Distinguishing Damages Paid from Compensation Received: A Thought Experiment

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I. Introduction

The law of patent infringement damages is in need of reform.[1] Courts and

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[1] *See* Stuart Graham et al., *Final Report of the Berkeley Center for Law & Technology Patent Dam-*

commentators have argued that damages are uncertain,[2] difficult to determine,[3] divorced from economic rationales,[4] sometimes too low,[5] and frequently too high.[6] High damages awards may depress innovation, raise prices, and exacerbate what many commentators consider to be the greatest threat to the patent system: patent trolls.[7] Recent doctrinal reforms signal deep dissatisfaction with the current damages regime and a desire to improve it.[8] This Article proceeds in this spirit and offers a thought experiment to more closely tie damages calculations to the normative aims of the patent system.

This Article argues that the shortcomings of damages doctrine stem in part from the disparate and sometimes conflicting normative aims of this body of law. Patent damages serve multiple functions, and this Article focuses on two of chief importance. First, consistent with the overarching normative aim of the patent system, this Article argues that damages serve to enhance incentives to invent and commercialize new technologies. As the Supreme Court famously observed in *Graham v. John Deere*,[9] the patent system seeks to induce the creation of inventions that would not exist but for the availability of exclusive rights.[10] As Michael Abramowicz and John Duffy have fruitfully explored, this "inducement" standard

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ages Workshop, 25 TEX. INTELL. PROP. L.J. 115, 116 (2017) ("The determination of patent damages . . . remains one of the most contentious topics in [patent law and policy].").

2 *See* John M. Golden, *Principles for Patent Remedies*, 88 TEX. L. REV. 505, 527 (2010) ("[E]ven as a theoretical matter, there seems to be no generally agreed value, or even a generally agreed way for determining value, for what patent holders should receive."); Ted Sichelman, *Innovation Factors for Reasonable Royalties*, 25 TEX. INTELL. PROP. L.J. 277, 287 (2018) (noting the "unwieldy and unpredictable" nature of reasonable royalty determinations).

3 Roger D. Blair & Thomas F. Cotter, *Rethinking Patent Damages*, 10 TEX. INTELL. PROP. L.J. 1, 2 (2001) ("[T]he rules courts have developed for estimating patent damages have been, all too often, both complex and contradictory."); Daralyn J. Durie & Mark A. Lemley, *A Structured Approach to Calculating Reasonable Royalties*, 14 LEWIS & CLARK L. REV. 627, 631 (2010) (exploring the difficulty of applying the *Georgia-Pacific* test for determining reasonable royalties).

4 *See, e.g.*, Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1336 (Fed. Cir. 2009) (insisting on greater economic justifications for damages awards).

5 *See* Ted Sichelman, *Purging Patent Law of "Private Law" Remedies*, 92 TEX. L. REV. 517, 564 (2014) (noting that challenges of calculating damages may lead courts to systematically undercompensate patentees).

6 Durie & Lemley, *supra* note 3, at 628 (citing commentary suggesting that damages routinely overcompensate patentees); Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, 2020–25 (2007) (describing several difficulties of calculating reasonable royalties that tend to exacerbate holdup problems).

7 *See, e.g.*, Oskar Liivak, *When Nominal is Reasonable: Damages for the Unpracticed Patent*, 56 B.C. L. REV. 1031, 1033 (2015).

8 *See, e.g.*, *Lucent Techs.*, 580 F.3d at 1301 (rejecting a reasonable royalty award as unsupported by the evidence); Uniloc USA, Inc. v. Microsoft Corp., 632 F.3d 1292, 1314–15 (Fed. Cir. 2011) (rejecting the 25% "rule of thumb" approach to determining a reasonable royalty); *see also* John M. Golden & Karen Sandrik, *A Restitution Perspective on Reasonable Royalties*, 36 REV. LITIG. 335, 347 (2017) ("In the past decade, the U.S. Court of Appeals for the Federal Circuit has issued a raft of opinions tightening standards for proving reasonable royalty damages . . . .").

9 Graham v. John Deere Co., 383 U.S. 1 (1966).

10 *Id.* at 9 ("[A patent is intended to serve as] a reward, an inducement, to bring forth new knowledge.").

provides compelling normative guidance for determining which inventions satisfy the nonobviousness requirement.[11] This standard also provides less appreciated normative guidance for the amount of incentive that the patent system should provide inventors, in part through the award of damages. An important component of the inducement standard is that the patent system should provide just enough incentive to induce invention and commercialization but nothing more.[12] While greater rewards create greater incentives, they come at a potentially significant cost of deadweight loss and static inefficiency,[13] and the patent system seeks to strike an appropriate balance between exclusivity and access to technology.

Second, the award of damages also serves the normative aim of deterring infringement and shunting would-be infringers into voluntary licensing negotiations with patentees.[14] This might be considered a secondary normative aim, for it essentially supports the primary objective of promoting incentives to invent and innovate. If damages are too low, then potential licensees will simply infringe and risk litigation, thus undermining incentives to invest in research and development as well as imposing other social costs. Put differently, patent law in general, and patent damages in particular, aims to ensure that market actors are no better off—and are usually worse off—by infringing a patent rather than licensing it.[15]

These two normative aims—providing just enough incentive to induce invention and commercialization while ensuring that infringement is not more profitable than licensing—may sometimes lead to conflicting conceptions of damages. For example, a patentee late in the patent term may have recovered its fixed costs and made a substantial profit based on exploiting a patent, thus satisfying the incentive to invent and commercialize. However, the market value of a patented article far exceeds the marginal cost of producing that article, and the patentee sues an infringer, seeking to wring even more profits from its exclusive rights. In the current damages framework, which provides so-called "make-whole" damages,[16] the patentee may recover lost profits or reasonable royalties (and potentially attorney fees and enhanced damages) based on the full market value of the infringer's use of the patented technology. However, receiving full, market-based compensation at this late point in the technology's lifespan may easily exceed

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[11] Michael Abramowicz & John F. Duffy, *The Inducement Standard of Patentability*, 120 YALE L.J. 1590, 1599 (2011).

[12] *See infra* Part I.A.

[13] *See* Ian Ayres & Paul Klemperer, *Limiting Patentees' Market Power Without Reducing Innovation Incentives: The Perverse Benefits of Uncertainty and Non-Injunctive Remedies*, 97 MICH. L. REV. 985, 989 (1999) (explaining how the last increment by which patentees raise prices harms social welfare more than it motivates a patentee).

[14] David O. Taylor, *Using Reasonable Royalties to Value Patented Technologies*, 49 GA. L. REV. 79, 113 (2014); *see, e.g.*, Panduit Corp. v. Stahlin Bros. Fibre Works, Inc., 575 F.2d 1152, 1158–59 (6th Cir. 1978) (warning that simply equating damages with a foregone royalty would encourage infringement).

[15] *See* Blair & Cotter, *supra* note 3, at 9 (arguing that patent damages should encourage voluntary licensing by rendering a technology user no better off from infringing a patent than licensing it).

[16] *See* Sichelman, *supra* note 5, at 517.

the incentive to invent and commercialize the technology, thus maintaining static inefficiency with relatively little countervailing gain to dynamic efficiency. In such cases, there is reason to believe that damages (and the exclusivity they help enforce) are excessive.[17]

As an alternative, some commentators have suggested shifting the emphasis of damages calculations from the market value of a patented technology to the cost of developing that technology.[18] However, altering damages in this manner introduces a host of difficulties,[19] including incentivizing industry actors to engage in widespread infringement, encouraging patentees to inflate technological development costs, and increasing socially wasteful patent litigation. This is a two-pronged dilemma. If a court awards make-whole damages, those damages may overcompensate patentees.[20] However, awarding damages that only cover invention and commercialization costs (and a reasonable profit) may encourage widespread infringement and incur concomitant social costs.

This Article proceeds as a thought experiment centered around one major theoretical insight: it distinguishes the multiple normative ends served by patent damages by formally separating the amount of compensation that patentees receive from the amount of damages that infringers pay.[21] The current practice of awarding make-whole damages likely overcompensates patentees in many instances by providing more reward than necessary to invent and innovate (while making a reasonable profit). However, awarding damages to simply cover inducement costs falters for a number of reasons, notably by creating perverse incentives to infringe rather than license a patent. There is, in short, a difference between the amount that patentees should receive in compensation and the amount that defendants should pay as damages for infringement. This Article argues that patent doctrine should embrace this gap to further the purposes of the patent system rather than evading this gap or forcing damages into one box or the other.

This Article proposes an unorthodox but conceptually simple framework.

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17 *Id.* at 555–56. *But see* John M. Golden, *"Patent Trolls" and Patent Remedies*, 85 TEX. L. REV. 2111, 2145–46 (2007) (disputing empirical assertions that patent damages awards are excessive); David W. Opderbeck, *Patent Damages Reform and the Shape of Patent Law*, 89 B.U. L. REV. 127, 130 (2009) (arguing that damages awards are widely and stochastically distributed and do not reflect a bias toward large awards).

18 *See, e.g.*, Sichelman, *supra* note 2; Golden & Sandrik, *supra* note 8; Hannah Brennan et al., *A Prescription for Excessive Drug Pricing: Leveraging Government Patent Use for Health*, 18 YALE J.L. & TECH. 275 (2016); *cf.* Lisa Larrimore Ouellette, *Adjusting Patent Damages for Nonpatent Incentives*, 26 TEX. INTELL. PROP. L.J. 187, 190 (2018).

19 *See, e.g.*, Golden, *supra* note 2, at 537–39.

20 This assumes that the market value of an invention exceeds a proportional amount of outstanding inducement costs borne by the infringer. Of course, patentees may also be undercompensated as well. *See* Sichelman, *supra* note 5, at 559. This Article, however, focuses on the more common scenario in which make-whole damages are likely to exceed proportional inducement costs.

21 This "decoupling" regime may not materialize in practice given that the patentee and infringer are likely to settle and thus divide any surplus between them. As discussed further below, this Article contends that such settlements are a beneficial attribute of this proposal. *See infra* Part III.E.

Infringers should pay damages based on the current regime of awarding make-whole damages. However, courts should award compensation to a patentee based on the patentee's outstanding and projected costs of invention and commercialization, including a reasonable profit to account for risk and opportunity costs. Under this proposal, the traditional measure of damages would define a maximum amount of potential compensation. If outstanding development costs exceeded traditional damages, then the patentee would recover all of those damages, as in the current framework. However, if make-whole damages exceed outstanding development costs—perhaps because the patentee has largely recouped fixed costs through normal operating profits—a court would allocate a portion of traditional damages to cover outstanding fixed costs as well as marginal costs. Courts would grant any difference between the defendant's damages and the patentee's compensation (the "patent surplus") to government agencies to fund research and development, thus advancing the goals of the patent system.

This Article acknowledges the difficulties of implementing this proposal and addresses several anticipated objections. While this approach arguably deviates from the patent damages statute and would be difficult to implement, the statute exhibits significant flexibility, and placing the burden on patentees to prove compensation would substantially facilitate implementation. Although this proposal would reduce some incentives to invent and commercialize, it corrects a current framework that frequently overcompensates patentees, and it would actually increase incentives to develop some technologies. This regime would encourage more market entry relative to the status quo. While defendants would still face make-whole damages (and possible injunctions), patentees would have less incentive to enforce their patents, and settlements would generally fall below make-whole damages. Although such market entry reduces technological development incentives for patentees, it may be a net social positive if it reduces static inefficiency without unduly harming dynamic efficiency.[22] Furthermore, concerns over rampant infringement are mitigated by the availability of treble damages and attorney fees for willful infringement. Even if, as expected, a patentee and infringer settle in a manner that splits the patent surplus, this proposal will still generate greater market entry and access to patented technologies compared to the status quo. Finally, this proposal leverages probabilistic decision making[23] to protect against miscalculating patentee compensation and harming incentives to invent by imposing relatively high damages on defendants.

This proposal shares conceptual similarities with suggestions to "decouple"

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[22] *Cf.* Ayres & Klemperer, *supra* note 13, at 986 (arguing that limited infringement can enhance social welfare without substantially diminishing incentives to invent and develop technologies); *see id.* at 989 (explaining how the final increments of patent-inflated prices harm social welfare more than they encourage technological development).

[23] *Cf.* Glynn S. Lunney, Jr., *Patents, the Federal Circuit, and the Supreme Court: A Quiet Revolution*, 11 SUP CT. ECON. REV. 1, 72–73 (2004) (describing the probabilistic nature of the patent system).

defendant payments from plaintiff recoveries in tort law,[24] though it deviates in important ways and is tailored specifically to patent law.[25] This Article also finds common cause with other proposals to shift patent damages toward a cost-recovery system.[26] However, while the majority of these proposals have sought to incorporate inducement costs in the traditional damages framework—notably, in the calculation of reasonable royalties[27]—this proposal seeks to achieve (or approximate) the appropriate incentives to invent and infringe by utilizing private ordering and probabilistic decision making. This Article thus provides an alternate account of cost-plus damages that, while facing some formidable challenges, offers some helpful insights.

This Article proceeds in three parts. Part I examines the normative aims of the patent system and patent infringement damages. It argues that the law of patent damages serves several functions, chiefly to provide (just enough) incentive to invent and develop new technologies while deterring infringement and encouraging voluntary licensing. Part II elaborates this proposal for differentiating the amount of compensation that patentees receive from the amount of damages that defendants pay. It highlights several benefits of this approach, including a tighter fit between damages doctrine and the normative aims of patent law. Part III addresses various objections to this proposal. Among other contentions, it argues that putting the onus on patentees to prove inducement costs can enhance the administration of this proposal and that existing doctrinal safeguards can adequately guard against rampant patent infringement.

II. The Normative Aims of Patent Law and Patent Infringement Damages

A. Normative Theories of the Patent System

In order to develop a normative theory of patent damages, one must first consider the overall normative aims of patent law. In a broad sense, it is virtually uncontested that patents are a policy tool aimed at promoting technological progress.[28] The Supreme Court, drawing upon the influential views of Thomas

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[24] *See, e.g.*, A. Mitchell Polinsky & Yeon-Koo Che, *Decoupling Liability: Optimal Incentives for Care and Litigation*, 22 RAND J. OF ECON. 562 (1991); Albert Choi & Chris William Sanchirico, *Should Plaintiffs Win What Defendants Lose? Litigation Stakes, Litigation Effort, and the Benefits of Decoupling*, 23 J. LEGAL STUD. 323, 346 (2004).

