive” technology<sup>20</sup> and confer market power, but many patented inventions will compete with a range of acceptable alternatives that limit the patent owner's ability to obtain a monopoly profit.<sup>21</sup> Competition aligns the value of the invention and the value of the

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<sup>17</sup> See Robert Cooter et al., *Bargaining in the Shadow of the Law: A Testable Model of Strategic Behavior*, 11 J. LEG. STUD., 225, 227–28 (1982) (describing bargaining dynamic in which parties divide the gains from cooperation).

<sup>18</sup> Kenneth W. Dam, *The Economic Underpinnings of Patent Law*, 23 J. LEGAL STUD. 247, 248–49 (1994); Farrell et al., *supra* note 7, at 610.

<sup>19</sup> Judge Giles Rich captured this important aspect of the patent system in an often-quoted statement: “[I]t is one of the legal beauties of the system that what is given by the people through their government—the patent right—is valued automatically by what is given by the patentee. His *patent* has value directly related to the value of his *invention*, as determined by the marketplace.” *In re Kirk*, 376 F.2d 936, 964 (C.C.P.A. 1967).

<sup>20</sup> JOSEPH A. SCHUMPETER, *CAPITALISM, SOCIALISM, AND DEMOCRACY* 84 (1st Harper Colophon ed. 1975) (1942) (A disruptive technology is one that creates “competition which commands a decisive cost or quality advantage and which strikes not at the margins of the profits and the outputs of the existing firms but at their foundations and their very lives.”).

<sup>21</sup> The principle that patents do not necessarily confer market power for these reasons is widely accepted. See *Illinois Tool Works, Inc. v. Indep. Ink, Inc.*, 547 U.S. 28, 45–46 (2006) (“Congress, the antitrust enforcement agencies, and most economists have all reached the conclusion that a patent does not necessarily confer market power upon the patentee. Today, we reach the same conclusion . . . .”); FTC/DOJ IP ANTITRUST REPORT, *supra* note 6, at 22 (“Although a patent gives the patent owner the right to exclude others from making, using, or selling

patent in accordance with consumer preferences. It also affects the allocation of research and development (R&D) resources by incentivizing inventors to pursue those inventions that are more likely to be valued by consumers.<sup>22</sup> Consumers benefit from the competition among patented products and technologies, which lowers prices, increases quality, encourages innovation, and allocates R&D resources.<sup>23</sup>

The market can fully reward a patentee and align that reward with the invention's economic value only absent infringement. Thus, when infringement does occur, the goal of compensatory patent damages is to replicate the reward that the patentee could have earned if there had been no infringement.<sup>24</sup> Damages that undercompensate patentees compared to the market will undermine the patent system's incentives to innovate. But damages that overcompensate patentees compared to the market are not benign either; nor will they increase innovation. Indeed, inflated damage awards can discourage innovation by raising the costs of product development and increasing the risks of investment for other innovators and manufacturers.<sup>25</sup> They encourage litigation and patent speculation, both of which divert funds from innovative and productive activities.<sup>26</sup>

Overcompensation can deter socially beneficial challenges to invalid or narrow patents, which also raises the cost of innovation. As the risk of paying an inflated damages award increases, would-be innovators, other than the patentee, will tend to enter into licenses rather than challenge claims that may be weak, perhaps paying unnecessary royalties.<sup>27</sup> Inflated damage awards also disrupt the ability of the market to allocate R&D resources to those areas likely to generate the products most valued by consumers. Overcompensation

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a particular product or process, the existence of close substitutes for the product or process may prevent the patent owner from exercising market power.”).

<sup>22</sup> See ROGER D. BLAIR & THOMAS F. COTTER, *INTELLECTUAL PROPERTY: ECONOMIC AND LEGAL DIMENSIONS OF RIGHTS AND REMEDIES* 16–17, 19 (2005); Carl Shapiro, *Patent Reform: Aligning Reward and Contribution*, in 8 *INNOVATION POLICY AND THE ECONOMY* 111, 113 (Adam B. Jaffe, Josh Lerner & Scott Stern eds., 2007).

<sup>23</sup> See FED. TRADE COMM’N, *TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY*, ch. 2, at 8, 13, 15 (2003) (discussing how competition promotes innovation), available at <http://ftc.gov/os/2003/10/innovationrpt.pdf>.

<sup>24</sup> To successfully support the patent system's incentives to innovate, remedies should also deter infringement in the first instance. Compensatory patent damages can partially fill this role, but enhanced damages for willful infringement and the threat of a permanent injunction are the primary tools for addressing this concern. See 2011 FTC PATENT REPORT, *supra* note 3, at 141.

<sup>25</sup> See Shapiro, *supra* note 22, at 113; 2011 FTC PATENT REPORT, *supra* note 3, at 145–46.

<sup>26</sup> 2011 FTC PATENT REPORT, *supra* note 3, at 146.

<sup>27</sup> See Vincent E. O'Brien, *Economics and Key Patent Damages Cases*, 9 U. BALT. INTELL. PROP. L.J. 1, 20 (2000).

of certain technologies over-incentivizes invention in that area, to the detriment of more productive innovative activity.<sup>28</sup>

For these reasons, patent damage awards should reflect the economic realities of the market in which the patented technology competes by rendering the patentee no worse off, but also no better off, than it would have been absent the infringement.<sup>29</sup> When a patentee licenses, the patented technology competes with alternatives in a technology market to be chosen for incorporation into products, before the costs have been sunk. Infringement presents a lost opportunity to license in that market. Thus, a compensatory damage award that puts the patentee in the position it would have been but for infringement will be based on the amount a licensee would have paid *ex ante*, when designing its product.<sup>30</sup>

In this way, the economic theory of compensatory damages for a licensed patent parallels the economic theory of RAND licenses, which is also based on the *ex ante* value of patented technology at the time the product is designed, *i.e.*, at the time the standard is being chosen. This parallelism will be disrupted, however, if the legal rules governing the calculation of patent damages do not focus on the *ex ante* value of patented technology in an appropriate technology market. In that case, the legal rules could create overcompensation biases in damage awards that distort negotiations for a RAND royalty, lead to higher rates based on holdup rather than *ex ante* competition, and harm consumers.<sup>31</sup> Part II of this article discusses ways in which patent damages law can decrease patent holdup by better valuing patented technology. Such improvements would help align damages for patents covering technology incorporated into standards with their *ex ante* value and a RAND royalty rate.

