LOST PROFITS AND REASONABLE ROYALTIES: TWO DISTINCT REMEDIES FOR TWO SEPARATE HARMS

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ABSTRACT

I argue that the two types of damages described in the Patent Act are more than a menu of compensatory options. They describe two distinct types of harm caused by patent infringement. Each comes with a distinctive cluster of remedies. Harm to Product Markets (HPM) is redressed by lost profit damages, and in most cases a permanent injunction against future infringement. This type of damages can be thought of as the mirror image of damages for violations of antitrust law. Antitrust cases are about illicit lack of competition: a wrongful reduction in the competitive state of a product market. Patent damages are about illicit competition: the presence of an unauthorized competitor (the infringer) wrongly increasing the level of competition in the market for the patented item. Odd as it may seem to students of microeconomics, HPM damages are all about giving compensation for interference with a virtuous, or at least statutorily protected, monopolist.

The other type of harm, Lost Licensing Opportunity (LLO), occurs when a patent owner is not a participant in the product market for products embodying the patented invention. The traditional remedy of a reasonable royalty is applied in these cases: the law in effect writes a hypothetical contract in which the patent owner licenses its patent to the infringer. Compensation takes the form of an estimate of the value the infringer gained by using the patent owner's technology as an input. When the input adds real value, and the patent owner is a repeat-player, specialized research and licensing company, the reasonable royalty measure of damages does much the same as HPM damages. The only difference is that damages in LLO cases are measured in markets for patent licensing, rather than for patented products.

But not all LLO harm is truly equal. Not all involuntary conferral of benefits should be thought of as the equivalent of a market exchange. Restitution emerged as a distinct branch of equity to address just this issue. Restitution principles reflect the fact that sometimes a benefit is conferred not on a willing market participant, but on a recipient who never asked for the "benefit" and had no effective notice of it; would prefer not to have received it; and in some cases is the victim of strategic, opportunistic tactics that make "receipt" of the benefit unavoidable. One example from patent law is when a patent owner alters patent boundaries to capture some of the value of the recipient's own contributions. I call this "engineered encroachment." In most contemporary private law interactions, the law protects the innocent defendant by requiring fault or intent before liability is imposed. But lack of notice, and the good vs. bad faith of the patent owner, are irrelevant in patent law's regime of strict liability for direct infringers. My proposal here is for courts to sort out the different types of LLO harm using traditional principles of restitutionary recovery. When a patented, intangible input

DOI: https://doi.org/10.15779/Z38FB4WN9F

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(benefit) is used (received) by an infringer, patent courts should deploy the full spectrum of restitutionary doctrine in pursuit of interparty fairness under the facts of each infringement case. In extreme cases of "engineered encroachment," for example, courts might deny any recovery for infringement.

> What a court can do to remedy a violation of law is a logically valid and practically useful category, clearly distinct from procedure, from the forms of action, and from primary substantive rights. Having that category available helps us more clearly pose the choices among alternative remedies; it helps us think about the law of remedies more systematically.
>
> –Douglas Laycock, How Remedies Became A Field: A History, 27 Rev. Litig. 161, 267 (2008).

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I. INTRODUCTION: IDENTIFYING TWO TYPES OF HARM FROM PATENT INFRINGEMENT

If your patent is infringed, the Patent Act requires that you receive adequate compensation.[1] This comes in two varieties under the Act: lost profits, or a reasonable royalty. The choice between them depends on whether you, the patent owner, sell a product on the market for the patented item. If so, the law aspires that you receive your lost profits in that market, i.e., the loss in profit resulting from the infringer's unauthorized presence in a market where your patent was *supposed to* give you an exclusive niche, and so some pricing power. I call this type of harm "Harm to a Product Market," or HPM.

Many patent owners enforce patents that do not cover products the owner makes and sells.[2] Some of these patentees make money by licensing patents to other companies.[3] Aside from companies with a pure licensing business model, many patent-owning companies make and sell products, but also hold patents that cover (or "read on") products sold by competitors.[4] In both situations, a plaintiff's remedy for infringement of a patent is not tied to the effect of infringement on the plaintiff's market profits—they don't have any. The

1. 35 U.S.C. § 284.

2. *See, e.g.*, Kristen Osenga, *Formerly Manufacturing Entities: Piercing the "Patent Troll" Rhetoric*, 47 CONN. L. REV. 435, 440 (2014) ("General Electric continues to make products, but also engages in extensive licensing of its large patent portfolio, including many patents covering technology that it does not manufacture.").

3. *Id.*

4. *Id.* There are two types of "pure licensing" companies. Some, which I call "Regular and Established Licensors," have developed and licensed multiple innovative technologies over time; licensing is the way these "idea factories" earn revenue. Because of their history and reputation, most licensees recognize their value, so litigation is rare. *See infra* Section I.B.1. The other type of "pure licensing" entity is one whose primary business is litigation. These are patent "trolls": companies that perform no research, and who generate income from damages awards and litigation settlements. *See generally* Robert P. Merges, *The Trouble with Trolls: Innovation, Rent-Seeking, and Patent Law Reform*, 24 BERKELEY TECH. L.J. 1583 (2009); Mark A. Lemley & A. Douglas Melamed, *Missing the Forest for the Trolls*, 113 COLUM. L. REV. 2117 (2013); Colleen Chien, *Startups and Patent Trolls*, 17 STAN. TECH. L. REV. 461 (2014).

remedy instead is a reasonable royalty on products made and sold by the infringer. This compensates a patent owner for the royalty income they should have received, but did not, when their patented technology was used without permission in the infringer's products. The essence of the reasonable royalty remedy, then, is the harm suffered by an input seller (the patent owner) when its patented input is used without compensation—a Lost Licensing Opportunity (LLO).

The two remedies are standard stuff in patent law. My argument here is that there is more in these remedies than a simple choice of compensatory mechanism.[5] If we separate out the two types of harm embodied in the two remedies, in the spirit of classificatory analytical jurisprudence,[6] we learn something interesting. The two remedies point to two quite distinct and fundamentally different types of harm.[7] The first, HPM, is based on an injury suffered in the patent owner's product market, and, because it is market-based, is in some ways a cousin to damages in antitrust cases. The other, LLO, has the characteristics of unjust enrichment, that is, conferral of a benefit without compensation. The injury is the loss of a legally mandated license fee—an injury suffered not in a product market but in the market for the intangible (patented) input itself.

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5. Some branches of private law have benefitted from a "remedy-centric" view of the relevant field. *See* James J. White & David A. Peters, *A Footnote for Jack Dawson*, 100 MICH. L. REV. 1954 (2002) (discussing well-known Contracts casebook, "Dawson and Harvey." JOHN P. DAWSON & WILLIAM BURNETT HARVEY, CONTRACTS: CASES AND COMMENT (1st ed. 1959)) ("[This casebook] first brought remedies to the front of contracts books and to the early weeks in contract courses. It so asserted that remedies were at least as important as any other part of contract doctrine and more important than most."). This is perhaps an instance of Kierkegaard's point that "[l]ife must be understood backwards." SØREN KIERKEGAARD, *Journalen JJ:167* (1843), *reprinted in* 18 SØREN KIERKEGAARDS SKRIFTER 306 (Søren Kierkegaard Research Center ed. 1997) (Danish: "Livet skal forstaas baglaens.").

6. For an application in the IP context, see Patrick R. Goold, *Unbundling the "Tort" of Copyright Infringement*, 102 VA. L. REV. 1833, 1834 (2016) ("[This] Article 'unbundles' infringement into five 'copy-torts': consumer copying, competitor copying, expressive privacy invasion, artistic reputation injury, and breach of creative control."). On the importance of classification and taxonomy, see Ugo Mattei, *Three Patterns of Law: Taxonomy and Change in the World's Legal Systems*, 45 AM. J. COMP. L. 5, 5 (1997) ("Taxonomy is as important in the law as in any other discipline. It provides the intellectual framework of the law and it makes the law's complexity more manageable.").

7. *Cf.* Samuel L. Bray & Paul B. Miller, *Getting into Equity*, 97 NOTRE DAME L. REV. 1763, 1793 (2022) ("[I]t was judicial practice and doctrinal development in relation to remedies that often fed downstream development of substantive doctrine. As the chancellors gained experience in crafting and ordering discretionary remedies, they came to recognize patterns and to elicit principles, standards, and other ways in which to loosely formalize grievances short of stipulation of a conduct rule (e.g., a right, duty, power, or liability).").

Looking more closely we see that the two types of harm latent in patent damages point to remedial clusters, rather than just to monetary compensation for infringement. HPM usually involves market competitors. Under the influential U.S. Supreme Court *eBay* case,[8] permanent injunctions are usually granted when a patent owner proves infringement by such a market competitor. So along with lost profits damages, HPM cases usually lead to grant of an injunction preventing future infringement.[9] Preliminary relief is also possible: hard-to-calculate damage from the market presence of an unauthorized infringer is a common ground for the (admittedly uncommon) grant of a preliminary injunction.[10]

Both lost profits and a permanent injunction seek to compensate a patent owner for the intrusion into their market of an unauthorized competitor, the infringer. HPM damages seek to robustly protect a patent owner's interest in the full benefits of their advantaged market position. The infringer's presence in the market often undercuts the market or pricing power that a patent is intended to confer. Erosion of the patent owner's supra-competitive profit margin, together with other harm caused by the infringer, determines the measure of compensation to be recouped in HPM cases.

The other type of harm, LLO harm, is about the uncompensated use of an input in the making or assembly of the infringer's product. In some cases, this

8. eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, 388 (2006).

9. Christopher B. Seaman, *Permanent Injunctions in Patent Litigation After eBay: An Empirical Study*, 101 IOWA L. REV. 1949, 1990–91 (2016) ("Patent holders who competed with an infringer were granted a permanent injunction in the overwhelming majority of cases (84%; 150 of 179 cases), while patentees who were not market competitors rarely succeeded in obtaining injunctive relief (21%; 8 of 39 cases).").

10. Won-Door Corp. v. Cornell Iron Works, Inc., 981 F. Supp. 2d 1070, 1078 (D. Utah 2013) (granting preliminary injunction: "Among th[e patentee's] harms [from infringement] is the need to lower its own price to compete against its own invention. Calculation of the resulting loss greatly complicates the measurement of damages.") (referring to Douglas Dynamics, LLC v. Buyers Prod. Co., 717 F.3d 1336, 1345 (Fed. Cir. 2013) (granting permanent injunction: "the rise in [the infringer's] market share from zero to about 5% in three years while infringing Douglas's patents. This record evidence underscores the profitability of infringement and suggests that mere damages will not compensate for a competitor's increasing share of the market, a market which Douglas competes in, and a market that Douglas has in part created with its investment in patented technology.")); *see also* John C. Jarosz, Jorge L. Contreras & Robert L. Vigil, *Preliminary Injunctive Relief in Patent Cases: Repairing Irreparable Harm*, 31 TEX. INTELL. PROP. L.J. 63, 72–73 (2022) (footnotes omitted):

> Over the period studied [2013–2020], preliminary injunctions were granted in 28.0% of the utility patent cases in which they were requested, ranging from a low of 17.4% in 2013 to a high of 33.3% in 2020, though there does not appear to be an upward trend over time. While preliminary injunctions were requested in 211 cases, they were granted in only fifty-nine cases and denied in 152 cases.

will lead to an injunction too, just as in an HPM case.[11] But where a court feels that an injunction would give an LLO-type patent owner "undue leverage" in negotiating with an accused infringer, it will deny the injunction in favor of an ongoing royalty—a species of "undue hardship" in the law of equity.[12] My point is that, like HPM cases, LLO cases implicate more than an approach to calculating damages. LLO cases open the door not just to an alternative way to calculate damages, but to a cluster of related remedies.