[25] For instance, while Polinsky and Che's proposal aims to maintain status quo levels of deterrence by raising the defendant's liability as high as possible (while reducing the plaintiff's recovery), this Article's proposal caps the defendant's liability at make-whole damages and seeks to lower deterrence slightly, thus encouraging greater market entry. *See* Polinsky & Che, *supra* note 24, at 563.

[26] *See, e.g.*, Brennan et al., *supra* note 18; Golden & Sandrik, *supra* note 8; Sichelman, *supra* note 2; *cf*. Ouellette, *supra* note 18.

[27] *See, e.g.*, Golden & Sandrik, *supra* note 8, at 336–37 (suggesting applying restitution principles to consider invention costs in reasonable royalty calculations); Sichelman, *supra* note 2. Hannah Brennan and her co-authors offer a different proposal, advocating for the federal government's use of 28 U.S.C. § 1498 to utilize patents for reasonable compensation "where there are significant social gains to be had from bringing compensation in line with the risk-adjusted cost of developing a drug." Brennan et al., *supra* note 18, at 282.

[28] *See* U.S. Const. Art. I, § 8, cl. 8 (authorizing Congress with the power to grant patents "[t]o pro-

Jefferson, observed that "[t]he patent monopoly was not designed to secure to the inventor his natural right in his discoveries. Rather, it was a reward, an inducement, to bring forth new knowledge."[29] This is a broadly utilitarian conception of the patent system that focuses on promoting society-wide progress rather than rewarding individual inventive labor.[30] Contrary to natural-rights theories, there is no entitlement to a patent—or to any particular set of remedies arising from patent infringement. This view accords with accounts of the patent system highlighting its regulatory, rather than rights-based, nature.[31] While statutes and courts sometimes characterize patents as property rights for conceptual convenience,[32] commentators have roundly criticized the application of property rights theory and rhetoric to patents.[33] And the Supreme Court has emphasized that recognizing patents as a form of property does not imply any particular remedy for infringement.[34]

Having established the broad, utilitarian nature of the patent system, it is important to further elaborate the specific normative function of patents. To that end, this Article draws upon Michael Abramowicz and John Duffy's conception that the aim of the patent system is to induce the creation of inventions that would

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mote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries"); Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502, 510–11 (1917) ("Since Pennock v. Dialogue was decided in 1829, this court has consistently held that the primary purpose of our patent laws is not the creation of private fortunes for the owners of patents but is to promote the progress of science and useful arts."); *see also, e.g.*, Golden, *supra* note 2, at 509 ("I generally assume a utilitarian goal that is standard in modern accounts: the patent system should act to promote the development, disclosure, and use of new technologies, ideally in a way that maximizes social welfare."); Sichelman, *supra* note 5, at 529 ("In the United States, the overriding goal of patent law is to promote technological innovation.").

29 Graham v. John Deere Co., 383 U.S. 1, 9 (1966).

30 *But see* ROBERT P. MERGES, JUSTIFYING INTELLECTUAL PROPERTY (2011) (providing deontological justifications for patent protection).

31 *See, e.g.*, Shubha Ghosh, *Patents and the Regulatory State: Rethinking the Patent Bargain Metaphor After Eldred*, 19 BERKELEY TECH. L.J. 1315–16 (2004); *cf.* Kenneth J. Arrow, *Distributive Justice and Desirable Ends of Economic Activity*, *in* ISSUES IN CONTEMPORARY MACROECONOMICS AND DISTRIBUTION 134, 152 (George R. Feiwel ed., 1985) ("But property itself is a social contrivance and cannot be taken as an ultimate value."); *cf.* Ayres & Klemperer, *supra* note 13, at 1021 ("Instead of taking an essentialist view that the 'very nature' of property entails the right to exclude, we suggest that the nature of patents should entail offering sufficient rewards for innovation.").

32 *See, e.g.*, 35 U.S.C. § 261 (stating that "patents shall have the attributes of personal property" regarding ownership and assignment).

33 *See, e.g.*, Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031 (2005).

34 eBay v. MercExchange, 547 U.S. 388, 392 (2006) ("But the creation of a right is distinct from the provision of remedies for violations of that right."); *cf.* Robert G. Bone, *Mapping the Boundaries of the Dispute: Conceptions of Ideal Lawsuit Structure from the Field Code to the Federal Rules*, 89 COLUM. L. REV. 1, 14 (1989) (noting the modern conception that rights "are neither logically prior nor logically posterior to remedies. The terms 'right' and 'remedy' are just handy conventions for describing the form of protection that a court will provide to someone whose interests have been harmed. And the scope of that protection is not given in the nature of things, but is the product of community decision based on controversial value choices").

not exist but for the availability of a patent.[35] This "inducement" principle arises directly from Supreme Court doctrine: in the seminal case of *Graham v. John Deere Co.*, the Court noted that "[t]he inherent problem was to develop some means of weeding out inventions which would not be disclosed or devised but for the inducement of a patent."[36] Although this statement directly addresses the nonobviousness requirement,[37] it provides broad normative guidance for why the government offers patents and why it may constrain those rights in some circumstances.[38]

Within this seemingly straightforward articulation of the normative aims of the patent system, it is important to unpack what it means to "devise" a new invention. This Article takes the conventional position that the patent system aims to induce the invention and commercialization of technologies that would not exist but for the patent system. While the objective of invention is fairly straightforward,[39] this Article also adopts the rather well-settled proposition that the patent system also aims to promote the commercialization of technologies.[40] As commentators have long recognized, developing a new invention into a commercial product can require significant time, effort, and resources.[41] Although commercialization-based theories of patents have proven controversial,[42] this Article argues that the normative aims of patent law encompass inducing invention as well as post-invention development and commercialization.[43]

While describing the patent system's aims, this Article emphasizes one inherent but underappreciated caveat. Ideally, in any given instance, the patent system should provide *just enough* incentive to invent and commercialize a new

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35 Abramowicz & Duffy, *supra* note 11, at 1594.

36 383 U.S. 1, 11 (1966); *see* Bristol-Myers Squibb Co. v. Teva Pharms. USA, Inc., 769 F.3d 1339, 1358 n. 10 (Fed. Cir. 2014) (citing same).

37 *See* 35 U.S.C. § 103; *see also* Bilski v. Kappos, 561 U.S. 593, 649 (2010) (Stevens, J., concurring) (citing the inducement principle of *Graham* in addressing patentable subject matter).

38 One caveat to this principle is that patents should induce the creation of an invention within a reasonable period of time relative to a world in which patents are not available. *See* Abramowicz & Duffy, *supra* note 11, at 1599.

39 *See* Rebecca S. Eisenberg, *Patents and the Progress of Science: Exclusive Rights and Experimental Use*, 56 U. CHI. L. REV. 1017, 1025–26 (1989) (discussing the incentive to invent).

40 *See, e.g.*, Abramowicz & Duffy, *supra* note 11, at 1600 (arguing that an inducement theory of nonobviousness should focus on "an earlier arrival of the commercialized invention, not merely the 'invention' in theory or on paper in a patent disclosure"); *see id.* at 1642–47; Liivak, supra note 7, at 1066.

41 *See, e.g.*, F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 MINN. L. REV. 697, 705 (2001).

42 *See* Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 266 (1977) (articulating the so-called "prospect theory" of patents); Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 872–75 (1990) (critiquing prospect theory and arguing that rivalrous competition offers the most efficient mechanism to develop many technological prospects).

43 *But see* Ted Sichelman, *Commercializing Patents*, 62 STAN. L. REV. 341 (2010) (arguing for separating the invention and commercialization function of patents).

technology and *nothing more*.[44] That is, the inducement approach to patent rights serves as both a floor and a ceiling. Inadequate exclusivity is problematic because it provides insufficient incentive to invent and develop new technologies. However, excessive exclusivity produces a host of well-recognized harms, such as allocative inefficiency, deadweight loss, and supracompetitive prices.[45] As Justice Brennan observed in his dissent in *Diamond v. Chakrabarty*, the exclusivity of patents comes at a cost, for "[t]he patent laws attempt to reconcile this Nation's deep seated antipathy to monopolies with the need to encourage progress."[46] The patent system tolerates a certain degree of static inefficiency to enhance dynamic efficiency.[47] However, excessive exclusivity may swallow the gains of dynamic efficiency and inhibit sequential innovation.[48] Furthermore, excessively rewarding patents can cause wasteful patent races and distort the allocation of resources toward patentable areas of technological development.[49] To strike the right balance, the overarching aim of patent law is "to give as little protection as possible consistent with encouraging innovation."[50]

B. Normative Theories of Patent Damages

The overarching inducement objective of the patent system helps inform the subsidiary normative aims of patent damages. Given that patent law rests not upon natural-rights theories or entitlements but a utilitarian commitment to society-wide technological progress, functional concerns should dictate the determination of damages.[51] This Article argues that patent damages should aim to provide adequate incentives for invention and commercialization (without offering excessive compensation) as well as discourage infringement by rendering it less profitable than licensing.[52]

There are, of course, other normative aims that damages could theoretically

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44 *See* Lunney, Jr., *supra* note 23, at 5.

45 *See, e.g.*, Peter Lee, *Toward a Distributive Commons in Patent Law*, 2009 WIS. L. REV. 917, 931–32.

46 Diamond v. Chakrabarty, 447 U.S. 303, 319 (1980) (Brennan, J., dissenting).

47 Ian Ayres & Gideon Parchomovsky, *Tradable Patent Rights*, 60 STAN. L. REV. 863, 867 (2007).

48 *See* Blair & Cotter, *supra* note 3, at 46.

49 Golden, *supra* note 2, at 517; *cf.* Mark F. Grady & Jay I. Alexander, *Patent Law and Rent Dissipation*, 78 VA. L. REV. 305, 308–09 (1992) (arguing that one of the functions of the patent system is to minimize rent dissipation).

50 Lemley, *supra* note 33, at 1031; *cf.* Thomas F. Cotter, *Patent Holdup, Patent Remedies, and Antitrust Responses*, 34 J. CORP. L. 1151, 1154–55 (2009) (arguing that patent law should be "structured to maximize the surplus of cognizable social benefits over cognizable social harms," with the latter encompassing deadweight loss and other costs); Ayres & Klemperer, *supra* note 13, at 987 ("[E]fficient patent policy should strive to give patentees constrained market power . . . ."); Golden & Sandrik, *supra* note 8, at 371 ("[P]atent law should provide a reward that is just large enough to cover the pertinent costs, including opportunity costs, associated with innovation so that the socially optimal level of these activities are stimulated at the least expense to society as a whole.").

51 Golden, *supra* note 2, at 509.

52 *See* Blair & Cotter, *supra* note 3, at 88 (characterizing as "first principles" the notions that "we want to (1) preserve the patentee's incentive to invent, disclose, and (perhaps) commercialize, and (2) deter infringement by channeling would-be users into voluntary transactions").

advance. For instance, damages could prevent injustice associated with undercompensation.[53] To illustrate the wide range of potential conceptions of damages—and the need to tie damages to a normative theory of patent law—it is instructive to consider various kinds of damages that patent law has dismissed. For example, unlike copyright and trademark law, patent law does not provide for statutory damages or standard remuneration for disgorgement.[54] While the design patent statute contains a provision explicitly allowing a patentee to recover the "total profit" from an infringer, the utility patent statute lacks such a provision.[55]

1. Providing (Just Enough) Compensation to Induce Invention and Commercialization

Drawing on the central "inducement" rationale of the patent system, this Article argues that the central aim of damages should be to provide sufficient compensation to encourage invention and commercialization of new technologies and nothing more. In so doing, it draws upon Abramowicz and Duffy's central insight that the purpose of the patent system is to induce the development of technologies that would not exist but for the availability of a patent.[56] It is important to note that an inducement theory of damages would require not only compensating the costs of invention and innovation but also providing a reasonable profit to cover the risk and opportunity cost of developing a particular technology to the exclusion of other uses of capital.[57] An inducement approach to damages would encourage similar investments in technological development in the future while minimizing the deadweight loss associated with exclusive rights. Since the government lacks the requisite information to make these determinations *ex ante*, the patent system relies on proxies—make-whole damages and relatively strict rights to exclude—as well as probabilistic decision making to encourage invention.[58]

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[53] Taylor, *supra* note 14, at 112; *see* Cincinnati Car Co. v. N.Y. Rapid Transit Corp., 66 F.2d 592, 595 (2d Cir. 1933) ("The whole notion of a reasonable royalty is a device in the aid of justice, by which that which is really incalculable shall be approximated, rather than that the patentee, who has suffered an indubitable wrong, shall be dismissed with empty hands.").

[54] *Compare* Golden, *supra* note 2, at 514–15, *and* Golden & Sandrik, *supra* note 8, at 336–37 (describing the demise of the disgorgement remedy for patent infringement), *with* 17 U.S.C. § 504(b) (providing for recovery of infringer's profits in copyright law), 15 U.S.C. § 1117(a) (providing for recovery of infringer's profits in trademark law), Aro Mfg. Co. v. Convertible Top Replacement Co., 377 U.S. 476, 505 (1964) ("The purpose of the [statutory] change was precisely to eliminate the recovery of profits as such and allow recovery of damages only."), Mark A. Lemley, *Distinguishing Lost Profits from Reasonable Royalties*, 51 WM. & MARY L. REV. 655, 655 (2009), *and* Taylor, *supra* note 14, at 158.

[55] 35 U.S.C. § 289; *see also* Samsung Elecs. Co. v. Apple, Inc., 137 S. Ct. 429, 432 (2016).

[56] Abramowicz & Duffy, *supra* note 11, at 1594 ("[I]f the innovation would be created and disclosed even without patent protection, denying a patent on the innovation costs society nothing . . . and saves society from needlessly suffering the well-known negative consequences of patents . . . .").

[57] *But see* Thomas F. Cotter, *Patent Damages Heuristics*, 25 TEX. INTELL. PROP. L.J. 159, 174 (2018) ("[I]f we want the patent system to induce the invention of economically valuable inventions, the better policy for both practical and economic reasons is to reward results, not effort, though presumably the two will often run in sync.").

[58] *See* Ayres & Klemperer, *supra* note 13, at 1007–08 (noting that the patent system economizes on the government's need for information); Lunney, Jr., *supra* note 23.