Perhaps much more than biases in damages law, the availability of a permanent injunction as a court-awarded remedy for infringement can give a patentee the ability to demand a patent's holdup value during a negotiation for RAND royalties. An implementer facing the threat of an injunction if licensing negotiations break down will pay royalties based on its switching costs

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<sup>28</sup> See BLAIR & COTTER, *supra* note 22, at 19; Shapiro, *supra* note 22, at 113.

<sup>29</sup> See BLAIR & COTTER, *supra* note 22, at 46–47; *Riles v. Shell Exploration & Prod. Co.*, 298 F.3d 1302, 1312–13 (Fed. Cir. 2002) (“Compensatory damages, by definition, make the patentee whole, as opposed to punishing the infringer.”).

<sup>30</sup> As discussed below, damage awards can be higher than established royalty rates, however, because damages awards should reflect the determination that the patent is valid and infringed following litigation, whereas license amounts can incorporate a discount for litigation uncertainty. See *infra* notes 50–53 and accompanying text.

<sup>31</sup> See 2011 FTC PATENT REPORT, *supra* note 3, at 144–47 (discussing harm to consumers from overcompensation in damage awards); see also Mark A. Lemley, *Ten Things to Do About Patent Holdup of Standards (And One Not to)*, 48 B.C. L. REV. 149, 165–66 (2007) (arguing for reform of patent damages law to mitigate holdup of standards).

rather than the ex ante value of the patented technology compared to alternatives.<sup>32</sup> That outcome can harm consumers and undermine the integrity of the standard-setting process.

Some have argued that by making a RAND commitment, a patentee has relinquished its right to seek a permanent injunction.<sup>33</sup> Such an interpretation would certainly lessen the threat of holdup during RAND negotiations. Others assert that the patentee's ability to threaten an injunction is needed to force standards implementers to the negotiating table. Without choosing sides in that debate, Part III of this article discusses how district courts can incorporate a patentee's RAND commitment and the potential for holdup of a standard into the determination of whether to grant an injunction, while remaining sensitive to the patent system's incentives to innovate.

## II. THE LAW OF COMPENSATORY PATENT DAMAGES

The fundamental principles of patent damages law are consistent with the economic analysis above: To support a RAND negotiation by creating a shadow in which a patentee receives compensation for the ex ante value of its invention rather than the holdup value based on the locked-in investments of standards implementers, patent damages should be calculated based on what the parties would have agreed to before the standard was set.<sup>34</sup> But the legal rules developed by courts to apply those principles can detract from an economically grounded damages calculation. This Part discusses three areas of law that are most relevant to damages for infringing a patent that covers a standard: (1) the hypothetical negotiation framework; (2) the role of competition from alternatives in calculating damages; and (3) the point in time from which reasonable royalty damages are determined.<sup>35</sup>

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<sup>32</sup> See Mark A. Lemley & Carl Shapiro, *Patent Hold-Up and Royalty Stacking*, 85 TEX. L. REV. 1991, 1993 (2007); see also Lemley, *supra* note 31, at 166–67 (arguing that courts use equitable analysis of injunctions to mitigate patent holdup of standards).

<sup>33</sup> Douglas Lichtman, *Understanding the RAND Commitment*, 47 HOUS. L. REV. 1023, 1039–43 (2010) (arguing that injunctions should not apply in the RAND context); Miller, *supra* note 13, at 358 (arguing that the RAND promise creates an “irrevocable waiver of injunctive relief” that helps prevent patent holdup).

<sup>34</sup> Some have recognized a degree of circularity in the effect of damages on licensing rates. Because parties negotiate a license in the shadow of litigation, the potential damage award will influence the negotiated rate. However, the law looks to the royalty the market would award to establish damages. See SUZANNE SCOTCHMER, *INNOVATION AND INCENTIVES* 211–12 (2004). This circularity is attenuated in an ex ante licensing negotiation by the licensee's ability to use an alternative technology and its unwillingness to pay more than the incremental value the invention adds to the infringing product, regardless of the size of any potential damage award.

<sup>35</sup> See 2011 FTC PATENT REPORT, *supra* note 3, at 137–212 (offering comprehensive critique of the legal rules governing damages calculations).

## A. THE HYPOTHETICAL NEGOTIATION FRAMEWORK

The Patent Act incorporates the economic goal of compensating patentees for infringement of their inventions by requiring that a court award a successful patentee damages “adequate to compensate for the infringement.”<sup>36</sup> Consistent with the economic principles for damages described above, courts have defined damages “adequate to compensate” as those that place a patentee in the position it would have been but for the infringement.<sup>37</sup> When absent infringement, a patentee would have licensed the accused infringer, patent law awards reasonable royalty damages based on a hypothetical negotiation between a willing licensor and a willing licensee.<sup>38</sup> Therefore, a court would undoubtedly award a patentee that has indicated its willingness to license through a RAND commitment reasonable royalty damages.<sup>39</sup>

Since the goal of damages based on a hypothetical negotiation and the willing licensor/willing licensee model is to value an invention in the same manner as the technology market in which the invention competes, those damages should reflect the *ex ante* value of the patented technology, and not the value of investments made by the infringer to manufacture a product incorporating the patented invention. In this way, with one distinction, damages should be consistent with the RAND amount.<sup>40</sup> Some recent damages cases raise concerns that damages will not be calculated in this manner. These cases seem to ignore the requirement of a willing licensee and the upper bound that it will place on reasonable royalty damages by allowing awards that were more than

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<sup>36</sup> 35 U.S.C. § 284.

<sup>37</sup> See, e.g., *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 507 (1961) (framing the damages question as: “[H]ad the Infringer not infringed, what would Patent Holder-Licensee have made?”); *Brooktree Corp. v. Advanced Micro-Devices, Inc.*, 977 F.2d 1555, 1579 (Fed. Cir. 1992); JOHN M. SKENYON ET AL., *PATENT DAMAGES LAW AND PRACTICE* §§ 1:1, at 1–3 (2011) (“This is the critical starting point for any review of the various patent damages theories . . .”).

<sup>38</sup> 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.”); *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), *modified and aff’d*, 446 F.2d 295 (2d Cir. 1971) (describing the proper measure of damages as: “[T]he amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon if both had been reasonably and voluntarily trying to reach an agreement.”).

<sup>39</sup> Courts likely would look to reasonable royalty patent damages law in determining a RAND royalty in the context of a contract dispute. See Anne Layne-Farrar et al., *Pricing Patents for Licensing in Standard-Setting Organizations: Making Sense of FRAND Commitments*, 74 *ANTI-TRUST L.J.* 671, 705 (2007) (The “fifteen factors in *Georgia-Pacific* that guide reasonable royalty determinations for patent infringement cases are the most obvious starting point for FRAND, and they appear to be readily applicable to reasonable royalties within SSOs.”).

