Patent Valuation Theory and the Economics of Improvement

Amy L Landers

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See Also

Response

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Amy L. Landers*  

I. Introduction

John M. Golden’s *Principles for Patent Remedies* sets forth theoretical considerations for determining patent value and, in turn, patent remedies.¹ Golden argues that the Supreme Court’s 2006 *eBay*² decision precipitated circumstances under which “we can no longer duck the question of what, from a societal standpoint, a patent should be worth.”³ The article offers several reasons for concern. Most alarmingly, the piece concludes that the law of patent remedies has entered a “slough of despond” that “create[s] deep uncertainty about how the patent system is performing and even what it should seek to accomplish.”⁴ Further, the article questions the current application of doctrine, including the difficulty of obtaining injunctions by nonmanufacturing patent holders and nonexclusive licensors.⁵ Golden’s critique of current proposals stops short of offering a concrete formulation for a remedies paradigm. Instead, *Principles* offers three adaptive and two implementation principles intended to guide the patent remedies debate: (1) nonabsolutism in the formulation and application of legal doctrine; (2) antidiscrimination with respect to business models; (3) learning, an interest in

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* Professor of Law, University of the Pacific, McGeorge School of Law.

1. John M. Golden, *Principles for Patent Remedies*, 88 TEXAS L. REV. 505, 510 (2010) (“[T]he task of designing patent remedies is hard enough. And this difficulty is a central, if not the central, theme of this Article.”).


4. *Id.* at 525, 551.

5. *See id.* at 556 (noting that only one noncompeting, nonmanufacturing patent holder has succeeded in obtaining a permanent injunction).
fostering the production of useful information; (4) administrability; and (5) devolution of significant decisional responsibility to private or government actors nearest to the facts of an individual case.

Golden’s work joins others who are currently engaged with the question of appropriate patent remedies. As some examples of recent activity, over the past months Congress reached a compromise on pending legislation to amend the Patent Act, including changes to patent remedies. These modifications were the result of a contentious industry-wide debate about the proper measure of patent value. In the 2006 eBay Inc. v. MercExchange, L.L.C. decision, the U.S. Supreme Court recalibrated the availability of injunctive relief in patent cases by eliminating the former general rule that a permanent injunction issued after a finding of infringement. Over the past year, the Federal Circuit issued some opinions that clarify aspects of the doctrine. Several scholars, including this author, have examined various facets of the issue. Professor Golden adds another voice to the discussion of a topic that is currently undergoing tumultuous theoretical change.


In this Response, I address various aspects of the remedies debate that underlie *Principles for Patent Remedies*. Although Golden’s article treats these subjects in an integrated manner, this Response will pull out three threads for separate examination. First, patent value may be difficult to define because of certain indeterminacies. Second, some economic and technological contingencies may be operating to distort the amounts paid for patents, whether in licensing or in litigation. Third, I examine the extent to which the principles of adaptation and implementation might bring the field to a theoretical consensus about patent value and propose the explicit addition of the *economics of improvement* is necessary to bridge differences in currently disparate theoretical viewpoints.

II. Indeterminacy and Patent Value

As a practical matter, under current patent valuation principles, a patent’s worth is dependent on a constellation of factors. These include the business context of the products that relate to the invention, the state of technological progress, and anticipated commercialization opportunities. Moreover, the different fields in which patents operate vary by the type and expense of research and development, risk, and competitive circumstances. Any or all of these factors can change over time. Further, a modest technological advance may, due to luck or calculation, become economically significant simply because a market has opened for reasons unrelated to the invention. For example, a patent to a popular interface may become valuable because it is integral to an industry standard rather than due to any technical merit. If the technology becomes marginalized, the value of that interface will drop. Under present legal standards, any search for an absolute market value of any patent, or any group of patents, is an inquiry that cannot be undertaken without consideration of these essential background features. As many have recognized, benchmarks are few and far between.

Confidentiality provisions routinely included within existing license agreements prevent the creation of reliable data from which valuation benchmarks can be derived.

(questioning whether any current valuation models pinpoint economically defined reasonable royalty rates).


13. See, e.g., Golden, *supra* note 1, at 550–51 (noting that we “have remarkably little information about how the patent system works in practice” because of confidential licensing agreements and the fact that most patent cases settle).

Additional contingencies complicate patent valuation for licensing discussions, including claim scope, validity, and enforceability. For example, the scope and type of patent claim impact the range of implementations covered by a patent and accordingly the patent’s value. Where a genuine dispute between a patentee and an accused infringer exists about claim scope, the patent’s validity and enforceability, or whether infringement exists, only trial and appeal (with the attendant high transaction costs) bring certainty.