Notably, this normative conception of damages departs starkly from the prevailing view of damages, which seeks to return the patentee to the status quo ante as if the infringement had not occurred.[59] The traditional approach offers "make-whole" damages of foregone profits and royalties lost to infringement.[60] As Ted Sichelman observes, this approach is a "private law" model of remedies consonant with tort, property, and contract law,[61] and it has become so ingrained in patent law that courts and commentators often assume its propriety.[62] Ironically, even when scholars highlight patent law's significant deviations from private law fields like torts and real property, they still apply private law remedies to patent infringement.[63]

As Sichelman has argued, however, this drive to return the patentee to the status quo ante is inconsistent with the normative aims of patent law.[64] While make-whole damages repair individual harms, the patent system's normative outlook is decidedly macroscopic and utilitarian, focusing on society-wide technological progress.[65] Although awarding reasonable royalties based on the market value of an invention has intuitive appeal,[66] it is not necessarily congruent with the normative

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[59] *See* Yale Lock Mfg. Co. v. Sargent, 117 U.S. 536, 552 (1886) (characterizing damages owed to the plaintiff as "the difference between his pecuniary condition after the infringement, and what his condition would have been if the infringement had not occurred"); Livesay Window Co. v. Livesay Indus., 251 F.2d 469, 471 (5th Cir. 1958) ("Of course the question was how much had the Patent Holder and Licensee suffered by the infringement. And that question was primarily: had the Infringer not infringed, what would Patent Holder-Licensee have made?"); ResQNet.com, Inc. v. Lansa, Inc., 594 F.3d 860, 869 (Fed. Cir. 2010) ("At all times, the damages inquiry must concentrate on compensation for the economic harm caused by infringement of the claimed invention."); Thomas F. Cotter, *Patent Remedies and Practical Reason*, 88 TEX. L. REV. 125, 130 (2009); Opderbeck, *supra* note 17, at 173.

[60] *See* Lemley, *supra* note 54, at 657 ("This traditional conception requires exclusivity; the value of a patent is accordingly commensurate with the value of the market or market niche it controls.").

[61] Sichelman, *supra* note 5, at 518–19. However, even these are contested grounds, for private law scholars have argued for more public-oriented approaches to remedies in these fields. *See id.* at 532.

[62] *See, e.g.*, Lemley, *supra* note 54, at 674 ("Patent damages are supposed to compensate patent owners for their losses, putting them back in the world they would have inhabited but for infringement."); Opderbeck, *supra* note 17, at 172 ("A tort-based measure of damages theoretically promotes economic efficiency because it deters over- and under-enforcement of the property right and thereby encourages Coasian bargaining."); Blair & Cotter, *supra* note 3, at 4 (applying traditional tort-law doctrines to patent damages).

[63] Sichelman, *supra* note 5, at 535. Even beyond make-whole compensation, sometimes courts even award damages when patent infringement produces little to no economic harm. Liivak, *supra* note 7, at 1035 ("[R]easonable royalties are not a type of damages at all, but rather they are a guaranteed minimum reward akin to a type of statutory damages.").

[64] Sichelman, *supra* note 5, at 519. Others, of course, have critiqued the normative view of tailoring patent remedies to promote incentives to invent. *See, e.g.*, Paul J. Heald, *Optimal Remedies for Patent Infringement: A Transactional Model*, 45 HOUS. L. REV. 1165, 1172–73 (2008) (observing that there is little causal connection between patent law and R&D expenditures, disclaiming any principled manner for determining the optimal level of R&D that a firm should conduct, and arguing for structuring remedies to promote transactions).

[65] Sichelman, *supra* note 5, at 531.

[66] Durie & Lemley, *supra* note 3, at 637–38 (identifying a cluster of *Georgia-Pacific* factors that evaluates the added value of a patented technology).

aim of providing just enough inducement to create new inventions.[67] For instance, make-whole damages based on the market value of patented products may easily exceed the amount of compensation necessary to promote invention and innovation, particularly in industries like software where technological development costs are relatively low.[68] This is particularly likely when a modest, inexpensive technological advance assumes significant market value because of luck or other reasons unrelated to the advance's merits.[69] An inducement approach to damages would focus on compensating invention, commercialization, and risk-adjusted opportunity costs rather than pegging damages to the market value of a patented technology. In most but not all cases, such an approach would provide patentees with far less than the full social value of their inventions, but it is routinely the case that private parties only capture a portion of the social value of their output.[70]

2. Encouraging Licensing and Deterring Infringement

Second, beyond providing adequate (and not excessive) incentives to invent and commercialize, this Article argues that another chief normative aim of patent damages is to shunt would-be infringers into licensing by rendering it economically preferable to infringement.[71] In some ways, this shunting is a secondary normative aim that undergirds the overarching objective of promoting technological progress. In short, damages have to be sufficient to deter infringement, or else market actors would infringe rather than license a patent (or design around it), thus undermining patentees' invention and commercialization incentives and imposing other costs on society. As Thomas Cotter describes, "both to preserve the patent incentive and to discourage infringement, the presumptive standard for awarding damages should be the greater of the patentee's lost profits or the royalty the parties would have agreed to ex ante."[72] Cotter's observations are true but somewhat overinclusive. Standard make-whole damages may effectively deter infringement, but as discussed above, they may do more than simply "preserve" incentives to invent and innovate; they may actually provide excessive compensation to patentees.

Currently, the patent system exhibits a strong normative concern for deterring infringement, as demonstrated in both the availability of injunctive relief[73] and the

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67 *See* Sichelman, *supra* note 2, at 280 (proposing incorporating patentee costs in the calculation of reasonable royalties).

68 Sichelman, *supra* note 5, at 523–24.

69 *See* Amy L. Landers, *Patent Valuation Theory and the Economics of Improvement*, 88 TEX. L. REV. SEE ALSO 163, 165 (2009); *cf.* Abramowicz & Duffy, *supra* note 11, at 1600–01.

70 Mark A. Lemley & Carl Shapiro, *Reply: Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 2163, 2167 (2007); Golden, *supra* note 2, at 530.

71 *See* Cotter, *supra* note 50, at 1177 ("[A]warding damages that render the infringer no better off than it would have been absent the infringement reduces the incentive to infringe, as long as the expected cost of defending an infringement suit exceeds the expected cost of negotiating a license."). Interestingly, trade secret law more explicitly recognizes these two normative values. *See* Rockwell Graphics Sys., Inc. v. DEV Indus., Inc., 925 F.2d 174, 178 (7th Cir. 1991).

72 Cotter, *supra* note 59.

73 *See* eBay v. MercExchange, 547 U.S. 388 (2006) (holding that courts should apply a four-factor equitable test to determine the appropriateness of injunctive relief); Christopher B. Seaman, *Per-*

award of make-whole damages. In theory, a system where infringers did not face an injunction and had to compensate outstanding invention and commercialization costs (plus a reasonable profit) on a proportional basis could maintain the desired technological development incentives while minimizing deadweight loss. However, administering such a system is difficult,[74] and the downside risk of miscalculating inducement damages and thus encouraging infringement is substantial.[75] Although the prospect of facing an injunction provides a powerful incentive to not infringe, the availability of make-whole damages offers an important additional incentive, particularly given that injunctions only prevent prospective infringement and do not directly reach gains from past infringement. Eliminating this marginal incentive may change the calculus for would-be infringers; they may be more willing to forgo licensing and "roll the dice" on infringement. Such a system may result in a significant increase in infringement, substantially undermining incentives to invent if patentees did not enforce their rights or creating significant litigation costs if they did.

Relatively high, make-whole damages thus supplement injunctions in deterring infringement. Such deterrence helps shunt would-be infringers into voluntary licensing, which confers significant benefits. Valuing intellectual property is notoriously difficult, and well-established law and economics scholarship holds that private ordering via voluntary negotiations achieves more accurate valuations of patent rights than third-party adjudication.[76] The prospect of paying market-based, make-whole damages may motivate a potential infringer to come to the negotiating table, where it and the patentee can utilize private information to value a technology and agree on an appropriate license. Alternatively, a party facing the prospect of paying high damages may choose to neither infringe nor license a patent but to develop a noninfringing technology. This advances another aim of the patent system: to encourage the development of new and alternative technologies that "design around" an existing patent.[77] Significantly, deterring infringement—whether it leads to licensing, designing around, or some other outcome—also serves the policy objective of avoiding litigation. Patent infringement litigation is long, complex, and costly,[78] and represents a drain on judicial and private resources that

manent Injunctions in Patent Litigation after eBay, *An Empirical Study*, 101 IOWA L. REV. 1949, 1982 (2016) (finding that courts award permanent injunctions in 72.5% of cases and that operating companies are much more likely to obtain injunctions than nonpracticing entities).

74 *See infra* Part III.F.

75 Michael Abramowicz, *Cost-Plus Damages*, 26 Tex. Intell. Prop. L.J. 133, 156 (2018).

76 *See* Robert P. Merges, *Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents*, 62 TENN. L. REV. 75, 99–100 (1994); Blair & Cotter, *supra* note 3, at 48. *But see* Jonathan S. Masur, *The Use and Misuse of Patent Licenses*, 110 NW. L. REV. 115, 121 (2015) (observing that licensing agreements reflect expected damages awards and noting circularity between court-determined damages and private negotiations).

77 State Indus. Inc. v. A.O. Smith Corp., 751 F.2d 1226, 1236 (Fed. Cir. 1985) (noting that one aim of the patent system is to promote the "'negative incentive' to 'design around' a competitor's products, even when they are patented, thus bringing a steady flow of innovations to the marketplace").

78 *See* AM. INTELL. PROP. L. ASSOC., REPORT OF THE ECONOMIC SURVEY 2015, at 37 (2015) (reporting average patent litigation costs for matters worth $1-10 million at $2 million dollars); Gaia Bern-

does not produce any innovation.

In elucidating this normative aim, it is important to distinguish mere deterrence of infringement from punitive measures. This Article argues that patent damages should deter infringement to the extent that it is economically preferable for a technology user to license a patent rather than infringe it. This is not to say that the patent damages statute should generally punish infringers with extremely high damages to express moral disapprobation for infringement.[79] Certainly, patent law can and properly does enhance damages for specific types of egregious conduct, such as willful infringement.[80] Similarly, in "exceptional cases," courts can award attorney fees—which are often substantial in patent litigation[81]—to serve a punitive function.[82] However, the general deterrence function of patent damages should simply aim to shunt parties into voluntary negotiations rather than mete out moral punishment.

III. Distinguishing Damages Paid from Compensation Received

This Article argues that some of the shortcomings of damages law arise because this body of doctrine serves more than one normative objective. On the one hand, patent damages law should aim to provide just enough compensation to induce invention and commercialization, avoiding excessive remuneration. On the other hand, it should encourage licensing over infringement by ensuring that a defendant must pay at least the market value of a patented technology upon a finding of infringement. This Part argues that distinguishing the amount of compensation that patentees receive from the amount of damages that infringers pay can resolve some of these tensions. Under this proposal, defendants would still be liable for make-whole damages to deter infringement and encourage licensing (or designing around) a patented invention. However, this traditional measure of damages would define a maximum amount of potential compensation; patentees would have to prove recoverable inducement costs based on their actual and projected expenditures and risk-adjusted opportunity cost of capital.[83] If outstanding inducement costs were sufficiently high, patentees would recover the full measure of make-whole damages, consistent with the present regime. However, if ordinary profits have already satisfied patentees' outstanding fixed costs of invention and commercialization, prevailing patentees should receive relatively low compensation

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stein, *The Rise of the End User in Patent Litigation*, 55 B.C. L. REV. 1443, 1485–86 (2014).

79 *See* Brian J. Love, *The Misuse of Reasonable Royalty Damages as a Patent Infringement Deterrent*, 74 MO. L. REV. 909, 911–12 (2009) (criticizing courts' inflation of reasonable royalties to serve a deterrent effect).

80 35 U.S.C. § 284 ("[T]he court may increase the damages up to three times the amount found or assessed."); Halo Elecs. Inc. v. Pulse Elecs., Inc. 136 S. Ct. 1923, 1935 (2016) (liberalizing the standard for awarding enhanced damages).

81 *See id*.

82 *Id.*; *see also* Octane Fitness, LLC v. ICON Health & Fitness, Inc., 134 S. Ct. 1749, 1755 (2014) (liberalizing the standard for awarding attorney fees).

83 Furthermore, a court may award treble damages and attorney fees, as discussed below. *See infra* notes 99–102 and accompanying text.

to cover marginal costs of production. When available, courts and agencies should allocate any difference between these amounts to advance research and development in accordance with the normative objectives of the patent system.

A. Mechanics

For ease of exposition, this section will first describe how, under this proposal, courts would determine damages paid by a defendant. It will then address how courts would calculate compensation received by a prevailing patentee. Finally, it will describe how courts and agencies would allocate any potential difference between these amounts.

1. Damages Paid by a Defendant

The determination of damages paid under this proposal is fairly straightforward, as it simply accords with prevailing practice. Defendants would be liable for make-whole damages based on the market value of the use of patented technologies. There are two traditional measures of damages: lost profits and reasonable royalties.[84] Lost profits damages would be available where an infringer manufactures an infringing product and competes against the patentee. In most cases, a patentee seeking lost profits must prove: "(1) demand for the patented product, (2) absence of acceptable noninfringing substitutes, (3) his manufacturing and marketing capability to exploit the demand, and (4) the amount of profit he would have made."[85] In the alternative, and as a minimum "floor," a court can determine a reasonable royalty.[86] The actual task of calculating reasonable royalties has long bedeviled courts.[87] Courts have adopted several approaches, including an "analytical method" that starts with the defendant's profit projections from utilizing an infringing product and then subtracts "the infringer's usual or acceptable net profit from its anticipated net profit realized from sales of infringing devices."[88]

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[84] *But see* Lemley, *supra* note 54, at 656 (observing that the lines between lost profits and reasonable royalties are blurring, in part because of the strict evidentiary standards for establishing lost profits).

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

[86] *See* 35 U.S.C. § 284 (2012). Empirical research has shown that courts awarded reasonable royalties in 81% of patent cases awarding damages, lost profits in 31% of those cases, and price erosion in 2% of those cases. (Percentages sum to more than 100% because courts sometimes awarded more than one type of damages.) PRICEWATERHOUSECOOPERS, 2015 PATENT LITIGATION STUDY: A CHANGE IN PATENTEE FORTUNES, 8 fig. 8 (2015), *available at* https://www.pwc.com/us/en/forensic-services/publications/assets/2015-pwc-patent-litigation-study.pdf.