<sup>40</sup> Damages should be calculated based on a patent known to be infringed and valid. *Lucent Technologies*, 580 F.3d at 1325. A license negotiated under the threat of litigation, including a RAND license, will incorporate a discount based on litigation risk.

any licensee would have paid.<sup>41</sup> In addition, recent, very large damage awards, some of which have been based on one feature of a complex product covered by hundreds of patents<sup>42</sup> and increases in IT industry patent litigation<sup>43</sup> raise questions of whether damages law is sufficiently economically grounded, at least in that subset of cases in which the invention is one component of a complex IT product. Of course, these are the types of cases most likely to involve a patent covering a standard.

The cases that ignore the requirement of a willing licensee express two recurring concerns about the hypothetical negotiation: its counterfactual nature and its inability to deter infringement. The counterfactual nature refers to the fact that the parties have completed patent litigation rather than agreed to a license.<sup>44</sup> The parties may have failed to reach agreement before trial where the patentee has expressed its willingness to license through a RAND commitment for two reasons, and 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

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<sup>41</sup> See Thomas F. Cotter, *Patent Holdup, Patent Remedies, and Antitrust Responses*, 34 J. CORP. L. 1151, 1185–86 n.163 (2009) (noting 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 and declaring that such “decisions make no economic sense”); see also *Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1338 (Fed. Cir. 2004) (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 “[t]here is no rule that a royalty be no higher than the infringer’s net profit margin”) (quoting *State Indus., Inc. v. Mor-Flo Indus., Inc.*, 883 F.2d 1573, 1580 (Fed. Cir. 1989)); *Monsanto Co. v. McFarling*, 488 F.3d 973, 977, 980 (Fed. Cir. 2007) (affirming \$40 royalty per bag of seed and finding that “it would be improper to hold that Monsanto’s reasonable royalty damages are limited to \$25.50 to \$28.50 per bag, the total amount charged for the seeds and the Technology Fee”).

<sup>42</sup> “From 2002–2009, there were at least eleven damage awards over \$100 million and one that was over \$1 billion, representing a marked increase in landmark damage awards compared to 20 years ago.” 2011 FTC PATENT REPORT, *supra* note 3, at 160–61; see PRICE-WATERHOUSECOOPERS, 2010 PATENT LITIGATION STUDY, THE CONTINUED EVOLUTION OF PATENT DAMAGES LAW: PATENT LITIGATION TRENDS AND THE IMPACT OF RECENT COURT DECISIONS ON DAMAGES 8, at Chart 2c (2010) (listing ten cases in which the initially adjudicated damage award exceeded \$200 million since 2007), available at <http://www.pwc.com/us/en/forensic-services/publications/2010-patent-litigation-study.jhtml>.

<sup>43</sup> 2011 FTC PATENT REPORT, *supra* note 3, at 58–60. While the overall number of patent cases brought has not risen during this period, one researcher reports that the number of defendants named in patent litigations has increased by approximately 50 percent since 2004. See Kyle Jensen, *Counting Defendants in Patent Litigation*, PATENTLY-O BLOG (Oct. 27, 2010), <http://www.patentlyo.com/patent/2010/10/guest-post-counting-defendants-in-patent-litigation.html>.

<sup>44</sup> The Federal Circuit has characterized the notion of a voluntary agreement between parties in litigation as “absurd,” (*Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1554 n.13 (Fed. Cir. 1995) (en banc)), and “a pretense that the infringement never happened.” (*Panduit Corp. v. Stahl Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1158 (6th Cir. 1978)).

appropriate for the court to award a reasonable royalty based on the expectations of more realistic negotiators.<sup>45</sup>

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.<sup>46</sup> The parties' failure to reach agreement in either circumstance does not justify supplementing the hypothetical negotiation amount or awarding more than a willing licensee would pay to fully compensate the patentee.

The patent damages case law also expresses a concern that damages that simply replicate the bargain the parties would have struck prior to infringement will not deter infringement.<sup>47</sup> One case explains that "the infringer would have nothing to lose, and everything to gain [from choosing to infringe] if he could count on paying only the normal, routine royalty non-infringers might have paid."<sup>48</sup> Some have argued that courts inappropriately allow concerns about deterrence and punishing infringers to justify reasonable royalty damages beyond an accurate measure of the hypothetical negotiation amount.<sup>49</sup>

Deterring infringement is an inappropriate reason to inflate reasonable royalty awards. Arguments that reasonable royalty damages do not deter infringement incorrectly assume that damages following trial will be the "normal, routine royalty."<sup>50</sup> The law, however, requires that the hypothetical negotiation amount incorporate the assumption that the patent is valid and infringed.<sup>51</sup> This assumption ensures that the patentee, having incurred the risk and burden of trial and prevailed, is fully compensated.<sup>52</sup> Therefore, a reasonable royalty

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<sup>45</sup> See Roger D. Blair & Thomas F. Cotter, *Rethinking Patent Damages*, 10 TEX. INTELL. PROP. L.J. 1, 76 (2001); O'Brien, *supra* note 27, at 27 (criticizing *Rite-Hite* for justifying a high royalty on the basis that the patentee did not wish to grant a license).

<sup>46</sup> 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.").

<sup>47</sup> *Panduit Corp.*, 575 F.2d at 1158 (expressing concern that patentee's competitor will simply "elect[ ] to infringe" and thereby "impose a 'compulsory license'").

<sup>48</sup> *H.M. Stickle v. Heublein, Inc.*, 716 F.2d 1550, 1563 (Fed. Cir. 1983) (quoting *Panduit Corp.*, 575 F.2d at 1158).

<sup>49</sup> See generally Brian J. Love, *The Misuse of Reasonable Royalty Damages as a Patent Infringement Deterrent*, 74 MO. L. REV. 909 (2009).

<sup>50</sup> *Panduit Corp.*, 575 F.2d at 1158.

<sup>51</sup> See, e.g., *Lucent Technologies*, 580 F.3d at 1325.