In a few respects, the remedies inquiry in patent litigation is more controlled than attempting to determine a patent’s worth in the abstract. This is because the infringer’s use of the technology frames the valuation inquiry. Moreover, patent damages are a make-whole remedy, intended to restore the patentee to the same position as before infringement. Quite simply, these compensatory damages are intended to provide the patentee with “the difference between [the patentee]’s pecuniary condition after the infringement, and what his condition would have been if the infringement had not occurred.” Thus, the temporal context becomes fixed to the specific acts determined to be infringing. In the reasonable-royalty context, the market for the infringing products and the competitive relationship between the parties can be defined. However, other litigation-related factors make the calculation of monetary damages less determinate. Unlike nations that trust remedies entirely to judges, the U.S. system relies on juries to calculate damage awards. Further, district courts have wide latitude when instructing juries and evaluating jury awards. For example, if a reasonable royalty is inadequate, a court may award additional damages. These circumstances lead to an inherent imprecision in determining patent value. U.S. law is consistent with the view that “there is a wide range, or zone, of economically feasible ‘reasonable’ royalties that can be mathematically derived.”

15. See Golden, supra note 1, at 512 (“[T]ypical costs and benefits of inventions and their commercialization can depend enormously not only on preexisting market structure but also on the particular technology or even patent at issue.”).
17. Id. (quoting Yale Lock Mfg. Co. v. Sargent, 117 U.S. 536, 552 (1886)).
18. See Maxwell v. J. Baker, Inc., 86 F.3d 1098, 1109 (Fed. Cir. 1996) (noting that the determination of a reasonable royalty requires a factfinder to determine the price at which the parties would arrive during a hypothetical negotiation).
20. See id. (noting that damages awarded by American juries are “largely unpredictable and widely inconsistent”).
21. Maxwell, 86 F.3d at 1110.
Golden correctly observes that we lack a “specific sense” or “precise idea[s]” for patent valuation. To some extent, exactitude has not been a plausible goal for patent valuation because the circumstances under which patents are valued are inherently imprecise. By itself, this circumstance does not necessarily mean that patent law has entered a slough of despond, or that guidelines can never be fashioned. Golden correctly identifies that additional work toward consensus on developing a legal understanding of patent valuation should be performed. Yet the task that Golden has undertaken is quite difficult, in part because he eschews reliance on the market as a starting point for the inquiry. This eliminates reliance on the present market-based damages regime. Moreover, it is questionable whether patent valuation can be credibly performed without some reliance on the market as a touchstone.

There is an open question of whether Golden’s argument that a theoretical shift to a social-value-based valuation system, and away from the current market-based compensatory system, will lead the way out of a slough of despond. Several factors that create indeterminacies will likely persist despite theoretical shifts: the use of jury trials to determine damages; business preferences for certain types of licensing arrangements; and an inability to predict the future direction than any particular technology is going to take over the life of a patent. Calculating a valuation figure prior to the expiration of the patent necessarily requires some measure of guesswork, and the time period that is the most interesting to those seeking to license the patent or to determine infringement damages is during the patent’s effective life.

Golden offers several intriguing insights into the inherent difficulty of fixing patent values that lead to, as he uses the phrase, slough of despond. Yet it is not entirely clear whether, even if we accept that valuation is as impossible as described in Principles for Patent Remedies, the alternatives he explores will bring certainty as the subject matter.

III. Factors that Distort Patent Valuation

There are larger policy concerns implicated by the second analytic issue—that is, the current remedies system may be subject to genuine, higher-level distortions that occur in the process of patent valuation. For its part, Principles for Patent Remedies examines numerous economic and market contingencies that, Golden argues, are both exogenous to the invention and significantly impact patentee profits. According to Golden, these include such factors as customary licensing terms and competitive

23. Golden, supra note 1, at 508.
24. See id. at 508–09 (noting that the market cannot provide the answer to patent valuation because the patent system seeks to alter the market, not mirror it).
circumstances within the relevant field.26 Certainly this is problematic to the extent that it suggests that there is no relation between patentee recovery under the current remedies regime and the patentee’s inventive contribution.