The former type of harm, HPM, requires proof of some difficult facts, but in essence tries to assess all losses suffered by the patent owner due to the unauthorized competitor. HPM measures the harm from unauthorized competition. The presence of a competitor, or an additional one, may change market dynamics, and so affect the interests of a patent owner, in myriad ways.

Lost profits doctrine shows just this. The cases are full of discussions of whether the patent infringer's unauthorized competition caused various losses suffered by the patent owner.[13] Immediate losses due to the infringer's taking of market share are complex enough.[14] Done properly, one must first estimate the demand curve for the patent owner's product in the absence of the infringer. If there are non-infringing substitutes for the patented product, these will limit the estimate of how much higher the patentee would have priced its product if the infringer had never entered the market.[15] With these estimates in hand, one may then deduce the profit-maximizing price the plaintiff would have set, and (reading off the demand curve), the quantity it would have sold—again, in the absence of competition—at the chosen price.

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11. *See, e.g.*, Presidio Components, Inc. v. Am. Tech. Ceramics Corp., 702 F.3d 1351, 1363 (Fed. Cir. 2012) ("Even without practicing the claimed invention, the patentee can suffer irreparable injury [and therefore merit an injunction]."). According to a study by Christopher B. Seaman, 16% of Patent Assertion Entities (an amalgamated category of patent case plaintiffs that do not sell products) received permanent injunctions. Seaman, *supra* note 9, at 1988.

12. On the Undue Hardship doctrine, see *infra* Section II.A.

13. *See, e.g.*, Grain Processing Corp. v. Am. Maize-Prods. Co., 185 F.3d 1341 (Fed. Cir. 1999), *aff'g* 979 F. Supp. 1233 (N.D. Ind. 1997) (Easterbrook, J., sitting by designation) (providing a close analysis of market conditions if infringement had never occurred).

14. *Id.*

15. Technically, one must estimate the cross-elasticity of demand between the patented item and the best non-infringing substitute. *See* Roger D. Blair & Thomas F. Cotter, *Rethinking Patent Damages*, 10 TEX. INTELL. PROP. L.J. 1, 13 (2001) (explaining and applying cross-elasticity analysis for calculating patent damages); *see also* Thomas F. Cotter, *Fifty Years of Patent Remedies Case Law: Two Steps Forward, One Step Back*, 50 AIPLA Q.J. 607, 609 (2022) (calling the noninfringing substitute analysis "the most important concept in the entire law of patent remedies").

Even more challenging is the question of ancillary or collateral losses. If accessories, service contracts, etc., are frequently sold together with a patented item, the loss of a product sale might entail a related loss of profit from these tag-alongs. Or a patent owner may plan to use a patent to exclude competitors from a market niche to promote sales of a separate, unpatented version of the product: patents as protection against a low-cost, less profitable substitute. Infringement of a "substitute blocking" patent like this might cause harm to product sales not covered by the patent.

In these ways, HPM measures losses the patent owner suffered in the market for its patent-protected products. Applying this remedy requires reconstructing the market state the patent owner *deserved*, and comparing it with the *actual* market state that included the infringing, unauthorized competitor. Corrective justice, working through the HPM remedy, aims to restore the patent owner's rightful market advantage. This damage measure exacts compensation for all the ways the infringer undermined that advantage. It is market-based, because the harm at issue is suffered in that market.

LLO cases are different. A patent owner that sells no products, or no products covered by a particular patent, claims this remedy when infringement is proven. It is meant to measure the fair market value of a license from the patent owner to the infringer, for use of the patented technology in the infringer's manufacture and sale of products. Harm in an LLO consists of lost licensing revenue: a profit the patent owner should have made had the infringer struck a voluntary licensing deal when it started using the patented technology.[16]

The loss in an LLO case is in one sense more direct than in an HPM case. LLO cases treat the patented technology as a valuable input into others' manufacturing process, from which a patent owner can earn revenue in the form of patent licensing royalties. LLO losses are suffered in the "market" for the patent itself, rather than indirectly, in the market for patent-protected products. As a result, unlike HPM cases, LLO cases are less concerned with the difficulties of reconstructing a counterfactual market state. They do, however, bring problems of their own.

These are the result of the fact that patented technologies in LLO cases are *intangible inputs*. The common thread across LLO cases is unauthorized use of a (patented) intangible input. What varies across cases is the nature of the thing used; its relative importance in the input mix used by the infringer; possible alternatives to the patented input; and ultimately the value of the input

16. *See, e.g.*, Pavo Sols. LLC v. Kingston Tech. Co., 35 F.4th 1367, 1379 (Fed. Cir. 2022) (reviewing the sufficiency of evidence for a reasonable royalty estimate).

used without authorization. LLO harm measures the fair value of an uncompensated use. It measures patent-related harm directly, by assessing the value of the patented input to the infringer. This determines what the infringer would have been willing to pay—which is precisely what the patentee loses when deprived of a licensing opportunity.

Because the two different harms are my central topic in this Article, I want to say some more about each of them.

A. COMPETITOR INFRINGEMENT: HARM TO THE PATENT OWNER'S MARKET POSITION

In HPM cases, harm to the patent owner takes the form of incursions into the market for the patent owner's product. This is an illicit form of competition relating to a patented product, feature, or component.[17] The infringer sells a product, or includes a feature or component in its product, that is legally the exclusive property of the patent owner.

In direct competition cases, patent value can be measured by the extra revenue a patent holder receives in the market by virtue of being the only authorized maker and seller of a particular product, feature, or component.[18] Put roughly, it is the extra margin of profit a patent holder receives in the relevant market by virtue of the exclusionary power of the patent. A patent in this setting has value insofar as it adds to the profit the patent holder receives in the product market. The patent owner suffers harm from infringement, but the harm can be measured by a reduction in profits earned from product sales. The courts have for a long time understood lost profits to be the best measure of damages "adequate to compensate for infringement," as the statutory standard requires.[19]

Harm-to-market-type infringement (HPM) involving competitors is illustrated in Figure 1, *infra*. The horizontal line represents a simplified product

17. It is fair to peg this as illicit competition because, in many cases, the validity of the patent owner's patent will have been established through three increasingly stringent layers of review: original prosecution, administrative patent challenge (e.g., one or more *Inter Partes* Review (IPR) proceedings), and the validity stage of a patent infringement suit. The status of the patent entitlement is much firmer at this point than on the day the patent issued. On the initial "shallow vesting" of a patent on its grant date, and the later "deeper vesting" post-validity review of a patent between two parties in a private law dispute, see *supra* note 9 and accompanying text.

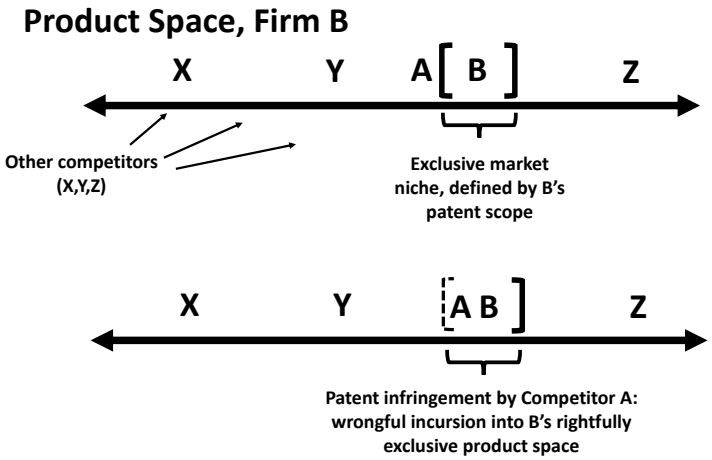
18. *See* Blair & Cotter, *supra* note 15, at 17.

19. 35 U.S.C. § 284 ("Upon finding for the [patent infringement] 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." (emphasis added)); *see also* Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538, 1546 (Fed. Cir. 1995) (turning to reasonable royalty measure of damages only after finding lost profits evidence inadequate in this case).

space symbolizing different combinations of features and prices.[20] Competitors array themselves along the line to maximize their profits. Firm A has determined that its optimal alignment is as a very close substitute for B's patented profit. The top of the diagram represents the situation where A gets as close to B's space as allowed by B's patent. Patent breadth here is represented by the bracketed market niche over which B has exclusivity because of its patent. The lower diagram shows the case where A is infringing B's patent. It is the presence of competitor A in what should be B's exclusive product niche that causes B's lost profits.

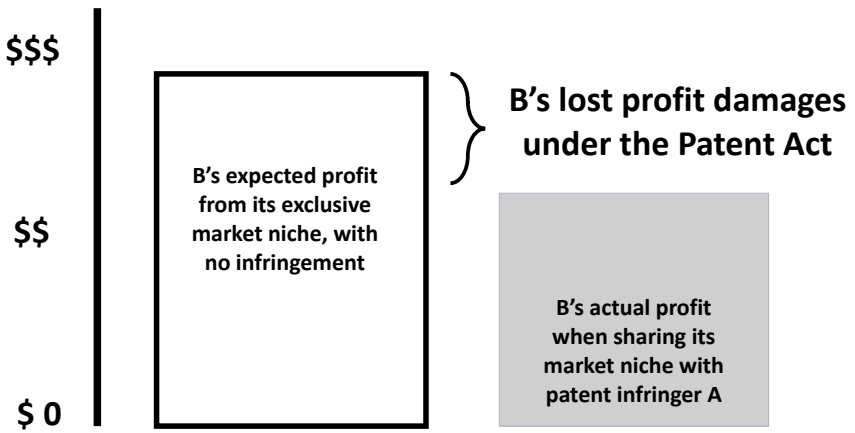
20. Inspired by, but not the same as, a "Hotelling line" or model. *See generally* Harold Hotelling, *Stability in Competition*, 39 ECON. J. 41 (1929).

Figure 1: Patents and Product Space



The lost profits measure of damages is intended to compensate B for the lost profits that attend A's illicit presence in what should be (by virtue of the patent) B's exclusive market niche. Graphically:

Figure 2: Title Lost Profits



The analogy with antitrust damages is pertinent here. Both patent law and antitrust award remedies when wrongdoers interfere with a legally protected market state. Antitrust protects a competitive market. Patent law protects a market niche *from* competition. The different damages rules reflect the mirror image nature of the harms. Each requires an exercise in market reconstruction: antitrust reconstructs a market that experienced an illicit lack of competition; it assesses damages from the harm of wrongful interference in an otherwise competitive market.[21] Patent law treats competition *as* the wrong: wrongful entry in a market niche that rightfully belongs exclusively to the patent owner.[22]

B. OMITTED LICENSE INFRINGEMENT: UNCOMPENSATED (UNLICENSED) USE OF PATENTED INPUT

These are cases of patent infringement where the patent owner does not sell a competing product. The harm to the patent owner is not lost market share, lost connection to product consumers, etc., as in Section I.A, but a lost licensing opportunity. The measure of damage is lost revenue from what should have been a patent license. Patents in this situation represent unseen technological inputs into the accused infringer's product design. A company that makes use of a patent owner's invention without compensation harms the patent owner. But it is a different sort of harm as compared to the harm from an illicit market competitor under Section I.A. If the harm in Section I.A is an improper incursion into the patent owner's rightful market, the harm in

21. *See* Daniel L. Rubinfeld, *Antitrust Damages*, *in* RESEARCH HANDBOOK ON THE ECONOMICS OF ANTITRUST LAW 378, 380–81 (Einer Elhauge ed., 2012).