<sup>52</sup> See *Rite-Hite Corp. v. Kelley Co., Inc.*, 774 F. Supp. 1514, 1535 (E.D. Wis. 1991), *aff'd in part, vacated in part on other grounds*, 56 F.3d 1538, 1554 (Fed. Cir. 1995) ("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."); Cotter, *supra* note 41, at 1183 n.156.

should be higher following trial than it would have been before because there will be no discount for litigation risk that would have been a factor in the ex ante negotiation. In any award of patent *damages*, the uncertainties regarding liability will have been resolved by the lawsuit. This point and the high cost of litigation should provide sufficient deterrent to infringement.<sup>53</sup>

#### B. THE ROLE OF ALTERNATIVE TECHNOLOGIES IN REASONABLE ROYALTY DAMAGES

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, assuming this information is available.<sup>54</sup> 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.<sup>55</sup> The incremental value of patented technology over alternatives is central to determining a RAND royalty. Moreover, it plays such a crucial role in all licensing negotiations that it deserves to play a commensurate role in the hypothetical negotiation that determines reasonable royalty damages.<sup>56</sup> A willing licensee and willing licensor would typically reach a price somewhere below the maximum determined by alternatives, leaving both parties to profit from the agreement.<sup>57</sup>

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<sup>53</sup> Willful infringement liability and the threat of a permanent injunction also provide important deterrents to infringement in most cases. See 2011 FTC PATENT REPORT, *supra* note 3, at 173–75 (discussing deterrents to infringement). The deterrent role of those remedies is less clear in the context of a patent that is subject to a RAND commitment, however. See Lichtman, *supra* note 33, at 1042 (arguing that willful infringement and permanent injunctions should not apply to patents subject to RAND licensing).

<sup>54</sup> Lance E. Gunderson et al., *The “Analytic Approach” as a Technique to Determine a Reasonable Royalty*, in ECONOMIC DAMAGES IN INTELLECTUAL PROPERTY: A HANDS-ON GUIDE TO LITIGATION 171, 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].”).

<sup>55</sup> RICHARD B. TROXEL & WILLIAM O. KERR, CALCULATING INTELLECTUAL PROPERTY DAMAGES § 5:21, at 280 (2011) (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 technology”).

<sup>56</sup> See Peter B. Frank et al., *Patent Infringement Damages*, in LITIGATION SERVICES HANDBOOK: THE ROLE OF THE FINANCIAL EXPERT ch. 22, at 16 (Roman L. Weil et al. eds., 2007); Gregory K. Leonard & Lauren J. Stiroh, *A Practical Guide to Damages*, in ECONOMIC APPROACHES TO INTELLECTUAL PROPERTY POLICY, LITIGATION AND MANAGEMENT 63–64 (Gregory K. Leonard & Lauren J. Stiroh eds., 2005) (explaining that with “sufficient data” the non-infringing alternative “can be incorporated directly into determining the licensee’s maximum willingness to pay”). Academics, practitioners, economists, and business representatives have acknowledged the importance of the value of the patented technology over alternatives to a reasonable royalty damages analysis. See 2011 FTC PATENT REPORT, *supra* note 3, at 185–87.

<sup>57</sup> See, e.g., Leonard & Stiroh, *supra* note 56, at 52–53; cf. Lemley & Shapiro, *supra* note 32, at 1995–96 (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

The damages case law allows consideration of non-infringing alternatives,<sup>58</sup> but it has not always recognized the singular role that evidence on alternatives can play when available. A leading case that does appropriately acknowledge alternatives is *Grain Processing Corp. v. American Maize-Products Co.*<sup>59</sup> The district court, with Circuit Judge Frank Easterbrook sitting by designation, held that the cost difference between using the patented technology and an alternative “effectively capped the reasonable royalty award” since, if the patentee “had insisted on a [greater rate] in the hypothetical negotiations,” the infringer would have adopted the alternative technology.<sup>60</sup> Judge Easterbrook’s award of a 3 percent royalty represented his “best estimate” of what the parties would have reached in light of the 2.3 percent cost saving from the patented technology as well as other cost savings associated with a hypothetical license agreement.<sup>61</sup>

The parties did not appeal the royalty amount, so the Federal Circuit did not review it. However, the appeals court stated that Judge Easterbrook “supported [the] royalty amount with sound economic data and with actual, observed behavior in the market.”<sup>62</sup> The Federal Circuit also explained (in affirming a denial of a lost profit award):

only by comparing the patented invention to its next-best available alternative(s)—regardless of whether the alternative(s) were actually produced and

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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”).

<sup>58</sup> See *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), *modified and aff’d*, 446 F.2d 295 (2d Cir. 1971) (listing factors to be considered including “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”); *Zygo Corp. v. Wyko Corp.*, 79 F.3d 1563, 1571–72 (Fed. Cir. 1996) (calling non-infringing alternatives “a factor relevant to the determination of a proper royalty during hypothetical negotiations,” because an infringer would be in “a stronger position to negotiate for a lower royalty rate knowing it had a competitive non-infringing device ‘in the wings’”); *Novozymes A/S v. Genencor Int’l, Inc.*, 474 F. Supp. 2d 592, 607 (D. Del. 2007) (explaining that parties “would consider available, or soon to be available, alternatives” in agreeing to a royalty).

<sup>59</sup> 185 F.3d 1341, 1350–51 (Fed. Cir. 1999). This decision was the last in a series addressing the proper remedy in the case. See *Grain Processing Corp. v. Am. Maize-Products Co.*, 893 F. Supp. 1386 (N.D. Ind. 1995) (finding infringement, denying lost profits, and awarding a reasonable royalty), *aff’d in part, vacated in part*, *Grain Processing Corp. v. Am. Maize-Products Co.*, 108 F.3d 1392 (Fed. Cir. 1997) (non-precedential opinion) (reversing and remanding the denial of lost profits), *on remand*, 979 F. Supp. 1233 (N.D. Ind.) (again denying lost profits and awarding a reasonable royalty), *aff’d*, 185 F.3d 1341 (Fed. Cir. 1999) (affirming the denial of lost profits).

<sup>60</sup> *Grain Processing Corp.*, 185 F.3d at 1347 (describing the district court’s reasoning regarding a reasonable royalty); see also *Grain Processing Corp.*, 893 F. Supp. at 1392–93.