The article’s inquiry into this difficult question is timely. Specifically, Congress’s recent compromise for the patent reform legislation requires district courts to identify and rely only on relevant methodologies and factors before determining damages or sending damages evidence to a jury.27 Determining which factors are relevant, and those that are not, will be challenging for all those interested in the patent system. Several recent court opinions have evidenced increasingly rigorous analysis to separate out evidence germane to the invention from irrelevant background factors of the larger market in which the invention operates. For example, the Federal Circuit’s recent ResQNet.com, Inc. v. Lansa, Inc. reversed a lower court’s royalty award as improperly relying on licenses that were extraneous to the patent in suit.28 Noting that “[a]ny evidence unrelated to the claimed invention does not support compensation for infringement but punishes beyond the reach of the statute,” the court noted the absence of any “discernable link” between several of the patentee’s other license agreements and the patent in suit.29 Similarly, two district court opinions30 authored by now-Chief Judge Radar, a U.S. Court of Appeals for the Federal Circuit judge sitting by designation, more sharply define the scope of evidence relevant to the reasonable royalty. Despite these recent decisions, the line between the factors that courts will consider legitimate features of patent value and those that are not, is becoming a visible and necessary feature of patent valuation.

Golden cites sources suggesting that patents may not function as effective incentives in certain markets.31 As Golden describes, “Economic contingency . . . suggests that there are unlikely to be easy, stable answers regarding either the proper nature of patent rights and remedies, or the types of inventive or innovative activities these rights and remedies should be designed to favor.”32 Golden’s observation leads to a conclusion that extraneous factors interfere with the ability to use patent valuation—or

26. Id. at 543–45.
29. Id. at 869–70.
31. See Golden, supra note 1, at 545 (“[U]ncertainty regarding which business models and market structures best promote invention and innovation naturally produces uncertainty about the extent to which strong patent rights or remedies help or hinder the same.”).
32. Id. at 546.
perhaps even more broadly, patents—as an effective policy tool. To assist policy makers and courts to answer difficult valuation questions, Golden proposes nonabsolutism as a guideline.33

The article is correct to point out that those factors that are exogenous to patent valuation should be identified and eliminated from remedies determination to the extent possible. Yet the difficulty of undertaking this determination cannot be overemphasized. In addition, Principles for Patent Remedies raises a fundamental question that has not yet been fully explored: Is a primarily market-based valuation approach the appropriate perspective to meet the patent system’s goals? If not, what would an appropriate system look like? These questions are intriguing ones, and ones that may require considerable insight to ultimately resolve.

IV. Patent Value, Remedies, and Incentives

The third analytic issue involves a determination of the appropriate metric for monetary relief. Principles for Patent Remedies does not provide a comprehensive formula, nor does the article endorse the theoretical options proffered by others. However, Golden does offer a critique of other proposals. The article most extensively examines Lemley and Shapiro’s Patent Holdup and Royalty Stacking, which, according to Golden, “restrict[s] the pool of social value properly available for appropriation to producer surplus, which, at least if the invention’s development or use does not produce net negative externalities, is generally less than or equal to the total social surplus associated with the invention.”34 Unlike Golden’s previous and more extensive critique,35 Principles focuses more narrowly on Patent Holdup’s baseline exclusion of consumer surplus from patentee recovery.36 Golden’s argument is somewhat difficult to assess, given that Lemely and Shapiro have explained that Patent Holdup “certainly does not include a full analysis of whether patent holders lacking holdup power are under- or overrewarded from a social-welfare perspective.”37 Rather, Patent Holdup created a model that relied on a benchmark to analyze the pre-eBay

33. Id. at 552.
34. Id. at 533. The authors of Patent Holdup and Royalty Stacking disclaim that the article, which focused on the relationship between patent remedies and patent value, was intended to provide a definitive or comprehensive analysis of patent remedies from a social welfare perspective. See Mark A. Lemley & Carl Shapiro, Reply: Patent Holdup and Royalty Stacking, 85 TEXAS L. REV. 2163, 2166 (2007) (“Our article certainly does not include a full analysis of whether patent holders lacking holdup power are under- or overrewarded from a social-welfare perspective.”).
35. See John M. Golden, “Patent Trolls” and Patent Remedies, 85 TEXAS L. REV. 2111, 2115–16 (2007) (asserting that Lemley and Shapiro have failed to justify that their royalty benchmark “represents the socially optimal level of patent-holder compensation”).
36. Golden, supra note 1, at 532–34 (explaining Lemley and Shapiro’s baseline for appropriate patent value and the ramifications of excluding consumer surplus).
37. Lemley & Shapiro, supra note 37, at 2166.
automatic injunctive rule as a contributor to holdup as a form of market failure.\footnote{See id. at 2165 ("We then identify the key underlying economic factors that determine the size of the gap between the negotiated royalties and this benchmark. In this fashion, we can isolate and study the effects of permanent injunctions on patent holdup.").}