22. This makes patent law unique. Though various areas of law measure harm by assessing deleterious market impacts, only patent law can claim that the relevant harm grows out of a true legal wrong—harm to a protectible entitlement. In other fields of law, there is a conceptual gap between market measures of harm and the underlying legal basis for a claim:

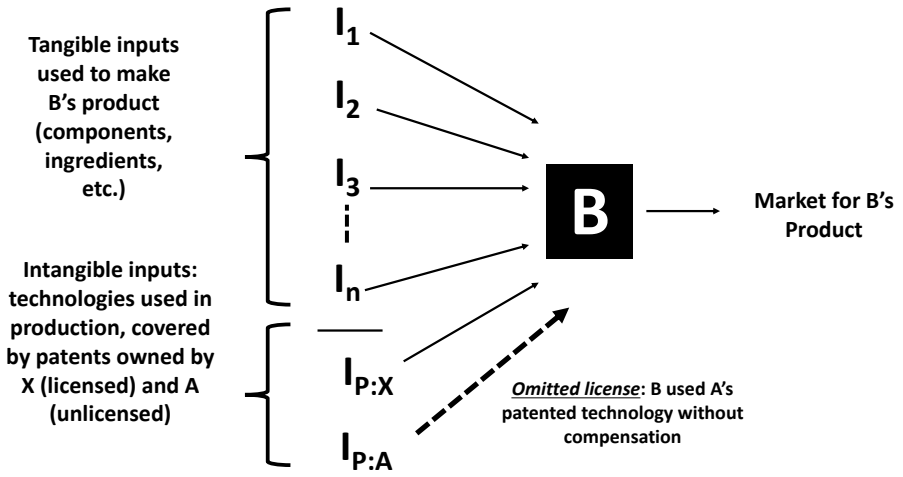
> There is some element missing from bare competition harm that prevents it from amounting to a wrong. For [legal theorists Arthur] Ripstein and [Ronald] Dworkin and other like-minded thinkers, that missing element is a right or entitlement. The mousetrap manufacturer has no right to his or her customers, so when a competitor comes along with a better design, the harm does not constitute a wrong.

Nicolas Cornell, *Competition Wrongs*, 129 YALE L.J. 2030, 2033 (2020). Patents are an exception. When properly understood, a patent vests (as between private actors) as a fully enforceable private law entitlement. *See* Robert P. Merges, *Patent Infringement, Private Law, and Liability Standards*, 76 U.C. L. S.F. L.J. 161, 188–89 (2024) (describing how patents, once they clear validity challenges in a particular private law interaction, vest fully as between those parties); Robert P. Merges, *Intellectual Property Rights and Private Law Entitlements*, *in* RESEARCH HANDBOOK ON PROPERTY, LAW & THEORY 422 (Chris Bevan ed., 2024) (generalizing this analysis to all IP rights).

Section I.B is an improper use of a beneficial invention without compensating its rightful owner.

The central question is how to value that intangible input. As with direct competition, patent value means the value to the infringer of using the patented invention. But in an omitted licensing case, this value cannot be estimated by looking at patent owner lost profits, because the patent owner has no presence in the infringing company's market. As to that market itself, the patent owner has no profits to lose. The patent owner is instead an upstream supplier (or potential supplier) in that market—a supplier of good ideas or useful techniques. These ideas or techniques—which form a sort of "invisible input" into the product—are available to firms who make the products that compete in that market. Thus, the patent owner's harm from infringement takes the form of a lost licensing opportunity. Put another way, the infringer's wrong is the beneficial use of an idea or technique without compensating the owner of the patent that covers that idea or technique. Although this might also be said of infringement through direct competition, the key difference is in how the wrongful act of infringement impacts the patent owner, and how that impact can be measured. Direct competition hurts the patent owner by luring away some customers in the product market. Lost licensing hurts the patent owner by eliminating licensing income that the patent owner should in fairness have received. The place of patent licensing in the list of inputs used to make a product is shown graphically here, in Figure 3.

Figure 3: Patented Technology as a Product Input



1. Regular and Established Licensors are Similar to Direct Competitors

Some companies rely heavily on patent licensing for revenue. Take for example Dolby Laboratories, which earns most of its revenue from licensing audio sound technology. Dolby is an established part of the industry ecosystem from basic consumer electronics, to state-of-the-art movie theater sound systems, to highly sophisticated studio sound processing.[23] Dolby's techniques are so widely used that payments to Dolby for patent licensing are an expected cost of making almost all audio-related products. Even so, Dolby occasionally sues other companies for infringement.[24] When it does, it must seek a

23. *See* Dolby Lab'y, Inc., Quarterly Report (Form 10-Q) (Aug. 9, 2022). For the quarter ending July 1, 2022:

> We have active licensing arrangements with over 500 electronics product [Original Equipment Manufacturers] and software developers. As of July 1, 2022, we had approximately 16,800 issued patents relating to technologies from which we derive a significant portion of our licensing revenue.

Id. at 36. Dolby earns roughly $ 1 billion per year with profit of roughly $250 million. *See id.* at 5 (reporting quarterly and year-to-date revenue and profit). *See generally* Pamela Hawkins Williams, Dotcy Isom III & Tiffini D. Smith-Peaches, *A Profile of Dolby Laboratories: An Effective Model for Leveraging Intellectual Property*, 2 NW. J. TECH. & INTELL. PROP. 4 (2003).

24. *See, e.g.*, Associated Press, *Dolby Sues BlackBerry Maker Over Patents*, N.Y. TIMES (June 15, 2011), https://www.nytimes.com/2011/06/16/technology/16patent.html (suing for the alleged uncompensated use of digital compression technologies by defendant (Research in Motion) Blackberry's handheld computer products). The case settled because there is no further record of the litigation.

reasonable royalty as damages. From the perspective described here, Dolby locates firms that used (without paying for) one of its patented technologies when making sound-related products or software. It is in effect using the courts to seek compensation for an omitted license.

Dolby is not the only company that employs a licensing model as its primary revenue source. The ARM company pursues a similar strategy in customized computer chips, and Qualcomm relies heavily (though not exclusively) on licensing in the mobile phone chip market.[25] As one observer says:

> [T]hese firms . . . have used licensing mechanisms to disseminate their technologies widely to a broad population of downstream producers and other customer-facing firms that are best situated to embed those technologies in devices for the end-user market. This licensing structure in turn generates a royalty stream that enables upstream innovators to earn a return on their past R&D investments and fund additional R&D investments to continue developing and disseminating technology inputs to the downstream production and distribution segments of the supply chain. It is precisely this socially constructive positive feedback mechanism that is overlooked by a predominately extractive [and thus negative] view of IP licensing.[26]

We might think of these companies as well-established "idea factories" in various industry ecosystems.[27] Other companies are not pure "idea factories," but they have developed what might be called "idea divisions": they earn revenue from making their own products as well as licensing patents. IBM and Texas Instruments are two large firms that have long used licensing to supplement their income, or to offset some of the costs of their large annual R&D outlays.[28]

For these well-established patent licensors, there is a greater likelihood that industry players will be on general notice of their patents—or at least, on "inquiry notice."[29] In other words, firms in these industries will normally keep

25. Jonathan M. Barnett, *The "License as Tax" Fallacy*, 28 MICH. TECH. L. REV. 197, 236–37 (2022).

26. *Id.* at 237.

27. For more on these companies, see ROBERT P. MERGES, *The Federal Circuit Era*, *in* AMERICAN PATENT LAW: A BUSINESS AND ECONOMIC HISTORY 435 (2022).

28. *See* Hannibal Travis, *Patent Alienability and Its Discontents*, 17 TUL. J. TECH. & INTELL. PROP. 109, 120 (2014) ("IBM's licensing revenue soared from $30 million in 1990 to $1.2 billion in 2004 . . . . [and] Texas Instruments earn[ed] more than $1.5 billion by 1993.").

29. *Cf.* Robert P. Merges, *Patent Infringement, Private Law, and Liability Standards*, *supra* note 22, at 201 (arguing that patent notice is usually effective for direct competitors because of the assumption that a company keeps current on its industry's patent landscape). My point is that

track of relevant patents held by well-known "idea factory" firms. Manufacturing firms will naturally anticipate the need to make royalty payments to the owners of these patents. There is, then, a background form of general notice regarding these patents.[30] They are an expected cost of doing business, though a particular manufacturer may not be aware of all the relevant patents and claims in these patents may be subject to fuzzy boundaries.[31]

2. Patented Technology Inputs vs. Mere Legal Clearances: Two Types of Uncompensated Benefits

Idea factory patent infringement is at one end of a spectrum of cases involving uncompensated use of benefits. The value of the benefit is established by, and normally collected through, the well-established market for

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we expect firms to keep abreast of established, repeat-player "idea factory" licensors for the same reasons as general notice.

30. *Id.*

31. Companies that have failed in the product market often turn to a licensing model, either as a way to remain viable as a going concern or to salvage some revenue in the process of winding up operations. *See* Kristen Osenga, *Formerly Manufacturing Entities: Piercing the "Patent Troll" Rhetoric*, 47 CONN. L. REV. 435, 440 (2014):

> Examples of formerly manufacturing entities include IBM, MOSAID (now Conversant), and General Electric. General Electric continues to make products, but also engages in extensive licensing of its large patent portfolio, including many patents covering technology that it does not manufacture. It is unsurprising, given the lack of precision in the rhetoric, that these companies have been attacked as "patent trolls," despite their past or ongoing commitment to manufacturing.

For more on failed companies, see Robert P. Merges, *Patent Markets and Innovation in the Era of Big Platform Companies*, 35 BERKELEY TECH. L.J. 53, 78 (2020) (describing how Research in Motion (RIM), maker of the Blackberry handheld digital device, was forced into the licensing business: "While Blackberry did introduce a 'smart phone' as an outgrowth of its original handheld 'digital assistant,' the introduction of a new [Apple] iPhone in 2013 effectively killed Blackberry as a player in the smartphone market."). Licensing, and the litigation sometimes needed to back it up, thus plays an important role in gaining at least some reward for early contributors who are later squeezed out of a market they helped build. *See* Robert Merges, *After the Trolls: Patent Litigation as Ex Post Market-Making*, 54 AKRON L. REV. 555, 584 (2020) (emphasis in original):

> [T]hough [an] *economic* market may be "winner take all," patent law works differently. By reconstructing the technological contributions to the ultimate winning product, it ensures that in some cases at least, an early innovator might be rewarded even though that innovator did not ultimately win in the product market. The patent system can form an ex post market that allows for a result we might call "*loser takes some*." Because today's product "losers" were yesterday's (and perhaps tomorrow's) technological innovators, this is an important though submerged aspect of the innovative ecosystem.

patent licenses. Restitution takes the commonsense form of replicating the missing market exchange as closely as possible. The reasonable royalty remedy mimics the market because the intangible input in question is of the type normally exchanged in a licensing market.

On this same end of the restitution spectrum are cases involving a patent owner who competes with the patent infringer, but not directly in the market related to the patent(s) in a suit. Patent Owner A, for example, sells truck docking devices for warehouses, retail stores, etc.; the devices keep trucks snug to the loading dock while forklifts and loading hands unload the contents of a truck. Owner A made its reputation with its Good Old X model, the first and most popular truck docking unit. But A designed a more high-tech (and more expensive) docking unit, New Y, which A has positioned to succeed Good Old X in the market. In pursuit of this plan, A recently announced the discontinuance of the Good Old X model. Just after this announcement, a new competitor company, B, launched operations. B announced it would commence making a docking unit much like Good Old X. In response, A, which still holds several patents on various features of Good Old X, filed a patent infringement suit against B.