<sup>61</sup> *Grain Processing Corp.*, 893 F. Supp. at 1392–93. The benefits of the license included eliminating the risk that the alternative might have turned out to infringe the patent, which had happened in the infringer’s initial attempts to design around the patent. *Id.* Judge Easterbrook also cited evidence of comparable royalties and emphasized that “[a]s the infringer, AMP must bear the effects of uncertainty” resulting from the lack of more detailed cost evidence. *Id.*

<sup>62</sup> *Grain Processing Corp.*, 185 F.3d at 1353 n.5.

sold during the infringement—can the court discern the market value of the patent owner’s exclusive right, and therefore his expected profit or reward, had the infringer’s activities not prevented him from taking full economic advantage of this right.<sup>63</sup>

In spite of its comments in *Grain Processing*, the Federal Circuit more recently suggested that non-infringing alternatives do not cap reasonable royalty damage awards. In *Mars, Inc. v. Coin Acceptors, Inc.*,<sup>64</sup> the court stated in dicta that “[it] is wrong as a matter of law to claim that reasonable royalty damages are capped at the cost of implementing the cheapest available, acceptable, noninfringing alternative.”<sup>65</sup> The *Mars* court continued, “to the contrary, an infringer may be liable for damages, including reasonable royalty damages, that exceed the amount that the infringer could have paid to avoid infringement.”<sup>66</sup>

Damages determinations that do not give sufficient weight to competition from alternatives risk overcompensating patentees and depriving consumers of the benefits of competition among technologies. Improvements in patent damages law, especially recognition of the role that the incremental value of patented technology plays in capping licensing rates, can protect firms implementing a standard from holdup and consumers from higher prices. Courts should recognize that, when it can be determined, the incremental value of the patented invention over the next-best alternative establishes the maximum amount that a willing licensee would pay in a hypothetical negotiation.<sup>67</sup> Such a policy would preserve the benefits of competition among technologies for consumers and prevent SSO members from extracting fees based on investments by implementers and switching costs.

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<sup>63</sup> *Id.* at 1351.

<sup>64</sup> 527 F.3d 1359 (2008).

<sup>65</sup> *Id.* at 1373.

<sup>66</sup> *Id.* If the *Mars* court is referring to the full cost of avoiding infringement (including the royalty for the alternative and any costs or reduced value resulting from using the alternative), the *Mars* dicta is in tension with *Grain Processing* and the analysis below. This view appears correct in light of the *Mars* court’s reliance on *Monsanto Co. v. Ralph*, which it stated had already rejected the proposition 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 ever have agreed to it.” *Mars*, 527 F.3d at 1373 (quoting *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1383 (Fed. Cir. 2004)). See also Christopher B. Seaman, *Reconsidering the Georgia-Pacific Standard for Reasonable Royalty Patent Damages*, 2010 B.Y.U. L. REV. 1661, 1722 (“Recently, in *Mars, Inc. v. Coin Acceptors, Inc.*, the Federal Circuit suggested that reasonable royalty damages should not be capped at the cost of a noninfringing alternative.”).

<sup>67</sup> 2011 FTC PATENT REPORT, *supra* note 3, at 185–87 (discussing broad support for increasing consideration of alternatives in damages calculations).

### C. THE TIMING OF THE HYPOTHETICAL NEGOTIATION

To prevent patent holdup of a standard, it is important that the hypothetical negotiation of the damages calculation be set at the time of the relevant design decision, when alternatives were still available. When a patent is asserted that is included in a standard, that time will be prior to the setting of the standard.

The damages case law places the hypothetical negotiation at “the time infringement began”<sup>68</sup> but does not precisely define that point in time. If courts interpret this rule to require a hypothetical negotiation at the time of first production or the first sale, the manufacturer will already have made investments to comply with the standard.<sup>69</sup> The industry may be already locked in to using the standard due to interoperability concerns, and there will be no practicable alternative technology for purposes of calculating the competitive reasonable royalty. To avoid holdup and to give full consideration to the competition from alternatives during the standard-setting process, courts should place the hypothetical negotiation earlier in time, when the decision to use the technology was made.<sup>70</sup>

### III. THE PERMANENT INJUNCTION ANALYSIS

The ability of a patentee to obtain a permanent injunction following litigation generally benefits consumers. An injunction preserves the exclusivity that is the foundation of the patent system’s incentives to innovate. The credible threat of an injunction can deter infringement in the first place and encourage licensing.<sup>71</sup> But an injunction or its threat can also effectuate patent holdup, leading a manufacturer to pay royalties based on its switching costs rather than the value of the patented technology.

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<sup>68</sup> See, e.g., *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1545, 1554 (Fed. Cir. 1995) (en banc) (citing *Hanson v. Alpine Valley Ski Area, Inc.*, 718 F.2d 1075, 1078 (Fed. Cir.1983)).

<sup>69</sup> *Leonard & Stiroh*, *supra* note 56, at 57 (noting that the timing of the hypothetical negotiation can affect the royalty). The Federal Circuit has acknowledged that the result of the hypothetical negotiation can vary significantly depending on when one assumes it occurred. See *Integra Lifesciences I, Ltd. v. Merck KGaA*, 331 F.3d 860, 870 (Fed. Cir. 2003) (“The correct determination of this date is essential for properly assessing damages. The value of a hypothetical license negotiated in 1994 could be drastically different from one undertaken in 1995 . . .”), *vacated on other grounds*, 545 U.S. 193 (2005).

<sup>70</sup> This analysis identifying the timing of the hypothetical negotiation at the “time infringement began” as being during design of the standard and prior to a product sale is generally consistent with infringement case law holding that liability can “begin” during early-stage product development. See *Roche v. Bolar*, 733 F.2d 858, 863 (Fed. Cir. 1984) (holding use of patented compound in experiments designed to enable launch of competing product constituted infringement); *Soitec, S.A. v. Silicon Genesis Corp.*, 81 F. App’x 734, 737 (Fed. Cir. 2003) (unpublished opinion) (“[T]he early-stages of process development is nonetheless a violation of patent law.”).

<sup>71</sup> Private contracting is generally preferable to compulsory licensing because the parties will have better information to craft appropriate terms for a license than would a court and more flexibility in fashioning efficient agreements. *Cotter*, *supra* note 41, at 1175–76.

A challenge for injunction analysis when a patent has been asserted against a standard is to balance the propensity of injunctions to deter infringement and promote contracting against their ability to cause holdup, which can result in higher prices and less innovation. This challenge must be undertaken within an equitable analysis set out by the Supreme Court in *eBay v. MercExchange*.<sup>72</sup> The Patent Act requires that a district court consider the “principles of equity” in deciding whether to grant a permanent injunction,<sup>73</sup> and the Court listed four factors that a patentee must satisfy:

1) that it has suffered an irreparable injury; 2) that remedies at law, such as monetary damages, are inadequate to compensate for that injury; 3) that, considering the balance of hardships between the [parties], a remedy in equity is warranted; and 4) that the public interest would not be disserved by a permanent injunction.<sup>74</sup>

Although the injunction analysis is equitable, it should be conducted in a manner that benefits consumers by both furthering the patent system’s goal of promoting innovation and recognizing the consumer interest in competition among patented technologies. In fact, as described below, the concerns regarding holdup caused by patents covering standards fit well within the equitable nature of the injunction remedy and *eBay*’s four factor analysis.