[87] Durie & Lemley, *supra* note 3, at 628 ("The calculation of patent damages has become one of the most contentious issues in all of intellectual property (IP) law."); Christopher B. Seaman, *Reconsidering the* Georgia-Pacific *Standard for Reasonable Royalty Patent Damages*, 2010 B.Y.U. L. REV. 1661, 1665 (noting how the *Georgia-Pacific* test "has become increasingly difficult for juries to apply in lengthy and complex patent trials, resulting in unpredictable damage awards"); *see also* Taylor, *supra* note 14, at 81 (describing several critiques of reasonable royalties doctrine).

[88] Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1324 (Fed. Cir. 2009) (quoting TWM Mfg. Co. v. Dura Corp., 789 F.2d 895, 899 (Fed. Cir. 1986)); *see* Taylor, *supra* note 14, at 118; Opderbeck, *supra* note 17, at 133; Blair & Cotter, *supra* note 3, at 39.

However, the more common method for calculating reasonable royalties comes from an influential fifteen-factor test from *Georgia-Pacific Corp. v. United States Plywood Corp*.[89] Arguably, the most important consideration is factor fifteen, which contemplates a hypothetical negotiation between the defendant and the patentee prior to any infringement.[90] Although it represents the most common approach for determining reasonable royalties, *Georgia-Pacific* has engendered significant controversy for its rather long and convoluted list of factors.[91]

This proposal would adopt the current approach to determining the amount of damages that infringers must pay, modified by suggested reforms to reasonable royalty calculations. For instance, Daralyn Durie and Mark Lemley have advocated simplifying and clarifying the *Georgia-Pacific* test by focusing on related clusters of factors, such as the marginal advance of the patented invention over the prior art and the relative value of other inputs that contribute to an infringing product.[92] Furthermore, the Federal Circuit has recently demanded greater justification for comparable licenses[93] used to calculate a particular reasonable royalty.[94] Courts and commentators have also suggested more stringently applying the entire market value rule, which governs whether courts should base a reasonable royalty for an infringed component patent on the "entire market value" of an integrated product containing that component.[95] As Mark Lemley has described, this practice—which evolved in the context of lost profits analyses—has crept into the law of reasonable royalties and increased damages,[96] particularly in component industries.[97] Courts have recently applied the entire market value rule more carefully, only allowing a broader royalty baseline in the rare case where the patented component drives consumer demand for the entire multicomponent product.[98] This Article's proposal would incorporate these reforms to help align the amount that infringers pay more closely with the market realities of infringement.

Also consistent with prevailing doctrine, courts may award enhanced damages and attorney fees. The governing statute for enhanced damages is rather open-ended, merely noting in pertinent part that "the court may increase the damages up to three times the amount found or assessed."[99] Historically, courts have generally reserved the award of enhanced damages for willful infringement. Recent Supreme

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89 Georgia-Pac. Corp. v. U.S. Plywood Corp., 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970) (articulating fifteen factors to guide the determination of reasonable royalties).

90 *See, e.g.*, *Panduit*, 575 F.2d at 1158.

91 *See, e.g.*, Durie & Lemley, *supra* note 3, at 628.

92 *Id.* at 629.

93 *See, e.g.*, *Georgia-Pac.*, 318 F. Supp. at 1120.

94 Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1332 (Fed. Cir. 2009).

95 Garretson v. Clark, 111 U.S. 120, 121–22 (1884).

96 Lemley, *supra* note 54, at 664.

97 *Id.* at 667. Lemley further observes, however, that cases like *Lucent Technologies* may signal a countervailing trend toward applying apportionment principles in reasonable royalty cases. *Id.* at 668.

98 *Lucent Techs.*, 580 F.3d at 1336.

99 35 U.S.C. § 284.

Court doctrine has eliminated the Federal Circuit's rigid test for determining enhanced damages, emphasizing that district courts have discretion to award such damages based on the "particular circumstances of each case."[100] In similar fashion, the Supreme Court has also recently clarified that the decision to award attorney fees—which may be quite considerable—in "exceptional"[101] cases also falls within the discretion of district courts.[102] This proposal would preserve this (recently reformed) doctrinal framework for determining treble damages and attorney fees, which may vastly increase the damages paid by an infringer.

Under this proposal, infringers would pay lost profits or reasonable royalty damages, plus any multiplier based on willful infringement. Again, this simply applies current doctrine—which awards make-whole damages—along with recent and suggested reforms to better tie the calculation of damages to the market value of the use of a patented technology. Make-whole and enhanced damages would reflect the amount that an infringer would pay; it would also act as the maximum compensation available to the patentee to cover inducement costs, a point that will be more relevant later. Infringers may also be liable for attorney fees, if the court so determines, which the court would award to the patentee independent of inducement-cost analysis.[103]

This Article's proposal adopts the current framework for determining damages paid by an infringer because it serves an important normative objective: it deters infringement by rendering infringement less economically preferable than licensing a patent. Traditional make-whole damages attempts (with varying levels of success) to capture the market value of some unauthorized use of a patented invention and award that amount as damages paid by a defendant. Substantial deviations from such a regime may encourage significant numbers of market actors to simply forgo searching for, licensing, or designing around existing patents in favor of infringement, secure in the knowledge that damages may be much lower than the market value of the technology. Such widespread infringement reduces incentives to invent and commercialize, eliminates the accuracy benefits of voluntary licensing negotiations, and diverts scarce societal resources to non-innovation-producing litigation. To shunt would-be infringers into licensing, this Article's proposal largely adopts the prevailing system for calculating market-based, make-whole damages.

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[100] Halo Elecs. v. Pulse Elecs., 136 S. Ct. 1923, 1933–35 (2016) (*abrogating* In re Seagate Tech., LLC, 497 F.3d 1360 (Fed. Cir. 2007)); *see id.* (holding that awards of treble damages are subject to "abuse of discretion" review upon appeal).

[101] *See* 35 U.S.C. § 285 ("The court in exceptional cases may award reasonable attorney fees to the prevailing party.").

[102] *See* Octane Fitness, LLC v. ICON Health & Fitness, Inc., 134 S. Ct. 1749, 1756 (2014) (holding that district courts have discretion to award attorney fees upon considering a totality of the circumstances); Highmark Inc. v. Allcare Mgmt. Sys., Inc., 134 S. Ct. 1744, 1749 (2014) (holding that all aspects of a district court's determination of an exceptional case should be reviewed for abuse of discretion).

[103] *See supra* notes 101–82, 101–102 and accompanying text.

2. Compensation Received by a Patentee

Unlike determining damages paid by a defendant, calculating potential compensation received by a patentee would be radically different from prevailing practice. This Article argues for tailoring the amount of compensation received by patentees to the overarching normative objective of the patent system: to provide incentives to invent and commercialize new technologies but no more incentive than necessary. As this Article notes, a court would determine the infringer's damages as per prevailing practice based on make-whole and enhanced damages.[104] These calculations would define a maximum amount of money, and this proposal would put the onus on the patentee to prove how much of that maximum compensation it should receive based on its actual, projected, and risk-adjusted costs—including opportunity costs—of invention and commercialization.[105] By shifting the focus of a patentee's compensation away from the market value of a patented technology toward inducement costs, this proposal better aligns the law of patent damages with patent law's broader normative aims.

Critical to this proposal is distinguishing between fixed and variable costs. Most patented technologies face much higher fixed costs of invention and development compared to their variable costs of production. To apply a schematic from pharmaceuticals, empirical studies estimate the fixed cost of bringing a new FDA-approved drug to market at $2.87 billion.[106] Importantly, this figure includes out-of-pocket expenses of $1.86 billion as well as opportunity costs of capital in the form of expected returns that investors forgo during drug development.[107] Additionally, this figure incorporates the cost of navigating the long and expensive process of FDA approval (an important commercialization cost) and the cost of numerous failed research projects that yield one successful drug.[108] All told, these are fixed costs associated with bringing one pill to market. After these initial

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[104] *See supra* Part II.A.1.

[105] This proposal thus departs starkly from Mark Lemley's suggestion that "a truly reasonable royalty is one that bases the patentee's damages on the merits of the incremental contribution of the patent." Lemley, *supra* note 54, at 670.

[106] Joseph A. Dimasi et al., *Innovation in the Pharmaceutical Industry: New Estimates of R&D Costs*, 47 J. HEALTH ECON. 20, 31 (2016). This is likely a rather generous estimate, as critiques of previous studies by these authors have argued that pharmaceutical development costs are much lower. *See, e.g.*, Jerry Avorn, *The $2.6 billion Pill—Methodologic and Policy Considerations*, 372 NEW ENG. J. MED. 1877 (2015).

[107] Dimasi et al., *supra* note 106; Press Release, Tufts Center for the Study of Drug Development, Tufts CSDD Assessment of Cost to Develop and Win Marketing Approval for a New Drug Now Published (March 10, 2016), *available at* http://csdd.tufts.edu/news/complete_story/tufts_csdd_rd_cost_study_now_published; *see* Sichelman, *supra* note 2, at 287 (discussing the calculation of opportunity costs in pharmaceutical research and development).

[108] Dimasi et al., *supra* note 106, at 31; *see* Mark G. Edwards, *Biotechnology and Pharmaceutical Commercialization Alliances: Their Structure and Implications for University Technology Transfer Offices*, *in* INTELLECTUAL PROPERTY MANAGEMENT IN HEALTH AND AGRICULTURAL INNOVATION: A HANDBOOK OF BEST PRACTICES 1227, 1230 (A. Krattiger et al. eds., 2007) ("[T]op-selling pharmaceuticals (the so-called blockbusters) drive the overall profitability of major pharmaceutical companies.").

expenditures, the marginal cost of producing each additional pill is a comparatively trivial variable cost. If ordinary sales and profits have recouped $2.87 billion (for an average case), they largely cover inducement costs for the pharmaceutical firm, which suggests the firm would invest in similar research and development projects in the future. While additional profits would spur even more investment, a pharmaceutical company would pursue this economically profitable endeavor again even without those additional profits. Given that these sales have already satisfied incentives to invent and commercialize, additional exclusivity in the form of supracompetitive prices and high damages awards extends static inefficiency for comparatively little gain in dynamic efficiency.[109]

Under this proposal, if a pharmaceutical patentee had already recouped $2.87 billion to cover inducement costs, it would receive relatively low damages for subsequent acts of infringement. While $2.87 billion is certainly a large figure, successful patented drugs routinely exceed this amount over their lifetime. For instance, Merck's Januvia made $3.863 billion, $3.931 billion, and $4.004 billion in sales in 2015, 2014, and 2013, respectively.[110] Furthermore, Zetia made $2.526 billion, $2.650 billion, and $2.658 billion in 2015, 2014, and 2013, respectively.[111] Gilead made $36 billion from its new Hepatitis C virus medicines in a little over two years on the market, vastly exceeding the cost of developing these drugs.[112] The average markup for a patented drug is nearly 400%.[113] For many of these medicines, ordinary sales and profits have likely far exceeded the incentive to induce invention and commercialization. Thus, under this proposal, courts would award relatively low damages to cover variable costs upon a finding of infringement. This is independent, of course, from the much higher amount of make-whole damages that infringers would have to pay.

This proposal is thus sensitive to the cost structure of technological research and development. For example, if a patentee has not recouped significant fixed costs of invention and commercialization, perhaps because infringement occurs early in the patent term, then a patentee would likely receive the entire amount of make-whole damages as compensation for infringement. If, however, ordinary sales and profits have largely satisfied inducement costs—for instance, if the patentee has successfully profited from a technology for a significant period of time—then the patentee would receive relatively low compensation to cover marginal costs of production. For situations between these extremes, a court would allocate the

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[109] *See* Ayres & Klemperer, *supra* note 13, at 1019 (identifying the pharmaceutical industry, which features very high margins, as one where "the benefits of restricting market power are considerable"); *cf.* Brennan et al., *supra* note 18, at 279 (noting the "massive social 'deadweight' losses that stem from supra-marginal cost pricing.").

[110] Merck & Co., Inc., Annual Report (Form 10-K), at 41 (Feb. 26, 2016).

[111] *Id.*

[112] Brennan et al., *supra* note 18, at 278; *see id.* at 328 (observing that Gilead has made revenues valued at forty times the cost of developing the drugs).

[113] Dean Baker, *Financing Drug Research: What are the Issues?* 7 (Ctr. for Econ. & Pol'y Res., Issue Br., Sept. 22, 2004, *available at* https://perma.cc/DUP5-KHRX.

defendant's damages toward the patentee's inducement and variable costs until either those costs are covered or the infringer's damages are exhausted, whichever comes first. As mentioned, if applicable, courts would award attorney fees to the patentee (or infringer) independent of inducement-cost considerations, as per current practice.

Throughout the analysis, the guiding focus should be on maintaining appropriate incentives to invent and commercialize. Thus, relevant costs are those that the patentee has expended or can reasonably be expected to expend absent the infringement. For instance, if a firm infringes the patent of an operating company before the patentee can expend significant sums of money on commercialization, and the infringement (and associated price reductions) would materially harm the patentee's incentive to invest in commercialization, then a court should consider projected commercialization costs within the patentee's compensation. However, if the patentee is a nonpracticing entity with no intention or capacity to engage in commercialization, then a court should exclude projected commercialization costs (which would never materialize) as part of the compensation that the nonpracticing entity should receive. (It bears mentioning that the nonpracticing entity would likely only qualify for a reasonable royalty, which would serve as a cap on any claim for compensation.) The easiest case for applying this proposal would involve an operating company that has already brought a technology to market, in which case actual costs of invention and commercialization (as well as a reasonable profit) would count toward compensable inducement costs.

This is obviously an information-intensive inquiry, and this proposal would put the onus on the party with the most information about inducement costs: the patentee.[114] Essentially, this proposal defines a pot of money and asks the patentee to prove how much of that money it should receive. Tellingly, unlike copyright law, patent law does not award statutory damages,[115] and this proposal resuscitates older doctrine holding that patent damages "must actually be proved, and cannot be assumed as a legal inference."[116] Patentees would thus bear the burden of calculating inducement costs for a particular patented technology. As noted, this analysis would require separating fixed from variable costs. While this is a daunting task, the current *Panduit* framework already requires patentees to separate fixed from variable costs to determine the amount of profit that they would have made but for infringement.[117] Furthermore, many corporations maintain detailed internal accounts of fixed and variable costs for technological projects to assess return on investment.[118] While pharmaceutical companies maintain these internal metrics as

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[114] *Cf.* Brennan et al., *supra* note 18, at 317 ("[C]ourts can impose the burden on the patentee—who ought to be the cheapest provider of such information—to produce information about R&D expenditures, risk, reasonable profits, and worldwide market share.").