In a narrow sense, the A vs. B lawsuit is one where a patent owner does not compete directly with the defendant who is accused of infringement. Yet competition—and a patent's ability to lessen it—is at the heart of the case. The patent here is an instrument of its owner's market strategy. The remaining patents on Good Old X are crucial to A's plans. Only by protecting against competition from less expensive substitutes can A successfully transition the trucking industry to the more advanced, and more profitable, New Y model. Except for the details of the overall market for docking units, and A's strategy of using its patent to block "low end" competition, A uses the patent to protect market profits—the same harm addressed in a lost profits case. The patent entitlement can be deployed in various ways to enhance the patent owner's competitive position. Patents can prevent duplication of a new generation product, perhaps their canonical use. But they can also be used to protect against low-end competitors to a new generation product. A patent can define and defend a "no fly zone," a market segment that could, but for the patent, supply a workable substitute for the (higher priced) product A is promoting.[32]

32. As an aside, this is one example of the way patent law has outgrown a primitive insistence that the zone of patent-related liability is limited to interference with A's right to practice its claimed invention. *See* Robert P. Merges, Cousins, Not Twins: Patent Claim Scope vs. The Breadth of Patent Enforcement (March 2024) (unpublished manuscript) (on file with author). A patent right is now conceived more broadly. Any interference with the patentee's

Patent rights are no longer tied tightly to the patent owner's implementation of their claimed invention. They now cover the right *not* to practice the invention: to use the patent right to foreclose anyone from entering the exclusionary zone, to increase the profitability of the product space adjacent to that zone.[33] Patents also include the right to use one of the patent owner's stockpiled technological options not to protect the owner's own product, but to earn royalties on the products of a rival who infringes a patent on one of the patent owner's "roads not taken."

All of these are examples of a patent on an intangible input being used by its owner to protect the owner's market-based income stream. The situation is in one respect unlike a defendant who overlooked licensing of a crucial patent developed by an established "idea factory." Those are the clearest cases for a

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exercise of its "right to exclude"—whether or not the patentee practices its invention—may trigger patent-related liability. The law protects the patentee's enforcement of its patent to further its economic interest; it broadens out the earlier conception of the patent right as a simple right to protect its owner's exclusive practice of the claimed invention. Once exclusion is conceived of in this broader frame, a patent owner can expand its legitimate expectations regarding future uses (and the future value) of the patents it owns. By expanding the zone of liability beyond mere exclusive practice of the invention, the law expands the economic reach of the patent, or the number of ways the patent can be deployed to enhance the patent owner's business goals. Patent claims define the patentee's exclusive piece of technological space. Patent rights define the range of defendant activities that a patent owner may reach by virtue of their patent.

33. For a well-considered critique of this, see Oskar Liivak & Eduardo M. Peñalver, *The Right Not to Use in Property and Patent Law*, 98 CORNELL L. REV. 1437, 1437–38 (2013):

> [T]he first-order normative case for recognizing a robust right not to use a patent is weaker than in the domain of tangible property. This is especially true when nonusing owners attempt to enforce their patents against independent inventors. As a consequence, in cases brought against independent inventors, we suggest making patent remedies contingent on a patent owner's efforts to disseminate their inventions. Recognition of such an obligation to use in patents would significantly reduce the threats posed by patent trolls and the high-tech patent wars.

I disagree but note that the authors' call for a special rule when a dormant patent is asserted against an "independent inventor" is in the spirit of weighing the relative culpability of the parties, which I emphasize in LLO-restitution cases. Another excellent discussion of these issues is in Robert G. Bone, *Of Trolls, Orphans, and Abandoned Marks: What's Wrong with Not Using Intellectual Property?*, 42 COLUM. J.L. & ARTS 1, 1 (2018) ("[A] general rule conditioning IP rights on use across-the-board is not desirable. Any use requirement should be tailored to the nature of the specific problems that nonuse creates."). With respect to unused patents asserted by patent troll (litigation business model) firms, Bone argues that "we should also employ a tailored use requirement. The idea is to allow patent enforcement by users, temporary nonusers, and perhaps functional nonusers when it makes sense in the particular case—but not by strategic nonusers or complete nonusers." *Id.* at 35 (footnotes omitted). In my understanding, competitors who use patents to block entry in product niches adjacent to their products would be considered "functional nonusers" by Bone.

restitution measure that tries to mimic the working of an actual patent licensing market. Where a patent is used to prevent competition from one variant, to indirectly enhance profits on a high-profit variant preferred by the patent-owning firm, the measure of restitutionary compensation could actually be higher than in the case of an overlooked "idea factory" patent. The premium—recognized in some actual cases—is justified by the situation. The owner would usually prefer not to license the relevant patent at all. The patent's value in blocking competition may make it difficult to estimate what the owner would ask in royalties in a willing bargain with the infringer/licensee. The difficulty of putting a dollar value on a competition-blocking patent may support grant of an injunction against future harm. But as for past damages, the courts are left applying a "willing licensor-licensee" test to determine the royalty term in a patent license that the patent owner is being dragged into against their will and against their economic interests.[34]

In all the situations discussed so far, restitution rightfully strives to duplicate market outcomes, or at least to compensate an unwilling patent "licensor" fully for unauthorized competition that by rights should never have occurred. Recovery in these cases should be on the high end of the restitutionary spectrum. Competitors are rightfully charged with constructive knowledge of patents held by known industry players. Even though that is irrelevant to the *existence* of infringement liability, when working with an equitable doctrine such as restitution it need not be ignored. There is no reason relative culpability should not influence the *degree* of liability (i.e., remedies). Infringers with greater reason to have effective notice of relevant patents, and who cause harm that patent owners feel in their product markets, should be subject to the most exacting remedies restitution can offer.

At the other end of that spectrum is the unwilling, unwitting and unknowing use of a patented technology. A manufacturer chooses a component, feature, or manufacturing process that crosses over the boundary line of a third-party patent. The patent may be one the manufacturer has no reason to know about: for example, it may be held by a company that does not compete in the manufacturer's product market, which means it is not held by

34. On the willing party hypothetical negotiation in reasonable royalty cases, see, e.g., Panduit Corp. v. Stahlin Bros. Fibre Works, Inc., 575 F.2d 1152, 1157–1159 (6th Cir. 1978). On the topic of willingness, note that two highly capable commentators have argued that injunctions should only be available to patent owners who showed an unwillingness to license prior to the defendant's infringement. *See* William F. Lee & A. Douglas Melamed, *Breaking the Vicious Cycle of Patent Damages*, 101 CORNELL L. REV. 385, 385 (2016). The authors argue that, in general, overcompensation is rife in patent damages. *Id.* at 447. In their view, innocent infringers ought to be subject to more forgiving remedies than those who could have or did learn of the relevant patent—a culpability factor I emphasize as well. *Id.*

a company whose patent holdings the manufacturer can be expected to monitor actively. It may be held by a company outside the manufacturer's industry, or by a tiny company formed for the sole purpose of acquiring patents to assert in lawsuits. The patent may be difficult to identify via patent searches; it may use nonstandard terminology, for example. It is the kind of patent scholars mean when they talk about "notice failure" in patent law.[35]

In such cases, the benefit of the patented technology is received by the recipient/infringer under very different circumstances than the regular licensing of "idea factory" patents. Where a patent covers a technology identical to one developed independently and innocently by the infringer,[36] or where patent lawyers stretch a patent's claims well beyond the actual contribution disclosed in the patent,[37] settlement of an infringement claim carries with it no semblance of actual technology transfer. It might even be said that under the circumstances, the only benefit conferred on the recipient is a bare legal license to use the patent. The "input" does not consist of techniques, know-how or other technology which happens to be covered by a patent. It is a bare legal right: permission to infringe, as it were.

The law of patent damages does not generally reflect the differences between these benefits. If a defendant's product is covered by the plaintiff's patent claim, liability follows whether the defendant learned anything from the plaintiff, directly or indirectly. Patent infringement is a strict liability civil offense.[38] By contrast, restitution law recognizes that legal actors confer all sorts of benefits on each other. In the most straightforward cases, restitution tries simply to mimic the market—to supply a missing transaction on an established market. But many situations do not involve a willing seller, a willing

35. *See generally* Peter S. Menell & Michael J. Meurer, *Notice Failure and Notice Externalities*, 5 J. LEGAL ANALYSIS 1 (2013).

36. *See* Robin Feldman & Mark A. Lemley, *Do Patent Licensing Demands Mean Innovation?*, 101 IOWA L. REV. 137, 137 (2015) ("[V]ery few [of the] patent license demands [reported in survey data] actually lead to new innovation; most demands simply involve payment for the freedom to keep doing what the licensee was already doing.").

37. *See* Sonos, Inc. v. Google LLC, No. C 20-06754 WHA, 2023 WL 6542320, at *1 (N.D. Cal. Oct. 6, 2023) (holding claims uneneforceable under doctrine of prosecution history laches; original 2006 application left open, new claims added in 2019 to cover defendant products):

> This was not a case of an inventor leading the industry to something new. This was a case of the industry leading with something new and, only then, an inventor coming out of the woodwork to say that he had come up with the idea first—wringing fresh claims to read on a competitor's products from an ancient application.

38. *See* Robert P. Merges, *Patent Infringement, Private Law, and Liability Standards*, *supra* note 22, at 161.

buyer, and a clearcut market exchange. Some feature an unwitting, and even unwilling, recipient of a benefit. Restitution may require compensation, but the rationale for compensation, and the valuation of the benefit conferred, may differ significantly from a market exchange. The law does not permit a claimant under restitution to force an unwilling "buyer" of benefits into an exchange on market terms they did not choose and would prefer to avoid.

Restitution takes notice that the recipient accidentally or unintentionally received the benefit in question. Fundamental fairness may demand some compensation, despite the involuntariness of the recipient.[39] But fairness places demands on the other side too. A claimant may not impose market terms on a recipient who is an unwilling party to the transaction. And no matter what, fundamental fairness also demands that a claimant not turn an inadvertent receipt of benefits into an opportunity to extract excessive compensation from the recipient.

a) Patent Encroachment

Restitution's sensitivity to the benefit received, as well as the overall situation, are well illustrated by restitution cases featuring the real property doctrine of encroachment. Encroachment occurs when a builder builds part of a building on an adjoining plot owned by a neighbor. The claimant—the landowner encroached upon—bestows the benefit of a piece of land onto the adjoining property owner (the recipient), and the law must place a money value on that strip of land. The following Section discusses the encroachment cases in more detail, and shows why encroachment doctrine provides a good guide for some LLO-type patent infringement cases. The goal of restitution in these cases is to provide a fair result under each particular set of circumstances: something patent law may aspire to as well.

One point at the outset. Both real property encroachment and the patent cases I will describe share the issue of notice. One variable in the real property cases is whether either of the parties could have avoided the encroachment with a reasonable inspection of title documents. Although trespass is a strict liability tort, a defendant who as a practical matter could not have avoided building over the property line will receive better treatment than one who would have avoided it if they had made a reasonable inspection of property boundary documents. Liability may be unavoidable and independent of fault when it comes to trespass. But the *remedy* for encroachment-type trespass is adjusted to take account of the defendant's degree of fault in building over the line.

39. *See* discussion *infra* Section I.B.2.a).

I believe patent remedies should mimic real property with respect to issues of notice. Although in patent law the fact of liability has nothing to do with the defendant's knowledge or intent with respect to infringement, there is no reason the *remedy* can't take these into account. Trespass law does, as I show below. Where notice is effective, i.e., where a reasonably cautious person in defendant's position could have researched the property line and avoided trespass, any trespass which does occur is the fault of the defendant. This factors into the remedy. Likewise, where a defect or conflict in title documents provides ineffective notice, any resulting encroachment will be trespass, but not negligent or faulty trespass. The unavoidability of the trespass will soften the remedy.