#### A. IRREPARABLE HARM AND INADEQUACY OF MONEY DAMAGES

The first two of the four equitable factors recited in *eBay*, irreparable harm to the patentee caused by infringement and the inadequacy of money damages to remedy that harm, are closely linked. Courts sometimes analyze them together, reasoning that “irreparable harm” is that which “cannot be adequately atoned for in money.”<sup>75</sup> For a patent asserted against a standard, three facts are especially important to the irreparable harm inquiry: the nature of the patentee’s use of the invention, the nature of invention, and the presence of a RAND commitment by the patentee.

##### 1. *Use of the Invention*

The irreparable harm inquiry often has focused on whether the parties competed in a goods market and the harm that the patentee would suffer as a result

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<sup>72</sup> 547 U.S. 388, 391 (2006).

<sup>73</sup> 35 U.S.C. § 283.

<sup>74</sup> *eBay Inc.*, 547 U.S. at 391.

<sup>75</sup> *See, e.g.*, *Wald v. Mudhopper Oilfield Servs., Inc.*, No. Civ-04-1693-C, 2006 WL 2128851, at \*5 (W.D. Okla. 2006) (stating that irreparable harm often occurs when an injury cannot be adequately atoned for in money); *Paice, LLC v. Toyota Motor Corp.*, No. 2:04-cv-211, 2006 WL 2385139, at \*5 (E.D. Tex. 2006) (“Irreparable harm lies only where injury cannot be undone by monetary damages.”), *aff’d in part, vacated in part, and remanded*, 504 F.3d 1293 (Fed. Cir. 2007); *see also* Douglas Laycock, *The Death of the Irreparable Injury Rule*, 103 HARV. L. REV. 687, 694 (1989–90) (“[W]hat makes an injury irreparable is that no other remedy can repair it.”).

of that infringing competition. Many companies that own patents practiced in a standard also manufacture standardized products. Patentees that practice their patents have been able to demonstrate irreparable harm through lost market share, lost customers, and price erosion caused by ongoing infringement.<sup>76</sup> Evidence that infringement harmed a patentee's reputation as an innovator, goodwill, name recognition, and ability to form relationships with potential customers has also supported findings of irreparable harm.<sup>77</sup>

But other companies that own patents covering a standard do not practice their patents. Instead they license their technology for manufacture by others. Conventional wisdom has sometimes assumed that patentees that license rather than practice their patents cannot obtain injunctions because money damages will adequately compensate any harm they may suffer from infringement. Neither the case law nor a careful consideration of the harm suffered by such patentees supports this assumption, however. Courts have, therefore, found irreparable harm to patentees that license but do not practice their patents.<sup>78</sup> When they license as part of a technology transfer program, as do universities and semiconductor design houses, patentees can suffer harm from infringement akin to that suffered by manufacturing patentees, including loss of customer base in a technology market<sup>79</sup> and loss of reputation as an innova-

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<sup>76</sup> See, e.g., *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1310–11 (Fed. Cir. 2007) (finding that lost customers and price erosion provide evidence of irreparable harm); *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, No. 04-1371, 2008 WL 5210843 (D. Del. 2008) (lost market share and harm to plaintiff's reputation and goodwill); *Sensormatic Elecs. Corp. v. Tag Co. U.S.*, 632 F. Supp. 2d 1147, 1182 (S.D. Fla. 2008) (future loss of market share and price erosion), *aff'd in part*, 367 F. App'x 143 (Fed. Cir. 2010) (non-precedential opinion); *Becton Dickinson & Co. v. Tyco Healthcare Group, LP*, No. 02-1694, 2008 WL 4745882, at \*3 (D. Del. 2008) (lost market share and customers); see also 2011 FTC PATENT REPORT, *supra* note 3, at 260–61; Bernard H. Chao, *After eBay Inc. v. MercExchange: The Changing Landscape for Patent Remedies*, 9 MINN. J. L. SCI. & TECH. 543, 549 (2008).

<sup>77</sup> See, e.g., *Emory Univ. v. Nova Biogenics, Inc.*, No. 1:06-cv-0141, 2008 WL 2945476, at \*4 (N.D. Ga. 2008); *Callaway Golf Co. v. Acushet Co.*, 585 F. Supp. 2d 600, 621 (D. Del. 2008) (holding that reputational harm supported injunction even though the patentee no longer marketed patented golf balls), *aff'd in part, vacated in part*, 576 F.3d 1331 (Fed. Cir. 2009); *Wald*, 2006 WL 2128851, at \*5; *Smith & Nephew, Inc. v. Synthes*, 466 F. Supp. 2d 978, 983 (W.D. Tenn. 2006).

<sup>78</sup> See 2011 FTC PATENT REPORT, *supra* note 3, at 263–65 (reviewing injunction cases through March 1, 2010, and identifying seven in which a district court granted an injunction to a non-practicing patentee); see also, e.g., *i4i Ltd. P'ship v. Microsoft Corp.*, 670 F. Supp. 2d 568 (E.D. Tex. 2009), *aff'd*, 589 F.3d 1246 (Fed. Cir. 2009) (district court's injunction grant affirmed), *superseded by* 598 F.3d 831 (Fed. Cir. 2010); *Kowalski v. Mommy Gina Tuna Resources*, No. 05-00679-bmk, 2009 WL 856006 (D. Haw. 2009) (injunction granted), *clarified by* No. 05-00679-bmk, 2009 WL 1360695 (D. Haw. 2009); *Joyal Prods., Inc. v. Johnson Elec. N. Am., Inc.*, No. 04-5172, 2009 WL 512156 (D.N.J. 2009) (injunction granted), *aff'd per curiam*, 335 Fed. App'x 48 (Fed. Cir. 2009); *Johns Hopkins Univ. v. Datascope Corp.*, 513 F. Supp. 2d 578 (D. Md. 2007) (injunction granted), *rev'd on other grounds*, 543 F.3d 1342 (Fed. Cir. 2008).