Golden’s disagreement with Lemley and Shapiro’s model may be emblematic of a deeper theoretical divide about appropriate patent valuation. To use the words of Thomas Cotter, there is a fundamental “disagreement over how best to divide the gains from innovation between patentees and downstream users” within the literature.\footnote{Thomas F. Cotter, Patent Holdup, Patent Remedies, and Antitrust Responses, 34 J. CORP. L. 1151, 1165 (2009).} As previously described, Golden’s starting assumption is that an inventor should receive the full social value of her invention to maintain proper incentives for investment in creating new inventions.\footnote{See Golden, supra note 1, at 530 n.154 (“If the inventor cannot expect to appropriate all of the economic value of the invention, there will be underinvestment . . . .” (quoting W. KIP VISCUSI ET AL., ECONOMICS OF REGULATION AND ANTITRUST 800 (Mass. Inst. of Tech. 3d ed. 2000) (1991))).} As an illustration of the manner in which this applies to the current patent system, Principles for Patent Remedies observes that third parties who design around a claim erode the patentee’s ability to capture the invention’s full social value of the invention.\footnote{Golden, supra note 1, at 544–45.} Further, Principles for Patent Remedies observes that subsequent inventors obtain an advantage from patenting pioneers who are able to frame and solve the problem earlier in time, even where subsequent inventors develop a similar or identical solution independent of the initial patent.\footnote{Id. at 588–89.} As another example, Golden suggests that the patent holder’s anticipated (rather than actual) profits should be part of the remedies calculation, so that damages can “compensate the patent holder for the lost option value of determining when and on what terms the patented invention will be exploited.”\footnote{Id. at 535.}

Golden’s reliance on full social value as the starting point is a departure from the patent system’s current remedies structure, which is founded on the theory of compensation. Presently, patent law aims to provide patentees with payment for lost profits or other competitive harm suffered through infringement, or under a reasonable-royalty model the “rate that would have both compensated patentees and allowed users of the technology to make a reasonable profit.”\footnote{Mark A. Lemley, Distinguishing Lost Profits From Reasonable Royalties, 51 WM. & MARY L. REV. 655, 669 (2009).} Currently, patent remedies do not attempt to track the social value of patents.\footnote{See Cotter, supra note 39, at 1177 (acknowledging the distinction between the congressional statutory scheme for patent remedies and the optimal social value of patents).}

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implementation assist in pulling the field closer toward a comprehensive view of patent valuation. Although methods to bridge this gap might be devised, the examples that Golden discusses suggest that the divide between these perspectives may be quite difficult to cross.

For example, Golden’s principles do not expressly consider the balance needed to accommodate the economics of improvement. Principles for Patent Remedies cites Rewards Versus Intellectual Property Rights for the proposition that the optimal patent reward is the expected value of the social surplus. Yet Rewards Versus Intellectual Property Rights recognizes a critical qualification to this rule—that is, subsequent creators can be prevented from creating improvements where property-rights holders refuse to license or a bargaining breakdown occurs. Economics of Regulation and Antitrust, also cited, recognizes that the patent system “can be regarded as one way of achieving balance between appropriability and use.”

Certainly, Golden’s article recognizes that optimal social value may be less than full social value. Nonetheless, express consideration of the need to tailor remedies to allow for improvement should be considered as a fundamental aspect of the patent remedies, and this consideration does not appear to play an express role in either of Golden’s adaptive or implementation principles. Absent such consideration, it is not entirely clear how Principles for Patent Remedies can be implemented to accommodate increasing the level of invention in the aggregate.

Some examples illustrate the disparity between Golden’s point of view and the Patent Act’s remedial scheme. First, Golden explains the economic impact of a design around as follows:

Patent protection is often imperfect, not only because of costs and difficulty of enforcement but also because competitors can often find ways to “design around” a patent in a way that reproduces advantages of the patented technology without falling within the patent’s scope. Depending on how much value a patentee can otherwise appropriate and how much value one believes the patentee should appropriate, the existence of such design-arounds can either cause or exacerbate the under-rewarding of the patentee, or eliminate or mitigate over-rewarding.

Yet the case law considering patent policy has recognized that designing around brings “a steady flow of innovations to the marketplace” and thereby

46. Golden, supra note 1, at 530 n.154 (“Under [a] reward system, the optimal reward $r^*$ equals the expected value of social surplus, $E(s^*)$, from an innovation.” (quoting Steven Shavell & Tanguy van Ypersele, Rewards Versus Intellectual Property Rights, 44 J.L. & ECON. 525, 535 (2001))).

47. Shavell & van Ypersele, supra note 46, at 543.

48. See Golden, supra note 1, at 530 n.154 (citing Viscusi for the proposition that that optimal patent reward is the expected value of the social surplus); W. Kip Viscusi ET AL., ECONOMICS OF REGULATION AND ANTITRUST 801 (MIT Press 3d ed. 2000).