An important contribution to the patent literature is the idea of "notice failure."[40] The volume of patents and lack of concordance in the precise language used to describe and claim some technologies makes patent searches ineffective in those cases. This is mitigated to some extent when a firm is searching patents owned by known competitors, which is common in many industries. Greater involvement in manufacturing, awareness of the actions of presumed competitors, and the common practice of "patent landscape" or "freedom to operate" (FTO) reports,[41] means that "strict liability" in cases of direct competitor infringement in reality operates more like negligence per se. Failure of the infringer to find out about the plaintiff's patent, when that is normal and reasonable, leads to liability for an infringer.[42] My point here is that strict liability for infringing a patent held by a known competitor is quite defensible given the public availability and searchability of competitor patents. Full HPM damages are also defensible for the same reason.

In LLO cases, notice may not be so clear. The patent owner may be a competitor who is not practicing a patent they assert against a defendant. Or they may be an established and known "repeat player" licensor. In these cases, notice may be as good as the typical HPM case. But many LLO-type cases are also initiated by small patent holding companies, formerly active companies no longer selling products, patent assertion companies in the business of patent litigation, and so on.[43] Patents held by entities like these may not be easy

40. The idea originated with Peter S. Menell & Michael J. Meurer. *See supra* note 35.

41. *See* Robert P. Merges, *Patent Infringement, Private Law, and Liability Standards*, *supra* note 22, at 194–96.

42. Since 2011, patent law has included a Prior Commercial User defense, which, for the first time in U.S. patent law, relaxes strict liability by excusing an accused infringer who can prove clear independent invention. *See* 35 U.S.C. § 273.

43. Robert Merges, *After the Trolls: Patent Litigation as Ex Post Market-Making*, *supra* note 31, at 556 (2020) (describing various patent licensing scenarios, from pure litigation-driven

to discover or monitor.[44] As a result, these LLO cases resemble encroachment cases where property boundaries are not easily discoverable. My suggestion is to adjust patent remedies when notice is less effective—just as in the case of real property encroachment.

II. WHEN INFRINGEMENT TAKES THE FORM OF ENCROACHMENT

Encroachment occurs when a landowner builds a structure or makes improvements that cross over the property boundary of a neighbor. At law, this is trespass. Conventionally, that means an injunction in favor of the neighboring property owner: get that building of yours off my land. Where the building owner disregards warnings or negligently relies on defective boundary information, the injunction usually issues.

But when the building owner made an honest mistake, restitution steps in. Courts, acting in the spirit of equity, will weigh the extent of the incursion into the claimant's property parcel against the hardship to the builder/recipient if an injunction is granted.[45] On a practical level, this means comparing the amount of the claimant's land that is encroached upon against the cost of tearing down or moving the portion of the building that overhangs the property line. If the piece of land inadvertently used by the recipient/builder is small compared to the overall size and value of the claimant's property parcel, and if the cost of remediating the encroachment is much greater than the land value, courts may deny an injunction.[46] And often when courts do so they require the recipient to compensate the claimant for the value of the

settlements with patent trolls to litigation that takes place after a patent owner has been pushed from the product market by a now-dominant competitor despite contributing to the development of the relevant technology).

44. *See* Robert P. Merges, *Patent Infringement, Private Law, and Liability Standards*, *supra* note 22, at 194–96.

45. *See infra* note 46 (considering the builder as the owner) and accompanying text.

46. California makes this three-part test the center of its encroachment cases. *See, e.g.*, Shoen v. Zacarias, 237 Cal. App. 4th 16, 19 (2015) (quoting various precedents):

> California courts have had the discretionary authority to deny a landowner's request to eject a trespasser and instead force the landowner to accept damages as compensation for the judicial creation of an [equitable] easement over the trespassed-upon property in the trespasser's favor, provided that the trespasser shows that (1) her trespass was "innocent" rather than "willful or negligent," (2) the public or the property owner will not be "irreparabl[y] injur[ed]" by the easement, and (3) the hardship to the trespasser from having to cease the trespass is "greatly disproportionate to the hardship caused [the owner] by the continuance of the encroachment."

benefit received (the strip of land). This is the judicial remedy known as a "forced sale."[47]

One traditional (though not uniform) rule in real property law is that a victim of encroachment should not be allowed to turn a neighbor's honest mistake into a financial windfall.[48] Figure 4 (*infra*) depicts a typical case of innocent encroachment, in which Party A in the diagram mistakenly builds part of a building on B's land. This can happen when visual boundaries (such as a row of bushes or trees) diverge slightly from the actual formal boundary line or because there's a mistake in the land survey. In any event, the situation after A's building is complete looks like this:

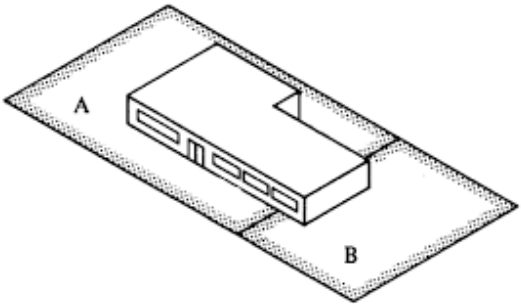
47. *See* George L. Blum, Annotation, *Power of Court to Order Land Owner to Sell Land to Another If Other's Structures Encroach on Land*, 29 A.L.R. Fed. 7th Art. 11 (2017 & Supp. 2024); Olivia Leigh Weeks, Comment, *Much Ado About Mighty Little - North Carolina and the Application of the Relative Hardship Doctrine to Encroachments of Permanent Structures on the Property of Another*, 12 CAMPBELL L. REV. 71, 74–75 (1989) ("Courts will deny equitable relief . . . in favor of money damages if the encroachment was an innocent mistake . . . . [and] if the encroachment is slight compared with the injury to the defendant if he has to remove it.").

48. This has been described as one instance of the more general principle of accession. Accession awards ownership to the mistaken improver A because the improvement is much more valuable than the small strip of B's land. *See* Note, *Accession on the Frontiers of Property*, 133 HARV. L. REV. 2381, 2381–82 (2020):

> The accession solution is simple: If one party acted in bad faith, the other party becomes the owner of the thing. If neither party acted in bad faith, the party whose interest is more valuable becomes the owner of the thing and compensates the other party for the value of the other party's interest. This Note will show that, despite its simplicity, this framework embeds deep common law principles that can help resolve all sorts of property disputes efficiently and equitably, without resort to multifactor balancing tests.

Figure 4: Real Property Encroachment

Real Property Encroachment: A's Building innocently built partly on B's property



Many state courts will deny an injunction request from B, because this would require A to tear down part of its building, usually at great expense. The destruction of the building, or a large payment to B to avoid it, seems unfair to many courts given the relatively modest intrinsic value of a narrow strip of B's land.[49] Encroachment takes for granted that trespass liability falls under the

49. *See, e.g.*, Terwelp v. Sass, 443 N.E.2d 804, 808 (Ill. App. Ct. 1982) (stating that "courts will ordinarily refuse to grant injunctive relief" when the removal cost of a mistaken improvement is high and the corresponding benefit to the encroached-upon land owner is low); Generalow v. Steinberger, 517 N.Y.S.2d 22, 23 (App. Div. 1987) (refusing to award the plaintiff the "drastic remedy of a mandatory injunction" requiring the defendants to remove a structure that encroached less than two feet onto the plaintiff's property because "the harm to the defendants in removing the wall would outweigh any corresponding benefit to the plaintiff"); Christopher v. Rosse, 458 N.Y.S.2d 8, 9–10 (App. Div. 1982) (observing that the "drastic remedy of an injunction" was unwarranted given the innocent nature of the defendant's encroachment); Cross v. McCurry, 859 S.W.2d 349, 354 (Tenn. Ct. App. 1993) (upholding the trial court's decision to award damages in place of an injunction as "the appropriate equitable relief"). For a sophisticated discussion of adverse possession by encroachment, emphasizing the need to balance the building party's need for care in locating the boundary against the excessive leverage ("quasi-rents") the B can obtain after the building is complete, see Thomas J. Miceli & C.F. Sirmans, *An Economic Theory of Adverse Possession*, 15 INT'L REV. L. & ECON. 161, 162 (1995):

> [G]ood faith errors are difficult, if not impossible, to distinguish from intentional boundary encroachment. We therefore argue that the structure of adverse possession must impose some penalty on possessors for making boundary "errors," both to deter intentional errors, and also to provide an

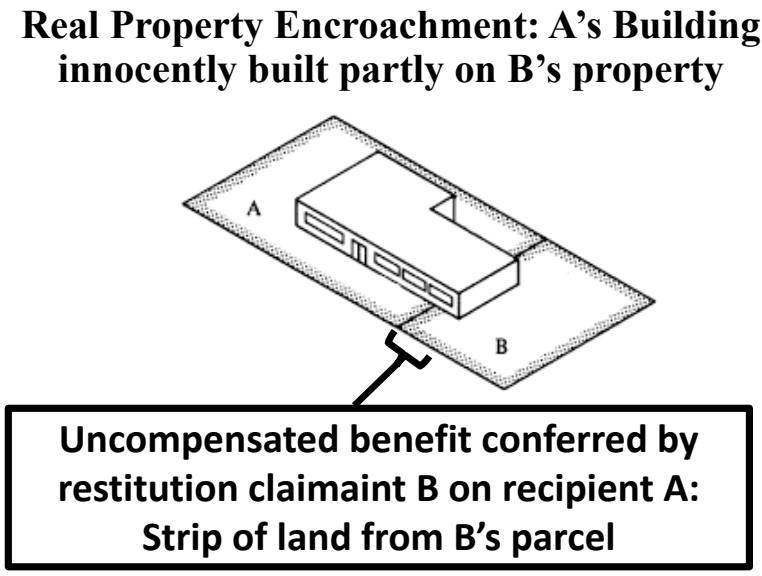
rigid contours of strict liability. The equitable nature of the restitution analysis allows courts to do at the remedies stage what they cannot do in determining initial liability: take into account relative culpability, and adjust the remedy in a way that promotes interparty fairness (which is arguably the heart of private law).[50] The basic structure of the situation depicted in Figure 4 remains the same. B, in our diagram, conferred a benefit on A through the use of the strip of B's land on which A built part of their building. The only questions are: (1) should a court grant an injunction in favor of B calling for A to cease its infringement of B's property line; and (2) what is the value of the land strip conferred on A? Figure 5 below depicts the encroachment story, told in terms of uncompensated benefits:

> incentive for land users to avoid good faith errors in the first place (e.g., by conducting surveys prior to developing). According to our theory, this penalty is the risk that land users face of losing their reliance expenditures [i.e., building costs] if the true owner discovers a boundary error before the statutory [adverse possession] period expires. The optimal statutory period balances this effect against the desire to prevent owners from extracting excessive quasi rents [i.e., undue leverage].

For more, see Lee Anne Fennell, *Efficient Trespass: The Case for "Bad Faith" Adverse Possession*, 100 NW. U. L. REV. 1037, 1038–39 (2006) (arguing that adverse possession can serve the end of promoting "efficient trespass"); Thomas W. Merrill, *Property Rules, Liability Rules, and Adverse Possession*, 79 NW. U. L. REV. 1122, 1131 (1984) (explaining that an encroached-upon party, such as B, can permit encroachment strategically, then collect a windfall; so adverse possession should guard against this strategic form of rent-seeking).

50. *See generally* Robert P. Merges, *Patent Infringement, Private Law, and Liability Standards*, *supra* note 22, at 161.