[115] 17 U.S.C. § 504(c).

[116] Seymour v. McCormick, 57 U.S. 480, 490 (1853).

[117] Panduit Corp. v. Stahlin Bros. Fibre Works, Inc., 575 F.2d 1152, 1157 (6th Cir. 1978).

[118] *See* DELOITTE, MEASURING THE RETURN FROM PHARMACEUTICAL INNOVATION 2014: TURNING A CORNER?, at 5 (2014); Sichelman, *supra* note 2, at 308.

trade secrets, it seems appropriate to compel patentees to articulate these costs in litigation to prove they actually spent (or plan to spend) the amount of compensation they are seeking. The lack of transparency in drug pricing has even spurred several attempts by state legislators to mandate R&D disclosure by pharmaceutical firms.[119]

In most cases, such calculations will necessarily involve some degree of uncertainty and projection. For instance, a defendant may infringe a patent early in its term, before the patentee or a licensee has expended significant resources to commercialize it. In such cases, parties can submit evidence of reasonable projections for commercialization costs based on similar instances of technological development and industry averages. While such approximations are not ideal, using comparable economic situations to calculate damages is a practice well established in patent law.[120] Furthermore, the exact scope of inducement costs is likely to engender significant debate. What proportion of electricity bills and rent can a patentee allocate to the development costs of a particular patented invention? To what extent should patentees receive compensation for marketing and advertising, which in the pharmaceutical realm exceed research and development costs?[121] Given that marketing and advertising are important to technological development and dissemination, it seems appropriate to include them in inducement costs.

Particularly nettlesome is the challenge of whether, and to what extent, to include the costs of failed projects in the inducement costs for a successful patented invention.[122] Returning again to pharmaceuticals, given that hundreds of candidates often fail before the discovery of a single successful drug, it is appropriate to consider these failures when calculating inducement costs. Furthermore, the distinction between fixed and variable costs is somewhat misleading given that research and development can continue to tweak and refine a patented technology even after its initial market launch, perhaps based on consumer demand and competitor responses. Inducement calculations may create a morass of indeterminacy or intractable battles between the litigants' experts. This proposal does not offer a set of bright-line rules, and courts should exercise discretion to consider inducement to modify compensation, but only when the advantages of fidelity to policy outweigh the disadvantages of uncertainty.[123]

Accordingly, this proposal contains a valuable safety valve. If calculating and apportioning inducement costs becomes more trouble than it's worth, a court can simply allocate the full measure of make-whole damages to the patentee, leaving

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[119] Brennan et al., *supra* note 18, at 320.

[120] *See, e.g.*, Lucent v. Gateway, 580 F.3d 1301, 1324 (Fed. Cir. 2009).

[121] Ana Swanson, *Big Pharmaceutical Companies Are Spending Far More on Marketing Than Research*, WASH. POST, Feb. 11, 2015, *available at* https://www.washingtonpost.com/news/wonk/wp/2015/02/11/big-pharmaceutical-companies-are-spending-far-more-on-marketing-than-research/?utm_term=.9799c970c327.

[122] *See* DELOITTE, *supra* note 118.

[123] *Cf.* Golden, *supra* note 2, at 533–34 (advocating nonabsolutism and flexibility as guiding principles of patent remedies).

both parties no worse off than under the current status quo. To guard against patentees gaming the system by providing indeterminate estimates and then invoking this safety valve, courts should impose duties of good faith and full disclosure on patentees attempting to prove inducement costs. Furthermore, infringers would also play an important role in litigating patentee inducement costs. At first glance, it appears that infringers would have little incentive to argue for low inducement costs; after all, regardless of patentee compensation, infringers would be liable for make-whole damages. However, infringers do actually have such an incentive, as establishing low inducement costs enhances their leverage in potential settlement negotiations with patentees.

A significant challenge is the endogeneity problem of calculating a "reasonable profit."[124] In order to fully compensate a prevailing patentee's inducement costs, the patentee must receive not only out-of-pocket and projected expenses but also a reasonable profit based on its use of capital for technological development (rather than other ends). If compensation is not available for opportunity costs and risk, then patentees will not invest in similar technological development in the next round of innovation.[125] However, firms that expect to receive a significant patent markup—reflected both in sales of patented items as well as make-whole damages—may view such a markup as a "reasonable profit" that they should receive upon a finding of patent infringement. In other words, patent-inflated profits and damages may be endogenous to the concept of a reasonable profit. For instance, if pharmaceutical firms expect to obtain profit margins in the neighborhood of 42%,[126] they could argue that such margins amount to a "reasonable profit" necessary to continue investing in drug development. This is a thorny issue that courts must navigate carefully, but here again the perfect should not be the enemy of the good. Courts can hear arguments and evidence regarding technological development expenses and profit margins in various high-tech industries to determine a reasonable profit without necessarily awarding the entire patent surplus to a patentee.[127] Furthermore, factors other than patents—such as human and physical capital—account for a significant proportion of return on investment in innovation in most industries, thus providing courts with more discrete factors to

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[124] *Cf.* Sichelman, *supra* note 2, at 314 (discussing the potential circularity involved in courts determining opportunity costs for patentees).

[125] *See id.* at 311; Brennan et al., *supra* note 18, at 316. *But see* Michael Abramowicz, *Cost-Plus Damages*, 26 Tex. Intell. Prop. L.J. 133, 150–51 (2018) (noting that *average* risk may be misleading because the risk of individual projects may differ considerably).

[126] Liyan Chen, *Best of the Biggest: How Profitable Are the World's Largest Companies?*, FORBES, May 13, 2014, *available at* https://www.forbes.com/sites/liyanchen/2014/05/13/best-of-the-biggest-how-profitable-are-the-worlds-largest-companies/#661785cf3a5e; *see also* Edwards, *supra* note 108 (noting that gross margins for pharmaceuticals regularly range from 75 to 95 percent for marketed drugs).

[127] Furthermore, as Michael Abramowicz points out, it may be beneficial for courts to simply apply a relatively high rate of return rather than customizing it for particularly inventive entities, thus reducing the risk of undercompensation. Abramowicz, *supra* note 125, at 153. *See also* Brennan et al., *supra* note 18, at 329 (applying a rough estimate of a 30% profit premium in pharmaceutical research and development to determine appropriate compensation for infringement).

use in calculating opportunity costs.[128] Additionally, the cost of capital for a particular company or industry can also indicate a reasonable profit expectation.[129] Circularity is problematic in the current damages regime,[130] and courts applying this proposal should guard against inflated conceptions of reasonable profits.

Notwithstanding calculation difficulties, in some cases it will be relatively clear that a patentee has already recouped its invention, commercialization, and risk-adjusted opportunity costs, so awarding the full measure of make-whole damages would be excessive. Where information regarding inducement costs is relatively forthcoming, a court should consider it. As older cases like *Rude v. Westcott* and *Coupe v. Royer* have held, infringement alone does not give rise to compensable harm.[131] Conceptually, the relevant "harm" to the patentee is not to its full market expectations, but to its incentive to invent and commercialize; the two concepts are not necessarily coextensive. This proposal simply applies the basic principle that the patentee must prove the damages for which it seeks compensation. Within this framework, the emphasis should not be on awarding the full market value of a particular patented article but on maintaining dynamic efficiency by compensating inducement costs, including a fair return on capital.[132]

3. Allocating the Patent Surplus

One notable result of distinguishing the damages paid by a defendant from the compensation received by the patentee is that courts and agencies can put any difference between these amounts to productive use. This may strike some IP observers as objectionable, given that patentees will not receive "their" entire damages award. However, this view reflects a natural-rights conception of patent protection that courts have routinely rejected.[133] Patents, after all, are policy instruments used to provide adequate incentives to invent and commercialize new technologies, not entitlements to maximize profits. Of course, one predictable implication of this proposal is that patentees and infringers will settle and split the "patent surplus" between them, which this Article addresses below.[134] However, if this does not occur, this Article proposes several options for allocating the patent surplus in ways that advance the patent system's overall aim of promoting technological progress.

First, the government can allocate these funds to support general research and development. One option is to support academic research by funding agencies like

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128 *See* Sichelman, *supra* note 2, at 314.

129 *See, e.g.*, Dimasi et al., *supra* note 106, at 24.

130 *See, e.g.*, Masur, *supra* note 76.

131 Rude v. Westcott, 130 U.S. 152, 167 (1889); Coupe v. Royer, 155 U.S. 565 (1895); *see* Liivak, *supra* note 7, at 1048–53.

132 John Stuckey & David White, *When and When Not to Vertically Integrate*, MCKINSEY Q., Aug. 1993, *available at* https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/when-and-when-not-to-vertically-integrate.

133 *See supra* Part I.B.

134 *See infra* Part III.E.

the National Science Foundation and the National Institutes of Health. Funding such research is wholly consistent with patent law's goal of promoting technological progress, and indeed all patentees in some way build off of publicly supported research to develop their creations.[135] Alternatively, if policymakers seek a tighter fit between the allocation of patent surplus and the industry where patenting and infringement took place, a funding agency could direct the patent surplus to support academic (or commercial) research in that field. This redirection may, of course, indirectly benefit the infringer (assuming that it operates in the same industry as the patentee), but its proportional share of proceeds would likely be so small as to contribute negligibly to any incentive to infringe.

Second, the government could allocate the patent surplus to fund technological development that the patent system does not sufficiently induce. While the Constitution articulates the broad objective of promoting useful arts, the patent system relies on market mechanisms that incentivize some kinds of innovations over others.[136] Indeed, "[m]arkets select for innovations that are valued in markets."[137] Patents, prices, and markets tend not to encourage the development of innovations of high social value but relatively low private value, such as malaria medications or other treatments for neglected diseases. Given the aim of the patent system to promote technological progress generally, it seems reasonable to allocate the patent surplus to promote technologies that patents and markets tend to neglect. Sichelman has proposed a system where government actors could identify areas of socially valuable innovation where prevailing incentives (including damages) are insufficient and target those areas for public subsidy.[138] The current proposal creates a revenue source for such subsidy. Thus, funding agencies could allocate the patent surplus to finance research into treatments for neglected diseases, low-cost technologies of value to poor communities, or similarly socially valuable innovations.[139]

As a subset of this approach, to tie the patent surplus more tightly to the work of patentees, the government could also allocate these funds to compensate patentees when inducement costs outstrip patent damages, particularly for technologies for which social value significantly exceeds private value. While make-whole damages may exceed costs of invention and commercialization, this may not necessarily be the case. It is possible that inducement costs exceed what the

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135 *See* Peter Lee, *Contracting to Preserve Open Science: Consideration-Based Regulation in Patent Law*, 58 EMORY L.J. 889, 907 (2009); John Golden, *Biotechnology, Technology Policy, and Patentability: Natural Products and Invention in the American System*, 50 EMORY L.J. 101, 110 (2001) (noting the "dominant role" played by federal funding in supporting biotechnology); PETER L. SINGER, INFO. TECH. & INNOVATION FOUND., FEDERALLY SUPPORTED INNOVATIONS: 22 EXAMPLES OF MAJOR TECHNOLOGY ADVANCES THAT STEM FROM FEDERAL RESEARCH SUPPORT (2014), *available at* http://www2.itif.org/2014-federally-supported-innovations.pdf.

136 *See* Kenneth W. Dam, *The Economic Underpinnings of Patent Law*, 23 J. LEGAL STUD. 247, 248–49 (1994) (extolling the virtues of market-based allocation of technological resources).

137 Peter Lee, *Social Innovation*, 92 WASH. U.L. REV. 1, 6–7 (2014).

138 Sichelman, *supra* note 5, at 559–60.

139 *See generally* Lee, *supra* note 137.

patentee could get in damages (or licensing revenues). This may arise in situations of inefficient or misguided technological development, but it may also arise when a patentee devotes significant resources to developing a technology where social value substantially exceeds private value, such as therapies for rare diseases or assistive technologies for disabled persons.[140] Thus, as a narrower version of the previous option, courts and agencies could allocate accumulated patent surplus to patentees involved in litigation where market-based damages for the latter do not cover a significant proportion of inducement costs.[141] This approach would serve a "smoothing out" function by allocating resources for innovation more equitably across different domains of technology.

B. Benefits

Separating damages paid from compensation received for patent infringement offers several benefits. It provides a more normatively grounded approach to damages based on the overarching objectives of the patent system. Within the utilitarian ideal of patent law, damages should provide just enough (proportional) compensation to induce invention and commercialization without exacerbating the efficiency losses of exclusive rights. Furthermore, reducing expected compensation decreases a patentee's incentive to sue,[142] thus reducing litigation costs and increasing entry from infringers, which enhances access to a patented technology.[143] At the same time, a patent system where defendants only pay enough damages to cover invention and commercialization (in an amount proportional to their infringement) is subject to errors of calculation, and the implications of miscalculation—widespread infringement, depressed incentives to invent, and costly patent litigation—may be severe.[144] Maintaining make-whole damages (with modern reforms) ensures that infringement is not more economically favorable than licensing. This may produce a difference between damages paid and compensation received, and this Article proposes allocating those funds to support research and development, which further advances the objectives of the patent system.

While this proposal draws on Abramowicz and Duffy's argument for an inducement approach to nonobviousness, damages represents a superior doctrinal

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[140] *See* Sichelman, *supra* note 5, at 560.

[141] *Cf.* Golden & Sandrik, *supra* note 8, at 337 (suggesting applying restitution principles to enhance reasonable royalties for patented inventions of high social value).

[142] Ayres & Klemperer, *supra* note 13, at 993 ("If the probability that the patent will be enforced is sufficiently low, entrants may find it profitable to produce the patented product."); *id.* ("Infringement during the patent's life will tend to expand industry output and decrease the market price.").

[143] This analysis assumes that infringers are relatively efficient and fixed costs of entry are relatively low. If, on the other hand, infringers face high entry costs or higher marginal costs than the patentee, then entry may simply convert some of the patentee's profits into additional social costs. Ayres & Klemperer, *supra* note 13, at 1015. Ayres and Klemperer suggest an alternative approach in which infringers pay less than make-whole damages, thus encouraging entry and the associated benefits of greater competition. *Id.* at 1028–29. This proposal achieves a similar result—encouraging entry—but by decreasing the likelihood of the patentee bringing suit and indirectly reducing the defendant's damages by encouraging settlement.