<sup>79</sup> Licensing patentees compete in a technology market to have their technology purchased for incorporation into new products. See U.S. Dep't of Justice & Fed. Trade Comm'n, *Antitrust Guidelines for the Licensing of Intellectual Property* § 3.2.2 (1995) ("Technology markets con-

tor.<sup>80</sup> The availability of an injunction is important to them when they rely on the threat to deter infringement and encourage licensing.<sup>81</sup>

Some non-practicing patentees seek to license broadly as patent holding companies. They do not engage in technology transfer. Rather they look for companies that already practice the invention and attempt to extract rents for its use.<sup>82</sup> It is less likely that such patentees would suffer irreparable harm from denial of an injunction and an award of ongoing royalties. They will not have the same concerns about deterring future infringement and protecting their reputation as an innovator that other licensing patentees may have.<sup>83</sup>

## 2. Nature of the Invention

How the nature of the patented invention affects competition from alternatives during the standard-setting process can also influence the irreparable harm analysis. If the patent covers only a minor component of a complex product and alternatives were available at the time of selection, denying the injunction will do less harm to the patent owner's reputation as an innovator and its ability to form relationships with customers. It is also more likely that ongoing royalties in lieu of an injunction will fully compensate the patentee for use of the invention. If the patent covers core technology to the product that could not be designed around, denying an injunction would likely create more harm to a patentee's reputation, relationships, and ability to be fully compensated.

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sist of the intellectual property that is licensed . . . and its close substitutes . . . .”), available at <http://www.justice.gov/atr/public/guidelines/0558.htm>.

<sup>80</sup> See *Commonwealth Sci. & Indus. Research Org. v. Buffalo Tech. Inc.*, 492 F. Supp. 2d 600, 604 (E.D. Tex. 2007) (injunction granted), *aff'd in part*, 542 F.3d 1363 (Fed. Cir. 2008) (explaining that infringement can harm reputation and a research institution's ability to obtain funding and recruit scientists just as it can harm brand name or goodwill to a manufacturing company); see also *Emory*, 2008 WL 2945476, at \*5 (emphasizing negative effects from infringement on goodwill and prestige).

<sup>81</sup> See *Broadcom Corp. v. Qualcomm Inc.*, 543 F.3d 683, 702 (Fed. Cir. 2008) (recognizing that infringement would harm patentee's ability to compete for “design wins”).

<sup>82</sup> See 2011 FTC PATENT REPORT, *supra* note 3, at 58–67 (describing activities of non-practicing entities that are primarily patent assertion entities rather than innovators).

<sup>83</sup> See, e.g., *z4 Techs., Inc. v. Microsoft Corp.*, 434 F. Supp. 2d 437, 440–41 (E.D. Tex. 2006). The patented technology was a small component of the infringing product and unrelated to the product's core functionality. The court concluded that the patent holding company patentee would not suffer irreparable harm because the only entity it was prevented from licensing in the future was the defendant. *Id.*; see also *Paice, LLC v. Toyota Motor Corp.*, No. 2:04-cv-211, 2006 WL 2385139, at \*5 (E.D. Tex. 2006), *aff'd in part, vacated in part, and remanded*, 504 F.3d 1293 (Fed. Cir. 2007) (denying injunction to licensing company plaintiff where the patented product was a small component of the infringing device).

### 3. *RAND Commitment*

In the standard-setting context, these considerations of the use and nature of the invention must be weighed against the patent owner's RAND commitment to determine irreparable harm. A prior RAND commitment, as an expressed intention to license broadly, provides strong evidence that denial of an injunction and ongoing royalties will not irreparably harm the patentee.<sup>84</sup> A court-ordered payment of ongoing royalties can ensure that the patentee receives the full value of the invention and protect incentives to innovate.<sup>85</sup> That ongoing royalty should incorporate knowledge that the patent is valid and infringed, and therefore be higher than a pre-litigation RAND rate, which will include a litigation risk discount. That higher rate can deter infringement and encourage licensing instead of litigation.

#### B. BALANCE OF THE EQUITIES AND HARDSHIPS BETWEEN THE PARTIES

Courts must consider the effect of a requested injunction on an infringer and balance that against the harm that infringement imposes on the patentee. An examination of the patentee's hardships will involve many of same facts relevant to irreparable harm, with the existence of a RAND commitment being of central importance. But this factor allows courts to consider whether an injunction would subject the infringer to holdup because it is locked into using the patented technology by high switching costs or compatibility concerns, as would likely be the case for standardized technology.<sup>86</sup>

As a key part of this analysis, courts should consider whether an infringer may face significant hardship as a result of an injunction if it is impossible to participate in the market without complying with the standard.<sup>87</sup> Some courts have dismissed infringers' complaints of hardship by stating that "[o]ne who

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<sup>84</sup> See *Hynix Semiconductor, Inc. v. Rambus, Inc.*, 609 F. Supp. 2d 951, 983–85 (N.D. Cal. 2009) (finding that any harm to the patentee from denial of the injunction would be slight because patentee was willing to license standardized technology broadly); cf. *Advanced Cardiovascular Sys., Inc. v. Medtronic Vascular, Inc.*, 579 F. Supp. 2d 554, 560–61 (D. Del. 2008) (noting patentee's willingness to license other competitors in finding that money damages were adequate compensation).

<sup>85</sup> When courts have denied an injunction, they have sometimes awarded ongoing royalties for the future infringement. See 2011 FTC PATENT REPORT, *supra* note 3, at 235–38; see also *Voda v. Cordis Corp.*, No. 03-1512, 2006 WL 2570614, at \*6 (W.D. Okla. 2006), *aff'd*, 536 F.3d 1311 (Fed. Cir. 2008) (imposing same royalty rate for future infringement as for past damages); *Creative Internet Adver. Corp. v. Yahoo!, Inc.*, 674 F. Supp. 2d 847, 861 (E.D. Tex. 2009) (judge calculating royalty based on increase over jury determined rate).

<sup>86</sup> *Hynix*, 609 F. Supp. 2d at 984–85 (denying injunction, in part due to lock-in).