Figure 5: Benefit Received in Real Property Encroachment



A. PATENT INFRINGEMENT AS ENCROACHMENT

Encroachment is a consequence of imperfect boundaries—a lack of precise notice. Variation comes in the form of the relative fault of the parties, the overall technological landscape, and the relative impact of potential remedies. IP scholar Michael Carrier has noted the parallels between this situation and certain cases of innocent infringement in IP law.[51]

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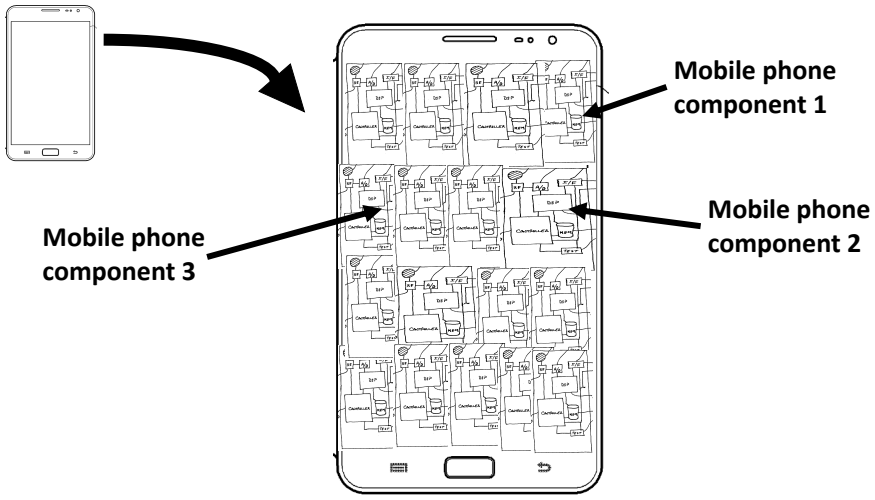
51. Michael A. Carrier, *Cabining Intellectual Property Through a Property Paradigm*, 54 DUKE L.J. 1, 73–74 (2004):

> The law of *encroachments* limits the right to exclude by precluding the issuance of an injunction when parts of buildings or other structures intrude onto others' lands. In particular, modern courts will not enjoin encroachments that are minimal, that would be costly to remove, and that result from innocent mistakes. For example, a court refused to issue an injunction when a high-rise parking garage encroached a total of 1.3 square feet onto the plaintiff's property and reduced the property's market value by two hundred dollars, but would have cost five hundred thousand dollars to remove.

(citing Urban Site Venture II Ltd. v. Levering Assocs. Ltd., 665 A.2d 1062, 1063 (Md. 1995), where according to Carrier, "[t]he court followed its 'accepted rule' that a court should balance the need for an injunction against the harm to a defendant if an 'occupation does no damage to the complainant except the mere occupancy of a comparatively insignificant part of his lot.'

It will help to start with a concrete example. The situation highlighted in Justice Kennedy's highly influential concurrence in *eBay v. MercExchange*[52] describes a complex, multicomponent product such as the mobile phone shown below in Figure 6:

Figure 6: Mobile Phone Components

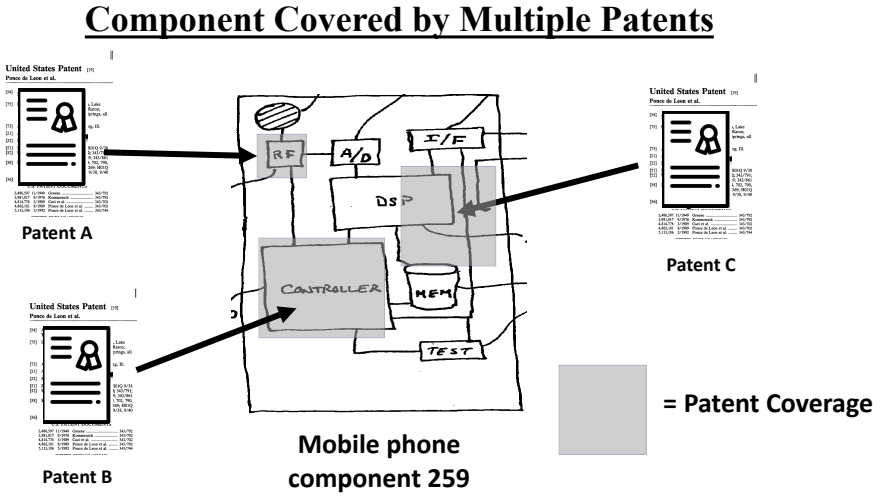


A mobile phone has hundreds of components, from special chips and circuits (microprocessor, power supply, analog-to-digital conversion, etc.), to antennas, ports, and all manner of software (to compress and decompress signals, encrypt and decrypt, upload and download, etc.). And each of these components may be covered by one, a few, or a dozen patents; Figure 7 depicts a typical example:

Id. at 1065 (quoting Easter v. Dundalk Holding Co., 86 A.2d 404, 405 (Md. 1952))"); *see also* B.J. Ard, *More Property Rules Than Property? The Right to Exclude in Patent and Copyright*, 68 EMORY L.J. 685, 685 (2019) (suggesting that IP law learn from situations where "courts and lawmakers use liability rules to deal with unintentional trespasses and to circumvent holdout problems involving real property").

52. eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, 396–97 (2006) (Kennedy, J., writing for Stevens, Souter & Breyer, JJ.).

Figure 7: Component Patents



One type of patent troll is a small company that has acquired one or a few patents with the set purpose of filing infringement cases.[53] A good number of these are software patents, which the troll firm may buy from a number of sources.[54] Some failed companies wind up their affairs by selling off patents.[55] Other companies may sell off a patent portfolio when they change their research direction, using the patent sale to pivot to a new opportunity.[56] Small inventors sell patents through brokers.[57] And sometimes patents can be acquired out of bankruptcy, or from a financial institution that acquired the patents in satisfaction of an unpaid loan.[58] Many of these patents would be difficult to identify in advance,[59] and of course the troll company has no duty

53. Points in this paragraph draw support from Christopher A. Cotropia, Jay Kesan & David Schwartz, *Heterogeneity Among Patent Plaintiffs: An Empirical Analysis of Patent Case Progression, Settlement, and Adjudication*, 15 J. EMPIRICAL LEGAL STUD. 80, 89 (2018).

54. *See* John R. Allison, Mark A. Lemley & David L. Schwartz, *How Often Do Non-Practicing Entities Win Patent Suits?*, 32 BERKELEY TECH. L.J. 237, 263 (2017) ("22.8% of operating company cases litigated to judgment involved software patents, while a whopping 65.9% of NPE [non-practicing entity, i.e., troll] suits did.").

55. Robert Merges, *After the Trolls: Patent Litigation as Ex Post Market-Making*, *supra* note 31, at 583.

56. *Id.* at 603.

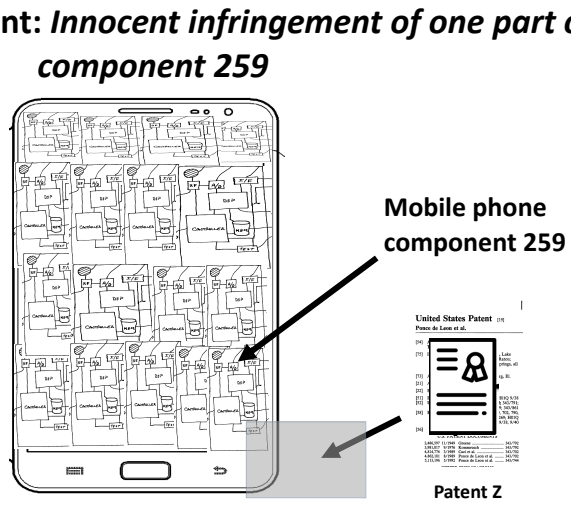
57. *Id.*

58. *Id.* at 583.

59. Robert P. Merges, *Patent Infringement, Private Law, and Liability Standards*, *supra* note 22, at 192–93.

to identify potential infringers (no patent-marking duty).[60] Under these circumstances it is exceedingly easy for a mobile phone maker to incorporate components that unknowingly infringe various patents. Visually, Figure 8 illustrates this situation, using fictional Component 259 in the pictured mobile phone design:

Figure 8: Patent Encroachment



This diagram demonstrates patent encroachment. The diagram shows an extreme case, where only one or two claims of Patent Z cover or "read on" one corner of Component 259. The potential for undue leverage is apparent, and the concerns raised in the *eBay* concurrence are self-evident.

By instructing courts to avoid giving "undue leverage" to a component patent holder, the Kennedy concurrence in *eBay* opened the way for future courts to consider the practical equities of the patent owner-infringer interaction.[61] The concurrence can be read as a model of how a judge should apply the traditional four-part test established unanimously in the *eBay* decision. The key features of the concurrence's approach are first, a careful understanding of the contemporary patent landscape and its relation to the dispute at issue; and second, familiarity with the animating spirit behind all of equity law: interparty fairness. The leverage conferred by enjoining

60. *Id.* at 223.

61. eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, 396–97 (2006) (Kennedy, J., concurring).

infringement of a component patent produces a windfall. The leverage is *undue*: not earned, not deserved, not fair. The flip side of the patent owner's windfall is the infringer's hardship. The concurrence in *eBay* trains attention on this hardship—the cost of redesigning an infringing component, and the large settlement the infringer might pay in lieu of this cost.[62]

Traditionally, courts determine undue hardship involves a comparison of the relative hardships on each party.[63] The concurrence says very little about the hardship a patent owner suffers when an injunction is denied. But the clear implication is that it is small in comparison with the hardship imposed on a component patent infringer who is enjoined:

> When the patented invention is but a small component of the product the companies seek to produce and the threat of an injunction is employed simply for undue leverage in negotiations, legal damages may well be sufficient to compensate for the infringement and an injunction may not serve the public interest. In addition injunctive relief may have different consequences for the burgeoning number of patents over business methods, which were not of much economic and legal significance in earlier times. The potential vagueness and suspect validity of some of these patents may affect the calculus under the four-factor test.[64]

This passage is rich in lessons about how to see patent disputes through the lens of equity. See what matters: (1) the patented item, "but a small component" of the infringer's product, would, under an injunction, confer "undue leverage" on the patent owner; (2) the potentially low quality of the patented invention, as evidenced by its minimal advance over the prior art (i.e., its "suspect validity"); and (3) little or no fault on the part of the infringer, because the "potential vagueness" of the patent in question would give no

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62. *Id.*

63. *See, e.g.*, Van Wagner Advert. Corp. v. S & M Enters., 492 N.E.2d 756, 761 (N.Y. 1986) (refusing to grant the traditional equitable remedy of specific performance in the case of an admitted breach of a lease agreement):

> Specific performance should be denied on the ground that such relief "would be inequitable in that its effect would be disproportionate in its harm to defendant and its assistance to plaintiff" . . . Restatement [Second] of Contracts § 364 [1] [b] . . . It is well settled that the imposition of an equitable remedy must not itself work an inequity, and that specific performance should not be an undue hardship (*see*, Pomeroy and Mann, Specific Performance of Contracts § 185 [3d ed 1926]).

On the doctrine of Undue Hardship in remedies cases, see generally Douglas Laycock, *The Neglected Defense of Undue Hardship (and the Doctrinal Train Wreck in Boomer v. Atlantic Cement)*, 4 J. TORT L. 1 (2012).