[144] *See infra* Part III.F.

context for applying such a principle.[145] Whereas nonobviousness operates as a binary switch (an invention is either obvious or nonobvious), a damages award offers more granularity to calibrate compensation based on particular costs of technological development. Furthermore, considering inducement while determining damages offers certain timing advantages relative to nonobviousness analysis. Nonobviousness determinations are initially made by patent examiners during prosecution. At this early stage of the patent process, an invention does not have much of a track record, and detailed information about invention and commercialization costs may not exist.[146] However, litigation, which typically occurs long after a patented invention has been on the market, affords courts and litigants an opportunity to develop the factual record regarding the out-of-pocket, projected, and risk-adjusted opportunity costs of a patentee's development of a particular technology.[147] The passage of time and the involvement of motivated litigants promise more and better information about inducement costs, thus rendering damages determinations a superior stage to consider such costs relative to patent prosecution.

It is also important to distinguish certain benefits of this proposal from previous suggestions to decouple defendant payments from plaintiff recoveries. As noted, commentators have argued in the tort context for decoupling damages paid from compensation received.[148] In Polinsky and Che's influential model, decoupling would produce the same level of care to avoid harm on the part of defendants (because the increase in damages paid would be offset by the lower probability of suit by plaintiffs) but with lower social costs because plaintiffs would be less likely to sue (due to lower expected recoveries).[149] The current proposal shares some commonalities with the decoupling approach, such as encouraging settlement rather than litigation, thus lessening social costs. However, this Article's proposal features some important differences. Polinsky and Che focus on the tort context, in which defendants' activities (such as car accidents or medical malpractice) are generally net welfare-diminishing activities that the legal system should discourage as long as it is cost-effective to do so (that is, without inducing wastefully excessive care). In the patent context, however, infringement can serve affirmatively beneficial social ends given that entry by nonpatentees diminishes deadweight loss, reduces prices, and increases access to a technology. As such, the current proposal does not seek to maintain the same level of deterrence as the status quo but actually encourages an uptick in infringement. It achieves this end both by reducing the likelihood of plaintiffs suing (because of decreased recovery) and capping the defendant's liability at make-whole damages. The current proposal thus differs in important ways from traditional "decoupling" strategies, which seek to raise defendants'

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145 Abramowicz & Duffy, *supra* note 11, at 1597.

146 *Id.* at 1655.

147 *Cf.* Brennan et al., *supra* note 18, at 317 (noting the advantages of allowing courts to determine damages awards *ex post*).

148 *See* Polinsky & Che, *supra* note 24, at 569; Choi & Sanchirico, *supra* note 24, at 326.

149 *See* Polinsky & Che, *supra* note 24, at 563.

liability as high as is practicable.[150] Furthermore, the current proposal deviates sharply from prior decoupling strategies in seeking to maintain a minimum level of recovery to patentees to maintain incentives to invent and innovate. This deviates from tort conceptions of decoupling, which posit the optimal plaintiff recovery as approaching zero.[151]

This proposal also ameliorates certain critiques of previous proposals for cost-plus recovery in patent law. As noted, several commentators have suggested reorienting patent infringement damages away from make-whole damages toward covering patentee costs.[152] These proposals would typically reduce damages paid by a defendant to cover a proportional share of the patentee's invention and commercialization costs. This Article contends, however, that such proposals are vulnerable to errors in undercompensating patentees, thus severely diminishing incentives to invent.[153] Another drawback of these proposals is that patentees would have incentives to inflate (or not care about economizing) invention and commercialization costs. After all, if a cost-plus regime compensates for such costs, along with some extra "kicker" to cover risk and uncertainty, it will tempt patentees to simply run up costs[154] or avoid socially beneficial low-hanging fruit that is inexpensive to develop.[155] However, the current proposal severely mitigates this incentive because patentee compensation would be capped at make-whole damages. Coupled with *ex ante* uncertainty regarding whether a firm's patents would be infringed and whether it would prevail in litigation, patentees would still have an incentive to economize on invention and development costs.

This inducement approach to calculating patentee compensation would have several practical results. It would most significantly impact patented technologies with the highest margins—that is, those technologies with the greatest difference between per-unit development costs and market price. This proposal would effectively transfer some of that producer surplus to society by allocating it toward research and development. Furthermore, transferring some patent surplus to other parties would increase incentives to perform research in areas of high social value but comparatively low private value. Additionally, this proposal would ameliorate certain instances of holdup and royalty stacking problems with multicomponent technologies.[156] Patentees of components derive significant leverage because the market value of their component is based in part on the "holdup value" of that component within an integrated product. By compensating patentees for inducement costs rather than the market value of their components, this proposal would reduce

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150 *Id.*

151 *Id.*

152 *See, e.g.*, Sichelman, *supra* note 2, at 304; Golden & Sandrik, *supra* note 8, at 371–73; Brennan et al., *supra* note 18, at 314–15.

153 *See infra* Part III.F.

154 *See* Abramowicz, *supra* note 125, at 141 (warning that cost-plus recovery would encourage "goldplating" on the part of patentees); Sichelman, *supra* note 2, at 313.

155 Golden, *supra* note 2, at 537–39.

156 *See* Lemley & Shapiro, *supra* note 6, at 1992.

such leverage in many cases.

One benefit of this approach to compensation is that it would account for non-patent incentives for invention and commercialization.[157] One set of inventions where non-patent incentives play a critical role is those arising from federal funds. Under the Bayh-Dole Act, universities routinely take title to patents emerging from taxpayer-funded research.[158] For such technologies, public funding may satisfy a significant portion of the incentive to invent, thus requiring less compensation to induce full development and commercialization of the technology. For such inventions, lowering patentee compensation would seem to be particularly appropriate to avoid what Lisa Ouellette describes as the "reward-stacking problem."[159] Indeed, courts have considered federal funding in reducing patentee recovery in cases involving the government's unauthorized use of a protected invention.[160] Of course, these would be highly factually intensive inquiries, as a federally subsidized invention may still require significant development costs to become a commercial product.[161] In general, however, where significant public funding or other non-patent subsidies cover invention and commercialization costs, courts should reduce patentee compensation accordingly.

IV. Objections and Responses

While it offers several benefits, this proposal for bifurcating damages paid and compensation received must address several objections. This Article has proceeded as a thought experiment, and a full response to all conceivable objections lies beyond its scope. Nonetheless, this Part provides some preliminary responses to likely counterarguments.

A. Statutory Compliance

First, critics may argue that bifurcating damages paid and compensation received, and adopting an inducement approach to the latter, is inconsistent with the patent damages statute. 35 U.S.C. § 284 states, in pertinent part:

> Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.
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> When the damages are not found by a jury, the court shall assess them. In either event the

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157 *See* Ouellette, *supra* note 18; *cf.* Abramowicz & Duffy, *supra* note 11, at 1623–25.

158 35 U.S.C. §§ 200–212.

159 Ouellette, *supra* note 18, at 193–95. On a related note, there have been proposals to enhance access to federally-funded patents based in part on the public's subsidy of those technologies. *See, e.g.*, Gary Pulsinelli, *Share and Share Alike: Increasing Access to Government-Funded Inventions Under the Bayh-Dole Act*, 7 MINN. J.L. SCI. & TECH. 393 (2006).

160 *See, e.g.*, Leesona Corp. v United States, 599 F.2d 958, 964, 978 (Ct. Cl. 1979) (en banc); Ouellette, *supra* note 18, at 202–03.

161 Dimasi et al., *supra* note 106, at 31 (estimating the total cost of bringing an FDA-approved drug to market as $2.87 billion).

court may increase the damages up to three times the amount found or assessed.[162]

Of course, given the rather drastic nature of this proposal, the most feasible way to implement it would be to reform the patent damages statute.[163] In particular, the statutory minimum of a reasonable royalty may seem to contravene this proposal's use of a cost-based approach to patentee compensation. However, there is significant flexibility in the current statute to accommodate this proposal.[164]

This Article argues that a plain reading of the statute does not bar application of this proposal. First, while the damages statute addresses the amount of damages awarded to a claimant, it is silent regarding how to calculate the amount of damages that an infringer must pay. While the statute implies, of course, that these amounts would be the same, it does not command it. Second, a plain reading of the statute is also compatible with an inducement theory of damages. The statute states that damages shall be "adequate to compensate for the infringement,"[165] which courts and commentators have interpreted as returning the patentee to the status quo ante as if the infringement had never occurred. If the aim of the patent system is to induce the creation of inventions that would not otherwise exist, however, then compensating for "the infringement" requires providing enough compensation to induce the underlying invention and commercialization as well as similar pursuits in the future.[166] Again, the relevant "harm" is not to the full, market-based profit expectations of the patentee, but to its incentive to invent and commercialize. Focusing on outstanding fixed costs as well as variable costs of production is a plausible way to determine a "reasonable royalty," which under this proposal would still relate to "the use made of the invention by the infringer."[167] In similar fashion, Sichelman argues, "infringement of a patent is not harmful per se; rather infringement is only harmful to the extent it denies the patentee an opportunity to be compensated an amount sufficient to induce it to engage in innovative activity."[168] This is admittedly a purposive interpretation of the statute, but it is consistent with the overarching objective of the patent system and infringement damages.

Furthermore, courts have shown significant flexibility in interpreting the damages statute in unexpected and sometimes counterintuitive ways. For example, in *Rite-Hite Corp. v. Kelley Co., Inc.*, the Federal Circuit held that lost profits can encompass lost sales of an item sold by a patentee that was not even covered by the

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[162] 35 U.S.C. § 284.

[163] It bears emphasizing that the patent damages statute has been the focus of heated congressional debate and is subject to change. For instance, damages reform was a principal element of proposed legislation that ultimately became the America Invents Act, though it was stripped out in part because of evolving Federal Circuit jurisprudence that modified damages doctrine. J. Jonas Anderson, *Patent Dialogue*, 92 N.C. L. REV. 1049, 1071–74 (2014).

[164] *Cf.* Dan L. Burk, *Means and Meaning in Patent Remedies*, 92 TEX. L. REV. 13, 15 (2014) ("[T]he metric of 'making whole' is never fixed, and instead shifts with judicial purpose.").

[165] 35 U.S.C. § 284.

[166] *But cf.* Sichelman, *supra* note 2, at 322 (cautioning against "strained" readings of the damages statute, particularly in light of historical practice favoring make-whole damages).

[167] 35 U.S.C. § 284.

[168] Sichelman, *supra* note 5, at 568–69.

patent in suit.[169] Although *Rite-Hite* reflected an expansive interpretation of patent damages, courts have also shown flexibility in interpreting damages more narrowly. For instance, courts have interpreted the patent statute to require apportionment of damages where the infringed patent covers a component that contributes relatively little to the overall value of some multicomponent product.[170] And the Federal Circuit has emphasized stringently applying the so-called entire market value rule, thus limiting instances where a court bases the royalty for a patented component on the entire market value of an integrated product including that component.[171] Recent Federal Circuit decisions have rejected rules of thumb that tend to inflate reasonable royalties and demanded greater economic justification for damages awards.[172] In short, while statutory reform is the most prudent course of action, the damages statute may be sufficiently flexible to accommodate the current proposal.

B. Administrability

Administrability is a central concern for any legal regime,[173] and some aspects of this proposal would admittedly be difficult to administer. It bears emphasizing, however, that calculating damages paid by an infringer would involve no variation from current practice. The primary difficulty, of course, would be calculating inducement costs on the part of the patentee. Courts should consider actual out-of-pocket expenses, projected expenses, and risk-adjusted opportunity costs borne by the patentee.[174] While some objections have already been addressed,[175] this section delves into several additional complexities of calculating a prevailing patentee's compensation. While this is a difficult task, calculating damages has always been an imprecise science, and it is not improper to award estimated damages as long as they have an adequate factual basis.[176]

It bears noting at the outset that the current doctrinal framework for calculating

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169 Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538, 1549 (Fed. Cir. 1995).

170 *See, e.g.*, Seymour v. McCormick, 57 U.S. 480, 491 (1853) ("[I]t is a very grave error to instruct a jury that as to the measure of damages the same rule is to govern, whether the patent covers an entire machine or an improvement on a machine.").

171 Brian J. Love, *Patentee Overcompensation and the Entire Market Value Rule*, 60 STAN. L. REV. 263, 270–71 (2007) (arguing that the entire market value rule was the exception that came to swallow the rule of apportionment); *see* Blair & Cotter, *supra* note 3, at 14–17 (discussing apportionment and the entire market value rule); *see, e.g.*, Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1339 (Fed. Cir. 2009).

172 Uniloc USA, Inc. v. Microsoft Corp., 632 F.3d 1292, 1317 (Fed. Cir. 2011) (rejecting the 25% "rule of thumb" approach to determining a reasonable royalty); *Lucent Techs.*, 580 F.3d at 1305 (rejecting a reasonable royalty award as unsupported by the evidence).

173 *See* Golden, *supra* note 2, at 563.

174 By focusing on actual, subjective costs of invention and commercialization, where known, this proposal differs from Abramowicz and Duffy's suggestion for an "inducement" approach to non-obviousness, which would follow an objective standard. Abramowicz & Duffy, *supra* note 11, at 1621. A salutary implication of this proposal is that so-called patent trolls, which amass patent portfolios but do not manufacture patented goods, would recover relatively little given that they do not bear significant commercialization costs.

175 *See supra* Part II.A.2.