<sup>87</sup> *Id.* (finding balance of hardships favored infringer where injunction based on patent asserted against semiconductor memory standard would "decimate" infringer's business). But see *TruePosition, Inc. v. Andrew Corp.*, 568 F. Supp. 2d 500, 532–33 (D. Del. 2008) (evaluating harm to infringer due to standard lock-in, but declining to find balance of hardship favored infringer because of lack of evidence).

elects to build a business on a product found to infringe cannot be heard to complain if an injunction against continuing infringement destroys the business.”<sup>88</sup> The quote originates from a 1986 Federal Circuit case that predates *eBay*.<sup>89</sup> As one district court recently explained, reliance on the quote in modern injunction analysis is inappropriate: “To ignore harm to the infringer because it cannot be heard to complain runs contrary to *eBay*’s mandate to consider the balance of hardships between the plaintiff and defendant.”<sup>90</sup> After *eBay*, the principle reflected in the quote should apply, at most, to those instances where an infringer truly “elects” to infringe and the infringement is found to be willful.<sup>91</sup>

Because the presence of a RAND commitment, the problem of lock-in, and a standard implementer’s inability to participate in a goods market without infringing might all support the denial of an injunction, the threat of an injunction in the standard-setting context will lose much of its power to deter infringement and encourage licensing. A court can counteract some of this dynamic without generating holdup in every case by considering the parties’ negotiation conduct and patent arguments when balancing the equities. For instance, if an infringer made particularly weak invalidity and non-infringement arguments in litigation and refused to engage licensing negotiations before trial, hoping instead to take its chances and pay a royalty after losing, a court might find that the equities supported the grant of an injunction. The potential for that outcome would discourage such behavior.

### C. PUBLIC INTEREST

Under the public interest factor, courts must examine the effect an injunction would have on third parties, including the public at large.<sup>92</sup> In the past, courts denied injunctions “in rare instances” to protect the public interest where an injunction would have serious consequences for public health and

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<sup>88</sup> 3M Innovative Prop. Co. v. Avery Dennison Corp., No. 01-1781, 2006 WL 2735499, at \*2 (D. Minn. 2006); Johns Hopkins Univ. v. Datascope Corp., 513 F. Supp. 2d 578, 586 (D. Md. 2007), *rev’d on other grounds*, 543 F.3d 1342 (Fed. Cir. 2008) (“[H]ardship for loss of sales and for ceasing operations is not sufficient because they are direct consequences of the illegal patent infringement.”); Smith & Nephew, Inc. v. Synthes, 466 F. Supp. 2d 978, 983 (W.D. Tenn. 2006) (“Although Synthes’ effort, time, and expense in redesigning [the infringing product] might be significant, that is the consequence of patent infringement.”).

<sup>89</sup> *Windsurfing Int’l Inc. v. AMF, Inc.*, 782 F.2d 995, 1003 n.12 (Fed. Cir. 1986) (“One who elects to build a business on a product found to infringe cannot be heard to complain if an injunction against continuing infringement destroys the business so elected.”).

<sup>90</sup> *Hynix*, 609 F. Supp. 2d at 970 (quotation omitted).

<sup>91</sup> *See id.*

<sup>92</sup> *See eBay v. MercExchange*, 547 U.S. 388, 391 (2006) (“Plaintiff must demonstrate . . . (4) that the public interest would not be disserved by a permanent injunction.”).

safety.<sup>93</sup> Since *eBay*, a few courts have appropriately broadened the scope of the public interest concerns to include computer security and other burdens that would be borne by the broader public.<sup>94</sup> Courts should also consider whether grant of an injunction would deprive consumers of interoperable products and threaten to undermine the collaborative innovation that can result from the standard-setting process. Courts should also consider whether an injunction awarded against a standard would result in higher prices to consumers resulting only from holdup of the standard and not the value of the technology.

Courts sometimes cite the public's interest in "a strong patent system" as supporting an injunction,<sup>95</sup> but a more nuanced approach recognizing that the public has a strong interest in a patent system that best promotes innovation is needed. As discussed above, such a patent system will often award injunctions to patentees. But in some circumstances, including those involving holdup based on a patent for a minor component of a standardized product, an injunction could distort competition among technologies, overcompensate the patentee, unduly raise prices to consumers, and undermine rather than promote innovation.

#### IV. CONCLUSION

Implementers of standards and patentees frequently bargain for licenses to patents covering standards. *Ex ante*, before the standard is set, competition from alternative technologies constrains the royalty a patentee can demand. That is not the case *ex post*, however, when the parties bargain for a license after the implementer has made investments necessary to manufacture to the

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<sup>93</sup> *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1547 (Fed. Cir. 1995) (en banc) ("[C]ourts have in rare instances exercised their discretion to deny injunctive relief in order to protect the public interest."); *City of Milwaukee v. Activated Sludge, Inc.*, 69 F.2d 577 (7th Cir. 1934) (overturning permanent injunction on operation of sewage plant based on public health concerns).

<sup>94</sup> *See, e.g., Broadcom Corp. v. Qualcomm Inc.*, 543 F.3d 683, 704 (Fed. Cir. 2008) (delaying start of injunction on cell phone because immediate injunction would adversely affect public, network carriers, and handset manufacturers); *Finjan Software, Ltd. v. Secure Computing Corp.*, No. 06-369, 2009 WL 2524495, at \*11 (D. Del. 2009) (considering effect of injunction on computer security and service disruptions but finding insufficient evidence to outweigh public interest in a strong patent system), *aff'd in part, rev'd in part, and remanded*, 626 F.3d 1197 (Fed. Cir. 2010); *Amgen Inc. v. F. Hoffmann-LaRoche Ltd.*, 581 F. Supp. 2d 160, 212–26 (D. Mass. 2008) (evaluating whether injunction could increase drug prices for government health programs), *aff'd in part*, 580 F.3d 1340 (Fed. Cir. 2009).

<sup>95</sup> *See, e.g., Telequip Corp. v. Change Exch.*, No. 5:01-cv-1748, 2006 WL 2385425, at \*2 (N.D.N.Y. 2006) ("[W]ithout the right to obtain an injunction, the right to exclude granted to the patentee would have only a fraction of the value it was intended to have, and would no longer be as great an incentive to engage in the toils of scientific and technological research."); *Zen Design Group, Ltd. v. Clint*, No. 08-cv-14309, 2009 WL 4050247 (E.D. Mich. 2009) (finding that denial of injunction would decrease incentives for scientific progress).

standard or an industry has become locked-in due to interoperability concerns. The patentee may be able to demand much more than the ex ante value of the invention because of the implementer's and industry's sunk costs. When the patent owner captures value unrelated to its invention—the holdup value—consumers are deprived of the benefit of competition among technologies and may pay higher prices. Moreover, holdup and the threat of holdup can discourage innovation by increasing costs and uncertainty for manufacturers.

Patent remedies law provides a tool for limiting the destructive effects of patent holdup resulting from standardization. Implementers and patentees that bargain for a license ex post do so “in the shadow” of patent damages and injunction law. Through the right balance, those doctrines can prevent patent holdup, thereby preserving the patent system's incentives to innovate while protecting consumers from competitive harm.