49. Golden, supra note 1, at 544–45.
provides benefits to the public.\textsuperscript{50} For these reasons, designing around is a practice that patent law encourages.\textsuperscript{51} There is a significant conceptual gap between deeming a design around an underreward (or mitigation of an overreward) for a patentee and the current legal conception that the patentee has no entitlement for design around activity.

Another example is Golden’s disapproval of measures that make injunctive relief more challenging for nonmanufacturing entities, based on the argument that such treatment is inconsistent with the article’s antidiscrimination principle.\textsuperscript{52} Separately, Dan Burk and Mark Lemley have considered whether the application of eBay’s injunctive relief standard might be used to encourage access in certain technological fields.\textsuperscript{53} They caution that the success of using injunctive relief as a policy lever remains to be seen, but point out that licensing entities that assert claims directed to a small portion of a larger, complex technology appear to have a more difficult time obtaining injunctive relief under current standards.\textsuperscript{54} Golden’s antidiscrimination principle, as applied in Principles for Patent Remedies, stands in contrast to Burk and Lemley’s summary of the current law and their proposals for ongoing implementation to facilitate access.

Further, Burk and Lemley suggest that courts may be best positioned to implement injunctive relief as a policy lever on a case-by-case basis.\textsuperscript{55} This view appears to be consistent with Golden’s devolution principle, which “emphasizes the value of leaving significant decisions and responsibility to private parties or government actors who operate on a finer scale than a high-level policy maker.”\textsuperscript{50} Yet Golden expresses doubt about implementations of eBay by district courts, who are government actors that are presumably well positioned to administer injunctive relief under the applicable standards.\textsuperscript{57}

As a final example, Golden would place the burden on the infringer to demonstrate the degree of apportionment in all cases. Thus, where the infringing product is a mix of patented and unpatented features, Golden argues that the learning principle would favor asking the infringer to delineate the portion attributable to the subject claim, or risk paying damages based on the entire market value of the entire infringing product.\textsuperscript{58} As a

\textsuperscript{50} State Indus., Inc. v. A.O. Smith Corp., 751 F.2d 1226, 1236 (Fed. Cir. 1985).
\textsuperscript{51} See id. (“It should not be discouraged by punitive damage awards except in cases where conduct is so obnoxious as clearly to call for them.”)
\textsuperscript{52} See Golden, supra note 1, at 556–57 (arguing that reducing the availability of injunctions for nonmanufacturers “implicate[s] concerns about patent law being reshaped in a way that unduly favors established private interests”).
\textsuperscript{53} See DAN L. BURK & MARK A. LEMLEY, THE PATENT CRISIS AND HOW COURTS CAN SOLVE IT 138–41 (2009) (suggesting that in industries where patents are used to violate antitrust laws, compulsory licensing may serve to open the market to competition).
\textsuperscript{54} Id. at 139.
\textsuperscript{55} Id. at 140–41.
\textsuperscript{56} Golden, supra note 1, at 564.
\textsuperscript{57} See id. at 578 (suggesting that district courts “might well have misinterpreted eBay”).
\textsuperscript{58} Id. at 585.
practical matter, Golden’s burden-shifting approach may lead to the infringer paying damages based on the value of an entire good where the claim is directed to components of more complex products. This is because, as Golden acknowledges, in such cases apportionment is a difficult (and in some cases, nearly impossible) question to answer.  

Each of these examples—permanent injunctive relief, apportionment, and design-around activity—implicates the interests of third parties in engaging in inventive or innovative conduct that may lead to knowledge creation. One allows the patentee to prevent access, and two credit the patentee for third-party activity outside the scope of the patent claims. To add to Golden’s Principles for Patent Remedies, express consideration of the need to foster new knowledge might lead to a different result in those three instances, and in any event warrant express consideration in the theorization of patent remedies. Doing so would bring Golden’s conception closer to the unifying principles of the current remedies regime, and perhaps to other theorists.

V. Conclusion

Golden’s Principles for Patent Remedies is a comprehensive examination of the theories and complexities of valuing patents. Golden’s conclusion that patent remedies are difficult to calculate may be the product of different factors, some of which can be isolated and controlled and others that many be inherent to the subject matter. However, any system that is devised to examine valuation as a policy tool should consider the nature of the balance between patentee reward and incentives to third parties to create new knowledge.

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59. See id. at 536 (“[I]t is unclear how even Herculean efforts can yield uniquely determined separate values when distinct innovative aspects are effectively inseparable.”).