176 Taylor, *supra* note 14, at 160.

damages already involves significant analytical nuance, and recent reforms have further increased its complexity.[177] Under the *Panduit* framework, courts must consider demand for a patented product, the availability of acceptable noninfringing substitutes, manufacturing and marketing capability to exploit demand, and the amount of profit that the patentee would have made (which involves separating fixed from variable costs[178]) to determine the availability and amount of lost profits.[179] These are all highly factually intensive inquiries upon which reasonable minds can differ. Reasonable royalty calculations are also highly complex.[180] The "analytical method" requires a court to apportion the infringer's profit projections between the patentee and the infringer,[181] and the fifteen-factor *Georgia-Pacific* test is notoriously complicated.[182]

Recent reforms have made reasonable royalty calculations even more difficult, as courts are more closely scrutinizing the evidence and economic rationale underlying such determinations.[183] As noted, in *Uniloc v. Microsoft*, the Federal Circuit rejected the well-established "25 percent" rule of thumb for calculating reasonable royalties,[184] insisting on a tighter fit between a proffered reasonable royalty and the economic dynamics of a potential licensing arrangement.[185] Furthermore, in *Lucent Technologies v. Gateway, Inc.*, the Federal Circuit vacated the jury's $358 million damages award because it was not supported by substantial evidence.[186] The Federal Circuit continued to emphasize analytical rigor in *ResQNet.com, Inc. v. Lansa, Inc.*, stating that "[a]t all times, the damages inquiry must concentrate on compensation for the economic harm caused by infringement of the claimed invention."[187] Other proposed reforms, such as apportioning the economic value of a patent relative to the prior art,[188] would also involve highly technical analyses. Any damages regime (including the present one) predicated on

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177 *See* Blair & Cotter, *supra* note 3, at 22 (noting that the adoption of cause-in-fact and proximate causation in damages calculations requires a "greater degree of economic sophistication").

178 Tate v. Tate, 575 F.2d 1152, 1156 (6th Cir. 1978); *see* Lemley, *supra* note 54, at 659–60.

179 *Tate*, 575 F.2d at 1156.

180 *Cf.* Cincinnati Car Co. v. N.Y. Rapid Transit Corp., 66 F.2d 592, 595 (2d Cir. 1933) ("The whole notion of a reasonable royalty is a device in aid of justice, by which that which is really incalculable shall be approximated, rather than the patentee, who has suffered an indubitable wrong, shall be dismissed with empty hands.").

181 Opderbeck, *supra* note 17, at 133.

182 Georgia-Pac. Corp. v. U.S. Plywood Corp., 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970); *see* Durie & Lemley, *supra* note 3; *cf.* Heald, *supra* note 64, at 1194.

183 Michael J. Kasdan & Joseph Casino, *Federal Courts Closely Scrutinizing and Slashing Patent Damages Awards*, 2010 PATENTLY-O PATENT LAW JOURNAL 24, 28.

184 Uniloc USA, Inc. v. Microsoft Corp., 632 F.3d 1292, 1317 (Fed. Cir. 2011).

185 *See* Jonathan A. Muenkel & Amar A. Mehta, *Uniloc v. Microsoft: The Federal Circuit's Continued Efforts at Patent Damage Reform*, 3 LANDSLIDE 10, 10 (2011).

186 Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1335 (Fed. Cir. 2009); *see* Kasdan & Casino, *supra* note 183, at 29–33.

187 ResQNet.com, Inc. v. Lansa, Inc., 594 F.3d 860, 869 (Fed. Cir. 2010); *see* Landers, *supra* note 69, at 168.

188 *See* Patent Reform Act of 2007, H.R. 1908, 110th Cong. § 5 (2007); Opderbeck, *supra* note 17, at 134–35.

determining the value of a patent will be inherently contingent.[189] Notwithstanding concerns that judges struggle to make economic distinctions,[190] there is little indication that this proposal to calculate patentee compensation is significantly more complex than the current damages regime.

John Golden presciently outlines several difficulties of implementing a cost-plus approach to damages.[191] He notes the challenge of identifying and weighing pertinent technology development costs. Given a multifaceted, longstanding research and development program, it may be difficult to apportion particular R&D costs—including the cost of failed technologies—to particular patented inventions. Additionally, Golden notes the complexity of determining an appropriate rate of return for investments in technological development.

While daunting, these challenges are surmountable. Indeed, in the context of the federal government's use of patented inventions, there is precedent for courts to adjust compensation based on the patentee's development cost.[192] Some of these difficulties, such as the need to rely on projections and the endogeneity of determining a "reasonable profit," have been addressed above.[193] Other commentators have also addressed the feasibility of certain aspects of cost-plus approaches, such as accounting for nonpatent incentives to reduce patentee recovery.[194] More generally, in defending an inducement theory of calculating damages, Ted Sichelman argues that "courts can hear evidence on R&D, testing, and commercialization costs (including the cost of failures); technological and market risk; increased profits versus baseline profits; the value of other patented components; the value of noninfringing alternatives; and so forth, in order to determine when injunctions and make-whole damages might lead to grossly excessive awards."[195] Such evidence can help courts determine appropriate invention, commercialization, and risk-adjusted opportunity costs to compensate the patentee. As noted earlier, this proposal would ameliorate some informational difficulties by placing the onus on the patentee to prove the amount of compensation needed to induce invention and commercialization.[196] Similarly, the defendant has the opportunity and incentive to counter that argument with its approximation of inducement costs.[197] This proposal thus puts the primary informational burden on the parties closest to the facts rather than on the courts.[198]

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189 Landers, *supra* note 69, at 166–67.

190 J. Jonas Anderson, *Judicial Lobbying*, 91 WASH. L. REV. 401, 433 (2016); Letter from Paul. R. Michel, Chief Judge, U.S. Court of Appeals for the Fed. Circuit, to Patrick Leahy & Orrin G. Hatch, Senate Comm. on the Judiciary (May 3, 2007), *available at* https://perma.cc/G6VL-UJ5X.

191 Golden, *supra* note 2, at 537–39.

192 *See, e.g.*, Leesona Corp. v. United States, 599 F.2d 958, 978 (Ct. Cl. 1979).

193 *See supra* Part II.B.

194 *See, e.g.*, Sichelman, *supra* note 2, at 311; Ouellette, *supra* note 18, at 204.

195 Sichelman, *supra* note 5, at 565; *see* Sichelman, *supra* note 2, at 309.

196 *See supra* Part I.A.2.

197 *Id.*

198 *See* Golden, *supra* note 2, at 564 ("The principle of devolution . . . emphasizes the value of leaving significant decisions and responsibility to private parties or government actors who operate on a

It is true that this proposal would enhance judicial discretion to shape compensation awards, thus increasing uncertainty.[199] Such discretion may raise concerns about separation of powers and democratic legitimacy given that courts would have significant power to determine damages.[200] However, courts have long exercised substantial discretion in determining patent infringement damages,[201] which has been further increased by recent Supreme Court rulings on awarding enhanced damages and attorney fees.[202] Furthermore, it again bears emphasizing that compensation would be capped by make-whole damages. When inducement costs are highly indeterminate or a court cannot resolve conflicts between the patentee's and defendant's estimates, the court can always award full make-whole damages to the patentee as a backstop. Furthermore, the risk of gross inaccuracy in determining appropriate compensation is mitigated by the availability of review upon appeal. Under this proposal, courts would need to resolve significant methodological questions to calculate a patentee's compensation. Because such questions are discretionary in nature, courts would need to explain and justify their decisions and would be subject to review for abuse of discretion on appeal.[203] Among the difficulties of the current system of jury-determined damages, there is little exposition of findings, and such determinations are subject to deferential review for substantial evidence on appeal.[204]

There are, of course, a host of challenges associated with administering the patent surplus to fund technological research and development. This proposal raises the specter of government self-dealing, as it may incentivize courts to decrease the compensation received by a patentee relative to the infringer's damages, thus maximizing the patent surplus. However, several factors mitigate this concern. First, courts would not face a true incentive for self-dealing given that courts themselves would not retain the patent surplus; courts would allocate it to federal funding agencies, which would disburse it to researchers. Second, the prospect of self-dealing is further mitigated by the fact that courts would need to provide economic justification for their compensation and damages awards (more justification than juries currently provide), and their calculations would be subject to more searching review by appellate courts. The actual disbursement of money necessarily entails some administrative expense and overhead. Furthermore, interest-group lobbying

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finer scale than a high-level policy maker.").

199 *Cf.* Sichelman, *supra* note 5, at 562.

200 *See* Sichelman, *supra* note 2, at 307; *cf.* Michael S. Moore, *Four Reflections on Law and Morality*, 48 WM. & MARY L. REV. 1523, 1535 (2007).

201 Sichelman, *supra* note 2, at 307; Brennan et al., *supra* note 18, at 326.

202 *See* Halo Elecs. Inc. v. Pulse Elecs., Inc., 136 S. Ct. 1923 (2016); Octane Fitness, LLC v. ICON Health & Fitness, Inc., 134 S. Ct. 1749 (2014).

203 *See* Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1310 (Fed. Cir. 2009) (subjecting a district court's decisions concerning the methodology of determining damages to review for abuse of discretion).

204 *See* Durie & Lemley, *supra* note 3, at 632–33; *Lucent Techs.*, 580 F.3d at 1310 (noting that courts characterize a jury's determination of damages as a question of fact and review it for substantial evidence); Golden & Sandrik, *supra* note 8, at 346–47 (noting the dramatic rise in the use of juries in patent cases, which exacerbates concerns over accuracy in damages determinations).

may influence the allocation of these funds.[205] But mechanisms already exist for parties to apply for federal grants through competitive, peer-reviewed selection processes;[206] agencies could simply expand these existing practices to allocate the patent surplus.

C. Diminishing Incentives to Invent and Commercialize

A central critique of any proposal that decreases compensation for patentees is that it would diminish incentives to invent and commercialize.[207] Indeed, this proposal will likely reduce such incentives for many patentees, as compensation for infringement may be less than make-whole damages paid by a defendant. Again, however, focusing on the normative aims of the patent system should mitigate this concern, for it is likely that traditional damages overcompensate patentees in many cases, particularly where sales and profits have already covered fixed costs of invention and commercialization as well as provided a substantial profit. After all, if the objective of the patent system were to maximize patentees' profits, it would offer high statutory damages or automatic trebling of damages.[208] Rather, the patent system attempts to strike a balance between inducing technological development and promoting access to technologies, and it seeks to provide just enough compensation to stimulate invention and commercialization and nothing more. Thus, a normatively faithful view of the patent system may indeed decrease incentives for particular patentees.[209]

More importantly, this proposal does not decrease incentives to invent and commercialize as much as shift them between different types of innovative activity. Government funding agencies would allocate the patent surplus to support other forms of research and development, consistent with the aims of the patent system.[210] As noted, these funds can support upstream research that benefits entire industries or targeted areas of technological development that the patent system and the market tend to neglect.[211] Furthermore, under one variant of this proposal, the

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[205] *Cf.* Rebecca Dresser, *Public Advocacy and Allocation of Federal Funds for Biomedical Research*, 77 MILLBANK Q. 257, 259 (1999).

[206] *See, e.g.*, Bhaven N. Sampat, *Mission-oriented Biomedical Research at the NIH*, 41 RES. POL'Y 1729, 1733–34 (2012) (describing NIH's peer-review process).

[207] *See, e.g.*, Brennan et al., *supra* note 18, at 321–22.

[208] Interestingly, an early patent statute automatically trebled damages for any type of infringement, but the patent system soon abandoned that practice. *See* Act of Apr. 17, 1800, ch. 25, 2 Stat. 37, 38, § 3; Blair & Cotter, *supra* note 3, at 5.

[209] Modifications of this proposal could shore up incentives to invent even for patentees subject to inducement cost compensation. For instance, with total compensation capped at inducement costs, policymakers could more comfortably extend the patent term or expand patent scope, thus maintaining robust incentives to invent and increasing the chances that damages would reimburse all inducement costs. *Cf.* Abramowicz, *supra* note 125, at 160 ("A working cost-plus damages system would make it feasible to grant broad patent scope without granting powerful monopoly rights."); Ayres & Klemperer, *supra* note 13, at 1001–02 (suggesting coupling probabilistic patent enforcement with term extensions).

[210] As explained more fully below, the patent surplus may not arise if the patentee and infringer settle, which is one potential (salutary) outcome of this proposal. *See infra* Part III.E.

[211] *See supra* Part II.B.

government would allocate the patent surplus to compensate patentees for whom make-whole damages provide inadequate compensation, for instance for technologies of high social value but relatively low private value. Thus, for a certain class of actors, this proposal would actually *increase* incentives to invent and commercialize new technologies.

D. Discouraging Litigation and Encouraging Market Entry

A related concern is that this proposal would decrease incentives for patentees to sue potential infringers, thus decreasing inducement incentives and encouraging market entry. This proposal, unlike others that simply reduce the infringer's damages to cover a proportional share of the patentee's inducement costs, maintains fairly robust deterrence incentives by requiring infringers to pay full make-whole damages. However, under this proposal, patentees would still have reduced incentives to bring infringement suits, given that they would only receive inducement costs and not full make-whole damages as compensation. Thus, this proposal threatens to discourage litigation, encourage market entry, and ultimately diminish incentives to invent and commercialize. For a variety of reasons, however, this concern is either misplaced or overstated.

First, at a theoretical level, more market entry is not necessarily problematic as long as it does not unduly hamper incentives to invent and commercialize. The most controversial type of market entry encouraged by this proposal is uncompensated infringement. However, if a patentee is reluctant to sue an infringer because it has already made substantial profits, thus covering inducement costs and encouraging similar investments in the future, then competition to bring down price and increase access during the patent term eliminates some static inefficiency while not overly diminishing dynamic efficiency.[212] While the prospect of actors "getting away" with infringement may offend some moral intuitions, this again reflects a property- or tort-based view of the patent system rather than conceiving of it as a regulatory scheme aimed at promoting technological progress.[213] Notably, courts have emphasized that damages should compensate patentees "without regard to the question whether the defendant has gained or lost by his unlawful acts."[214] The critical aim is to compensate the patentee appropriately, regardless of any windfall the infringer may enjoy.[215]

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[212] *Cf.* Ayres & Klemperer, *supra* note 13, at 986–87 (arguing that limited amounts of infringement can reduce *ex post* allocative inefficiency without reducing *ex ante* incentives to invent and innovate); Sichelman, *supra* note 5, at 557–58 (characterizing some kinds of infringement as "efficient breach" that diminishes deadweight losses associated with exclusive rights). *But cf.* Blair & Cotter, *supra* note 3, at 66–70 (challenging Ayres and Klemperer's thesis).

[213] *See* Ghosh, *supra* note 31, at 1315–16.

[214] Coupe v. Royer, 155 U.S. 565, 582 (1895); *see also* Georgia-Pac. Corp., v. U.S. Plywood-Champion Papers Inc., 446 F.2d 295, 296–97 (2d Cir. 1971) (reducing damages substantially because the district court did not adequately consider that the defendant would have negotiated for a residual profit in a hypothetical negotiation); Tektronix, Inc. v. United States, 552 F.2d 343, 351 (Ct. Cl. 1977) ("The proper measure [of damages] is what the [patent] owner has lost, not what the taker has gained.").