64. eBay, 547 U.S. at 388, 396–97 (Kennedy, J., concurring).

effective notice to that infringer, rendering it difficult for that infringer to avoid the infringing interaction with the patent owner. When these equitable factors are weighed, the Court concludes, "legal damages may well be sufficient to compensate for the infringement." The excessive leverage provided by an injunction, in other words, would be more than sufficient in this case—it would be undue, too much, excessive.[65] A patent on a minor feature or element of a complex technology, especially one that would be difficult for a potential infringer to identify and avoid during initial product design, is simply too small of a legal right to justify the industrial leverage conferred on the owner of a minor component patent when it receives an injunction.[66]

The story is quite different where a patent owner is an operating company, making and selling products, and the accused infringer is also in the market competing with the patent owner. Despite post-*eBay* concern about "the end of patents as property rights,"[67] outside the special case of patents on multicomponent products, courts continue to issue injunctions regularly and predictably. According to a definitive study,

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65. For a proposal to adjust patent damages according to the degree of similarity between a patent's *specification* and the details of the product accused of infringement, see Bernard Chao, *The Infringement Continuum*, 35 CARDOZO L. REV. 1359, 1359–60 (2014):

> Although I would continue to use the claims to determine infringement, I suggest that the specification be used to assess the remedy. Specifically, I suggest replacing the current lost profits/reasonable royalty framework with one based on royalties that consider disclosure principles. The size of the royalty would be determined by comparing the infringement to the patent specification and adjusting the royalty based on the degree of similarity.
>
> The proposal improves on existing doctrines in two fundamental ways. First, instead of offering binary outcomes, the proposed remedies are highly adjustable. Therefore, they are well suited for addressing the full infringement continuum. Second, this proposal does not just focus on the patentee's injury, as does the current law. Rather, it advances the public interest by optimizing incentives for both initial and follow-on innovators.

66. Undue hardship, like its civil cousin, abuse of right, is all about enforcing rough proportionality and preventing unearned windfalls. For a general discussion of the proper relationship between the scope and strength of an entitlement and the economic rewards from deploying it under specific conditions, see ROBERT P. MERGES, *The Proportionality Principle*, *in* JUSTIFYING INTELLECTUAL PROPERTY 159 (2011).

67. *See, e.g.*, Richard A. Epstein & Kayvan B. Noroozi, *Why Incentives for "Patent Holdout" Threaten to Dismantle FRAND, and Why It Matters*, 32 BERKELEY TECH. L.J. 1381, 1408 (2017) (speaking of "[t]he flawed remedial structure announced in *eBay*"). For a well-considered critique of the *eBay* decision, see Eric R. Claeys, *On Cowbells in Rock Anthems (and Property in IP): A Review of* Justifying Intellectual Property, 49 SAN DIEGO L. REV. 1033, 1036–44 (2012) (reviewing ROBERT P. MERGES, JUSTIFYING INTELLECTUAL PROPERTY (2011)).

> Patent holders who competed with an infringer were granted a permanent injunction in the overwhelming majority of cases (84%; 150 of 179 cases), while patentees who were not market competitors rarely succeeded in obtaining injunctive relief (21%; 8 of 39 cases). This difference was statistically significant.[68]

As one district court said soon after the *eBay* decision: "*eBay* has changed little where a prevailing plaintiff seeks an injunction to keep an infringing competitor out of the market."[69]

B. RESTITUTION AS MARKET SUBSTITUTE AND MARKET ALTERNATIVE

One function of restitution is to approximate a market transaction when for some reason such a transaction did not occur.[70] In LLO cases involving known licensors, courts can and do mimic the voluntary licensing market as much as possible. This makes damages in these cases something like "lost profits for companies with a licensing business model." As mentioned, currently most LLO cases are squeezed into this narrative. But I argue that this need not be. Restitution is a limber body of law; it can flex and adapt. Real property encroachment cases show this in action.[71] I would approach patent infringement cases, especially LLO harm cases, in the same spirit.

When restitution confronts recipients who were blameless in receiving a benefit, it does not automatically assess compensation to simulate market outcomes. Instead, it returns to first principles and attempts to achieve interparty fairness under the circumstances.[72] The Restatement of Restitution does this by framing the situation from the point of view of the innocent recipient:

> A benefit that is costly to confer, with a substantial market value, may be of no value at all in advancing the purposes of the recipient . . . . In such cases the unjust enrichment of an innocent recipient is ordinarily calculated by whichever of the available measures . . .

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68. Christopher B. Seaman, *Permanent Injunctions in Patent Litigation*, *supra* note 9, at 1990–91.

69. Amgen, Inc. v. F. Hoffman-La Roche Ltd., 581 F. Supp. 2d 160, 210 (D. Mass. 2008), *aff'd in part, vacated in part, and remanded*, 580 F.3d 1340 (Fed. Cir. 2009).

70. A fine statement of the issues can be found in Robert A. Long, Jr., *A Theory of Hypothetical Contract*, 94 YALE L.J. 415, 415–16 (1984).

71. *See* discussion *infra* Section II.E (describing and adapting restitution principles from real property encroachment cases).

72. *See, e.g.*, Hirshfield v. Schwartz, 91 Cal. App. 4th 749, 770 (Cal. Ct. App. 2001) ("The object of equity is to do right and justice. It 'does not wait upon precedent which exactly squares with the facts in controversy, but will assert itself in those situations where right and justice would be defeated but for its intervention.'") (quoting Times-Mirror Co. v. Super. Ct., 44 P.2d 547 (1935)).

> yields the smallest liability in restitution . . . . Because "value to the recipient" is usually the most restrictive measure of enrichment, it is the customary measure of the restitutionary liability of an innocent recipient of unrequested, nonreturnable benefits; though in particular contexts the rule [stated in a related section] yields the formula "cost or value, whichever is less."[73]

At the outset I make a preliminary point. The principle of Restatement (Third) § 50 is that restitution is not always a market substitute. For innocent recipients of a benefit, restitution is a nonmarket compensation mechanism that balances two things: (1) the moral/legal obligation not to use another's property-protected valuable idea without compensation, and (2) the moral/legal right not to have market transactions imposed when one has chosen to abstain from a market transaction. On the patentee's side of the equation is the strict liability regime for patent-based liability. On the recipient/infringer's side is a lack of culpability regarding appropriation of another's idea, plus the legal system's reluctance to treat an involuntary recipient the same as a party who actively seeks out a market exchange. Relative fault is not considered when deciding whether a defendant infringed a patent.[74] But culpability in various forms is highly relevant to the law of patent remedies—a principle I propose to extend in innocent-recipient LLO harm type cases.

C. PATENT TACTICS AND STRATEGICALLY ENGINEERED ENCROACHMENT

The sequence of events leading to patent litigation is typically this: B obtains a patent; A is already, or later begins, to infringe by making and selling

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73. RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 50 (A.L.I. 2011) reads:

> (2) If nonreturnable benefits would be susceptible of different valuations by the standards identified in § 49(3) [e.g., value to recipient, cost to claimant, market value], the liability of an innocent recipient is determined as follows:
>
> (a) Unjust enrichment from unrequested benefits is measured by the standard that yields the smallest liability in restitution.
>
> (b) Unjust enrichment from requested benefits is measured by their reasonable value to the recipient. Reasonable value is normally the lesser of market value and a price the recipient has expressed a willingness to pay.
>
> (c) Reasonable value may be measured by a more restrictive standard if the validity of the recipient's assent is in question (§ 49(3)(d)); if the claimant has not performed as requested (§ 36); or if prevailing prices include an element of profit that the court decides to withhold from the claimant.

74. On patent law's strict liability standard, see Robert P. Merges, *Patent Infringement, Private Law, and Liability Standards*, *supra* note 22, at 161.

something embodying one or more of B's patent claims; liability is established, and a remedy ensues. Owing to the flexibility of patent practice, however, the sequence sometimes varies. Sometimes A starts making and selling things, and B begins to scout around for loose patents that either cover or might be *made to cover* A's product. We will consider both tactics: (1) acquisition of patents whose claims might be susceptible of a generously broad interpretation, and (2) acquisition of pending patent applications whose claims might support a strategically broad amendment.

Begin with the acquisition of existing, issued patents. Patent trolls will look for patents that clearly center on a specific device, but whose claims use terminology that is broad enough to embrace things well beyond the particulars of the disclosed invention. As one observer of these practices put it:[75]

> [T]he existence and success of patent assertion entities [i.e., trolls or NPEs] are often attributed to patents with "fuzzy boundaries" and vague claims . . . . [P]atent assertion entities purposefully seek out patents with vague or ambiguous claim language for purchase. This allows patent assertion entities to target technology that is different than that disclosed in the patent and developed after the patent issued but has now become firmly established and extract payments from those dependent on a particular technology. Relatedly, vagueness in claim language allows patent assertion entities to assert their patents broadly to cover a wide range of technology that exists in the market, technology that may only have a tangential relationship to that described in the patent. Importantly, technology users cannot avoid infringement before developing or adopting a technology because the vague claim language hinders ex ante efforts to identify or design around the subsequently asserted patent.
>
> [In addition,] patent assertion entities are often said to rely on overly broad claim scope, whether due to the inherent breadth of the patent claims or because the ambiguity and vagueness of claim language permits the patent assertion entity to read the claim broadly. Broad patent scope allows the patent assertion entity to assert the patent against now-established technologies developed after the patent issued, as well as to assert it broadly against a large number of products and companies. The result is increased returns from the patent assertion entity's investment in a patent.

If the specification of the acquired patent hints at or partially discloses extrapolations and adaptations of the basic device, and if a sympathetic court

75. Greg Reilly, *Patent "Trolls" and Claim Construction*, 91 NOTRE DAME L. REV. 1045, 1050–51 (2016).

finds this to be adequate support for a broad interpretation, what seems to be a narrow patent can be creatively deployed to cover a broad and valuable technology. Firms that specialize in finding these "big value in a small, overlooked package"-type patents then sue various defendants in hopes that one or more courts or juries will be sympathetic to a broad reading of the patent.[76] It only takes one winning case for a patent like this to pay off. Though many don't, a few do (particularly in the software field),[77] and for aggressive patent litigators that's enough to keep them on the hunt for patents like these.

Patent encroachment can be engineered more directly in some cases. When patent portfolios are sold, they often include "open applications": still-pending patent applications that are maintained in the Patent Office to keep options open.[78] Because it is possible to amend patent claims while a patent is pending,

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76. Two sample infringement cases illustrate this dynamic. *See* On Demand Mach. Corp. v. Ingram Indus., Inc., 442 F.3d 1331, 1340 (Fed. Cir. 2006) (rejecting the claim that defendants—large-scale remote printing companies including Amazon.com—who print books on demand in response to customer orders-infringed upon U.S. Patent No. 5,465,213, which was drafted in 1990 to cover on-demand printing of single copies of books in special kiosks installed in bookstores: "[T]he focus of the [plaintiff's] patent is immediate single-copy printing and binding initiated by the customer and conducted at the customer's site. The [patent claim at issue] . . . cannot eliminate these constraints in order to embrace the remote large-scale production of books for publishers and retailers."); Walker Digital, LLC v. Microsoft Corp., No. CV 09-7514 PSG PJWX, 2011 WL 61618, at *13–14 (C.D. Cal. Jan. 3, 2011), *aff'd*, 484 F. App'x 496 (Fed. Cir. 2012) (granting summary judgment for defendant on plaintiff's patent claiming the ability to prepare a browser search that runs "in the background" while a user operates a software program (such as Microsoft Word) "in the foreground"; the patent application filed in 1998 envisioned the preparation and launch of a search term completely within a self-contained and separate browser program, while later software permits browser search preparation in a program separate from but tightly integrated with the browser, such as in contemporary versions of Microsoft Office).

77. *See* Reilly, *supra* note 75, at 1051:

> That patent assertion entities most commonly assert patents on software-related inventions supports the importance of ambiguous and broad claim scope to their business model. The most likely reason for the popularity of software patents among patent assertion entities is that software patents tend to have vague and broad claim language, often written in "functional" terms that define a goal, rather than a specific means of achieving that goal.

See also Allison et al., *supra* note 54, at 261.