[215] *Cf.* Lemley, *supra* note 54, at 669 ("But the ultimate aim is not to mimic exclusivity, or to give pa-

Beyond uncompensated infringement, this proposal also encourages market entry in the form of licensing—both *ex ante* licensing prior to using a patented technology and *ex post* licensing in the form of a settlement after infringement and the patentee has begun to enforce its rights. The prospect of defendants paying relatively high, make-whole damages while patentees receive relatively low inducement compensation encourages both kinds of licensing. Both types of licensing either avoid or lower litigation costs and promote competitive rent dissipation while still providing some remuneration to the patentee.

Notably, this proposal benefits from the self-correcting function of time. Early in the patent term, before a patentee has recouped inducement costs, the patentee has a strong incentive to bring a lawsuit against an infringer, as it can expect to receive the entire measure of make-whole damages as compensation. However, later in the patent term, the patentee's incentive to bring an infringement suit wanes, as the patentee's substantial profits reduce its amount of compensable outstanding inducement costs. This proposal thus dynamically calibrates a patentee's incentive to litigate to decrease as time and overall profits accumulate, and it accords with other suggestions to weaken intellectual property rights over time, even before expiration.[216]

Second, as a practical matter, litigation costs as well as potential enhanced damages and attorney fees may be available to deter infringement even when outstanding inducement costs are relatively low.[217] Although this proposal would calculate compensation to a patentee based on inducement costs, enhanced damages would still be available for egregious conduct on the part of defendants, most notably for willful infringement.[218] In *Halo Electronics v. Pulse Electronics*, the Supreme Court recently liberalized the test for finding willful infringement, emphasizing that district courts have discretion to award enhanced damages based on the "particular circumstances of each case."[219] Given the normative objective of deterring infringement—particularly willful infringement—under this proposal, courts would still have discretion to enhance damages for willfully infringing defendants. Furthermore, courts would have discretion to award some or all of these enhanced damages to the patentee as an inducement to bring suit in the first place, even if "ordinary" compensable inducement costs are relatively low. Similarly, the prospect of awarding attorney fees—which are usually substantial in patent

tentees the full social value of their technology, but instead to set a rate that would have both compensated patentees and allowed users of the technology to make a reasonable profit.").

216 *See, e.g.*, Justin Hughes, *Fair Use Across Time*, 50 UCLA L. REV. 775 (2003) (arguing that fair use should expand toward the end of a copyright term); Joseph P. Liu, *Copyright and Time: A Proposal*, 101 MICH. L. REV. 409 (2002) (arguing that courts should consider the passage of time in fair use cases).

217 *See* Blair & Cotter, *supra* note 3, at 42 (emphasizing the deterrent effect of litigation costs as well as potential enhanced damages and attorney fees).

218 35 U.S.C. § 284 ("The court may increase damages up to three times the amount found or assessed.").

219 Halo Elecs., Inc. v. Pulse Elecs. Inc., 136 S. Ct. 1923, 1934–35 (2016) (abrogating In re Seagate Tech., LLC, 497 F.3d 1360 (Fed. Cir. 2007)).

litigation[220]—would both decrease incentives to infringe on the part of willful infringers and increase incentives to bring infringement suits on the part of patentees.

For similar reasons, concerns that patentees would have less incentive to vigorously litigate their theory of damages, whether lost profits or reasonable royalties, are not as acute as they might appear at first glance. Aside from diminished incentives to bring a suit at all, patentees may have diminished incentives to invest in legal services and expert witnesses to prove a high amount of market-based damages by the defendant. After all, a patentee may only expect to receive outstanding inducement costs. However, several factors weigh against such an argument. First, even if a patentee would only expect to receive minimal damages, it may still highly value deterring another party's infringement of its patent, motivating vigorous litigation of its theory of lost profits or reasonable royalties. Second, it is likely that most patentees would also argue that significant fixed costs of invention and commercialization are still outstanding and that they should receive the full measure of make-whole damages from the defendant; as such, they still have incentives to argue forcefully for high damages awards, which they may receive if a court determines that normal profits have not recouped inducement costs.

One could argue that even if potential infringers are deterred from infringing, they would still have an incentive to "lowball" patentees in licensing negotiations. After all, patentees would receive only inducement compensation, thus giving infringers significant leverage in licensing negotiations. Several mechanisms already mentioned, however, mitigate this concern. First, patentees can still threaten to hold defendants liable for full make-whole damages. Furthermore, patentees have the leverage of treble damages and attorney fees in situations where a prospective licensee chooses to infringe instead.

E. Splitting the Patent Surplus

Another potential objection to this proposal is that patentees and infringers would game the system by simply splitting the patent surplus through settlement. For instance, if a patentee and infringer were nearing the end of trial, and it appeared that the infringer would face substantial make-whole damages while the patentee would recover modest outstanding inducement costs, the parties would have an incentive to settle at some figure between these values, thus eliminating the patent surplus. This objection could be addressed in several ways. First, if the settlement occurred after the start of litigation, courts could be required to approve any such settlement before it takes effect. While American jurisprudence typically favors settlement as private ordering that avoids litigation costs, courts must authorize settlements in some instances. For example, courts must approve settlements in class action suits before they are legally binding,[221] ostensibly to

[220] *See supra* Part II.A.1.

[221] Fed. R. Civ. P. 23(e); *see* Andrew Rosenfield, *An Empirical Test of Class-Action Settlement*, 5 J.

ensure the fairness of the outcome to the parties involved.[222] Analogously, this proposal could implement a rule stating that courts must approve settlements, perhaps out of a policy interest in maintaining a patent surplus in some cases.

As a general matter, however, the tendency of decoupling to encourage settlement is a feature rather than a bug. One of the primary strengths of decoupling regimes in general is that they promote settlement.[223] This benefit is especially valuable in the context of patent litigation, which is unusually expensive and represents a significant drain on judicial and innovative resources. More substantively, splitting the patent surplus also promotes greater market entry relative to the status quo, thus producing competition that tends to decrease prices and increase access to patented technologies. Given the benefits of avoiding litigation and increasing market entry, settling and splitting the patent surplus is a benefit of decoupling damages paid from compensation received.

F. Why Not Just Pay Inducement Damages?

Critics might argue that this proposal undermines its own purpose. After all, one of the aims of compensating patentees for inducement costs (and not providing full make-whole damages) is to promote more competitive entry, thus dissipating rents, reducing prices, and increasing access to technology. However, the prospect of paying full make-whole damages deters potential infringers from entering the market. Critics may contend that this proposal leads to the worst of both worlds: decreased incentives to invent and commercialize with high barriers to entry in the form of make-whole damages. Going further, commentators have argued in favor of "pure cost-plus" reforms to patent damages in which infringers pay to cover inducement costs, thus maintaining incentives to invent and commercialize but reducing (in most contexts) expected damages, thus promoting entry. In other words, infringers should just pay a proportional amount of "inducement damages" rather than make-whole damages.

This Article offers four responses to such criticisms. First, a pure cost-plus system raises the difficulty of apportioning compensation among multiple infringers over time. If, for instance, a patentee has $100 million in outstanding inducement costs, and a defendant commits infringement to the tune of $10 million in make-whole damages, what is the appropriate amount of compensation that that infringer should pay? Certainly, it would be grossly excessive to hold the infringer liable for the entire $100 million, particularly because later infringers should bear some liability for remaining inducement costs. But *ex ante*, there is no way of knowing if there will be later infringers, how many there will be, and what their magnitude of infringement will be. This gives rise to a serious apportionment challenge for such proposals.

LEGAL STUD. 113, 115 (1976).

[222] *See* Fed. R. Civ. P. 23(e)(2) ("If the proposal would bind class members, the court may approve it only after a hearing and on finding that it is fair, reasonable, and adequate.").

[223] Polinsky & Che, *supra* note 24, at 563.

Second and relatedly, a pure cost-plus approach may allow an infringer to bear liability for more than the economic harm caused by its patent infringement, particularly if inducement costs are relatively high.[224] Even if the universe of current and future infringers were presently known, thus addressing the apportionment issue, dividing outstanding inducement costs among these infringers could yield damages grossly incommensurate to the economic harm of infringement. To return to our example, suppose that a patentee has $100 million in outstanding inducement costs, and there are five current and future infringers, all of whom commit infringement to the tune of $10 million each in make-whole damages. To compensate for outstanding inducement costs, each of the five infringers would have to be liable for $20 million in damages, which is grossly disproportionate to the actual economic value of their infringement. In their pure form, "proportional cost-plus" recovery regimes lack a limiting principle (other than the patentee's outstanding costs) for constraining damages awards. This may lead to grossly unjust damages awards. Furthermore, as others have noted, pure cost-plus regimes create incentives for patentees to inflate (or not economize on) technological development costs.[225] This proposal establishes an intuitive ceiling for a defendant's liability: the market value of its infringement as measured by make-whole damages.

Third, critical to understanding the operation of this proposal is that actors in the patent system engage in probabilistic decision making against a backdrop of sometimes uncertain legal rules. This proposal has assumed the status quo of the availability of injunctions and advocates imposing make-whole damages on defendants. While this would seem to strictly deter infringement, thus eliminating the supposed benefit of competitive market entry, it offers less deterrence than the status quo. Whether a market actor infringes is a complicated calculation based on its awareness of a patent, the actor's assessment of the patent's validity, the probability of detection, the probability of litigation success, and the chances of facing an injunction and/or high damages upon a finding of infringement. To this calculus, this proposal adds the complicating factor that patentees would only receive inducement costs as compensation, thus reducing their incentive to sue. Therefore, even though this proposal maintains the current system's availability of injunctions and make-whole damages for defendants, it encourages an uptick in competitive market entry by infringers relative to the status quo, thus decreasing deadweight loss. In short, this proposal alters the game-theoretic calculus for potential infringers and nudges the expected returns of infringement a bit higher.

Fourth, the subtle benefits of this proposal compared to pure cost-plus regimes lie in recognizing that any cost-recovery calculations will frequently be incorrect.[226] As mentioned, calculating inducement costs will necessarily involve projection,

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[224] *Cf.* Brennan et al., *supra* note 18, at 283 ("If appropriate evidence is supplied by the patentee, courts would then adjust this compensation award upwards to account for the patentee's risk-adjusted R&D costs and to ensure a reasonable profit.").

[225] *See* Abramowicz, *supra* note 125, at 140–41; Sichelman, *supra* note 2, at 313.

[226] *Cf.* Ouellette, *supra* note 18, at 206–07.

speculation, and discretion.[227] The question then becomes: given that errors will occur, should those errors systematically weigh toward overcompensating or undercompensating patentees? As Michael Abramowicz observes, the potential downside risk of providing insufficient compensation is significant.[228] If the permitted rate of return is too small, "many inventors who might have invented might choose not to invent at all, because they anticipate earning back less than their risk-adjusted returns."[229] While permitting an excessive rate of return is also problematic,[230] Abramowicz's analysis suggests that, within certain parameters, it is better to overcompensate rather than undercompensate patentees. Abramowicz's computer simulations reveal that the optimal damages regime may be a hybrid of make-whole damages and cost-plus recovery.[231] Coincidentally, this "sweet spot" is precisely where licensing negotiations are likely to fall where patentee compensation is limited to inducement costs but infringers face the prospect of paying make-whole damages, as this Article proposes.[232] Put differently, the settlements that patentees and infringers are likely to reach will represent a hybrid of make-whole damages and inducement recovery. Thus, in an indirect fashion, distinguishing damages paid from compensation received utilizes private ordering to nudge the patent system toward an inducement-recovery framework while mitigating the significant downside risk of undercompensating patentees.

V. Conclusion

This Article has proposed separating damages paid by an infringer from compensation received by a patentee. It does so to better serve the multiple, sometimes conflicting normative objectives of the patent system and infringement damages. On the one hand, the patent system seeks to provide enough incentive to induce the invention and commercialization of new technologies—and nothing more. The current regime of make-whole damages, which is based on the market value of technologies rather than the actual and opportunity costs of technological development, likely overcompensates patentees in a significant number of cases. Thus, this proposal tailors compensation for instances of infringement to a patentee's outstanding inducement costs. On the other hand, the patent system also endeavors to deter infringement and shunt would-be infringers into voluntary licensing of patents by imposing make-whole damages. This proposal helps ensure that infringement is not more economically favorable than licensing by maintaining the current regime in which defendants are liable for make-whole damages upon a

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227 *See supra* Part II.A.2.

228 Abramowicz, *supra* note 125, at 146 ("The case . . . for a reward system that seeks to reimburse risk-adjusted research-and-development costs in any technological domain, thus depends on whether the government can be expected to make its estimates sufficiently accurately that the profit and error margin it allows will be enough not to dissuade even a small percentage of inventions.").

229 *Id.* at 182.

230 *Id.*

231 *Id.* at 178.

232 How the patentee and infringer split the patent surplus, of course, remains to be seen, but the final "equilibrium price" of infringement will fall between these amounts.

finding of infringement. Courts and funding agencies would allocate any patent surplus—the difference between damages paid and compensation received—toward research and development, thus advancing the overarching aims of the patent system.

An inducement approach to damages offers many benefits. First, it better aligns the law of damages with the normative aims of the patent system. To the extent that current doctrine provides greater compensation than would be necessary to induce invention and commercialization, it may systematically overcompensate patentees and exacerbate allocative inefficiencies long-associated with exclusive rights. Second, this proposal also deters infringement, promotes the accuracy benefits of voluntary licensing, and mitigates the social costs of litigation. Third, rather than simply reducing incentives to invent, this proposal shifts such incentives to areas of technological development neglected by markets and the patent system.

Of course, the devil is in the details, and this proposal must contend with several objections. While reform to the damages statute may be preferable, there is significant flexibility within that statute to accommodate bifurcating damages paid from compensation received. This proposal mitigates some of the complexity of calculating inducement costs by placing the onus on patentees to show relevant and recoverable expenses. While this proposal may encourage some uncompensated infringement, this is a feature rather than a bug, and remedies such as enhanced damages and attorney fees are available to curb rampant willful infringement. Although patentees and infringers will predictably settle in many cases, thus eliminating the patent surplus, this outcome still produces more competitive entry than the status quo. Finally, this proposal harnesses private ordering to safeguard against undercompensating patentees by encouraging patentees and infringers to settle at some compensation between make-whole damages and full inducement costs. Although a radical proposal, decoupling damages paid from compensation received may provide some valuable insights for an area of law in need of reform.