78. Colleen Chien, *Startups and Patent Trolls*, 17 STAN. TECH. L. REV. 461, 481 n.80 (2014) (emphasis added):

> In the words of one [patent sale] industry veteran, there are three bands of patents: "crown jewels" that can be used to currently block a large segment of the market and are worth about $700K+/patent; "mid-value" patents in the $300–500K range; "stocking suffers" ($200–300K per patent) that add bulk to a portfolio that "aren't currently being infringed but that's the way

these open applications are used to try to add new claims that cover emerging trends in the product area, as well as specific products of individual competitors. Amended claims must still be supported (enabled and disclosed) by the pending patent specification; an applicant cannot add new supporting material for amended claims without losing the original filing date for the pending application.[79] So while an applicant can't just add any new claim that might be valuable, they *can* file amended claims that have some plausible support in the original specification.[80] When this strategy works, it allows a

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> the market is going," and *"pure bulk" patents that "are valuable only as part of a portfolio, and may have open applications*."

See also Orion Armon, *Patent Litigation Strategies at the End of the "Patent Bubble"*, ASPATORE, 2014 WL 3773052, at *6 (June 2014) (considering whether to file an infringement suit: "In [today's] environment, a successful patent enforcement campaign requires a large patent portfolio and ideally one that has *open applications* to enable cleansing prior art and *adjusting claim scope*.") (emphasis added). On the acquisition of patent portfolios, see ROBERT P. MERGES & FANG (HELEN) LIU, INTELLECTUAL PROPERTY STRATEGY FOR BUSINESS 248–58 (2020) (section on "Acquiring Other Companies' Patents to Enhance Your Portfolio").

79. *See, e.g.*, PowerOasis, Inc. v. T-Mobile USA, Inc., 522 F.3d 1299, 1306 (Fed. Cir. 2008) ("[A] patent application is entitled to the benefit of the filing date of an earlier filed application only if the disclosure of the earlier application provides support for the claims of the later application . . . . ").

80. The Patent Office and courts are called on to police the boundary between a legitimate amendment, spelling out or focusing on (1) a disclosed but unclaimed aspect of the technology, and (2) an illegitimate one which tries to shoehorn new developments into a patent that in no way anticipated or supported them. On the process of claim drafting, the possibility of capturing legitimate extensions of a disclosed technology, and the general conception of patents and pending applications as options, see Robert P. Merges, *Patent Markets and Innovation in the Era of Big Platform Companies*, 35 BERKELEY TECH. L.J. 53, 62–63 (2020) (footnotes omitted):

> The essence of a patent is an extrapolation from one or a few prototypes, successful experiments, or working models. Those who draft patent claims work every day in the realm of projection, extension, variation, and modification. Even within a single patent, the usual practice is to draft a set of claims that begins broadly and then becomes narrower. This pattern is repeated several times in a typical patent. Thus, from an economic perspective, the best way to conceptualize a patent is as a set of nested options. When a patent is filed or a claim is redrafted (amended), it is impossible to know for certain whether that claim will cover (read on) a valuable commercial product (embodiment) in the future. There is also a risk that a broader claim may encompass something known in the field before the claim was filed, making that claim invalid. As a result, patent drafters are forever navigating the eternal golden braid of validity risk, legitimate extrapolation (enablement), and future coverage. But the better the claims are drafted, and the more of them there are, the more likely that something of future value will be covered. Additionally, the real-world unit of analysis these days is a patent portfolio rather than a single patent. Most

patent owner to file amended claims and then push the resulting application through the Patent Office, resulting in a new patent with (hopefully valid) claims that have been adjusted and tailored to capture upcoming valuable products.[81] The use of open applications and strategic amendments represents probably the simplest case of "manipulated encroachment." Though this practice has been criticized,[82] it is a longstanding tradition in the patent field and one unlikely to be rooted out anytime soon.

> portfolios also include pending patent applications which, unlike issued patents, can still be amended. Their claims can be stretched, where legitimate, to cover products that have become viable or foreseeable in the interval between the filing of the original claim and the amendment. These pending applications and their claims thus have even greater option value. The result of this setup is a large bundle of ownership claims over a multitude of technological options. The options cover embodiments that may be hard or impossible to foresee, and it is equally hard to predict the market value of these hard-to-foresee embodiments.

See also Jonathan Bockman, Joshua A. Crawford & Jeffrey Gerard Young, *Client Alert:* Sonos v. Google *Breathes New Life into Prosecution Laches Doctrine*, MORRISON FOERSTER, (Oct. 31, 2023), https://www.mofo.com/resources/insights/231031-sonos-v-google-breathes-new-life-into-prosecution-laches-doctrine ("The . . . practice of drafting continuation claims intended to cover a competitor's product is sometimes referred to as 'targeted' continuation practice.").

81. Amended claims designed to cover a competitor's product can put those claims in jeopardy of being invalidated under patent law's "written description" requirement. *See, e.g.*, Gentry Gallery, Inc. v. Berkline Corp., 134 F.3d 1473, 1479 (Fed. Cir. 1998) (holding that a claim amended to capture competitor product was invalid under written description requirement, 35 U.S.C. § 112). *Cf.* Sonos, Inc. v. Google LLC, No. C 20-06754 WHA, 2023 WL 6542320, at *1 (N.D. Cal. Oct. 6, 2023) (holding claims unenforceable under doctrine of prosecution history laches, where the original 2006 application was left open and new claims added in 2019 to cover defendant products):

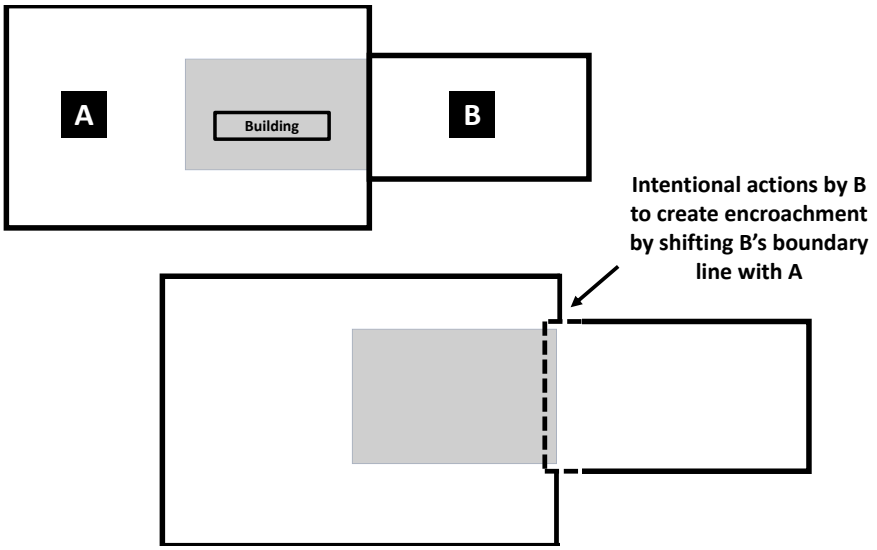
> This was not a case of an inventor leading the industry to something new. This was a case of the industry leading with something new and, only then, an inventor coming out of the woodwork to say that he had come up with the idea first—wringing fresh claims to read on a competitor's products from an ancient application.

82. *See* Philip S. Johnson, *Patent Reform Legislation: An Introductory Note*, SM024 ALI-ABA 47, 82 (Sept. 28–29, 2006) (footnote omitted):

> Continuation applications are said to allow applicants to more accurately claim a previously disclosed invention without the necessity of an appeal. Some commentators believe they are subject to abuse, however. Under this view, continuation practice introduces delay and uncertainty into the patent acquisition process. In particular, applicants are said to use a chain of continuation applications in order to gain advantages over competitors by waiting to see what product the competitor will make, and then drafting patent claims that cover that product.

Whether through fuzzy but perhaps broad claims, or carefully amended claims, infringement that results from strategically engineered encroachment has less to do with an infringer who oversteps a boundary and more to do with a clever patent strategist who manages to slip a new boundary under the infringer's building at night. Figure 9, using the example of real property encroachment, depicts the situation:

Figure 9: Real Property Encroachment



From here, we are in a good position to give a precise definition of patent encroachment.

1. A Precise Definition of Patent Encroachment

Patent encroachment has three essential elements: (1) intentional alteration of existing or pending patent boundaries; (2) with the intent to capture a third-party contribution; (3) where the altered claim(s) meet patent law's enablement standard formally or technically, but not in substance. When an accused infringer establishes these, I would encourage courts to pick up the tools of restitution when fashioning an appropriate remedy. That remedy may vary from case to case, as I have suggested. There are greater and lesser degrees of culpability within the ambit of the patent encroachment.

The first two elements—intentional alteration of boundaries to embrace third-party contributions—are described in some detail in the prior section. Their relevance to a restitution-based remedy is addressed below. What remains is to explain a bit further why I think patent law *needs* the

encroachment concept. The next Section explains why none of the dozens of existing patent-related rules and doctrines reliably address the encroachment problem.

a) Existing Doctrines Designed to Prevent Overextension of Pending Patent Claims

Encroachment happens when a patent applicant intentionally manipulates pending claims to capture a third-party contribution. Of course, claim amendments during patent prosecution cannot be drafted as broadly as the applicant might desire; there are constraints, enforced by several existing patent rules, on how broad of an amendment the Patent Office will accept. The most fundamental rule is that no claim—originally filed or later amended—may cover anything already available to the public in the prior art, as of patent filing.[83] But there are other constraints, designed to prevent claiming something not known before but also not legitimately supported by the inventor's original patent specification. Three rules in particular do most of the work in this respect:

- Enablement: the original specification must teach those in the relevant field how to "make and use" the claimed invention;[84] amended claims may cover variations and extensions of the originally claimed invention that are not adequately taught or "supported" in the originally filed specification.
- Written description: the original specification must not only enable but "describe" the invention as claimed; claims that deviate from the stated purpose or main thrust of the invention as described may be invalidated not being adequately described.
- New matter: The filing of an amendment can be accompanied by explanatory material to be added to the specification, but to the extent the added material goes beyond anything expressly disclosed or suggested in the specification as originally filed, the amended specification may lose the benefit of the original filing date, and be forced to rely on the date of the "new matter" filing—which could prove fatal if new and damaging prior art appears in the field after the original filing but before the new matter filing.

83. *See* U.S. PAT. & TRADEMARK OFF., CONSOLIDATED PATENT RULES – APPENDIX R R-134 (Jan. 2025) (reviewing 37 C.F.R. § 1.111: "The reply must present arguments pointing out the specific distinctions believed to render the claims, including any newly presented claims, patentable over any applied [prior art] references.").

84. *See* 35 U.S.C. § 112.

- The equitable doctrine, prosecution delay laches, will often have the indirect effect of limiting the ability of a patent applicant to embrace after-developed technology on the basis of an earlier, still pending, patent application. This form of laches invalidates patents that were amended many years after initial filing. It is explicitly aimed at patent applicant strategies founded on long prosecution delays and the potential for claiming valuable post-filing (way post-filing) developments in the relevant technology.[85]

I consider each of these in order, on the way to explaining why, despite their value, remedial flexibility is a desirable additional tool to deploy when some degree of engineered patent encroachment is at issue.

D. WHY REMEDIAL FLEXIBILITY IS NEEDED IN ADDITION TO THESE DOCTRINES

Collectively these doctrines work to prevent attempts to stretch patent claims beyond what an inventor deserves to own. Each has limits, however. When these are considered together with the patent system's long-running permission to maintain open patent applications as long as applicants want them, the need for added flexibility at the remedies stage becomes apparent.

The enablement doctrine has evolved so that applicants can often legitimately claim new developments and improvements that arise after patent filing, and even after patent issuance. This occurs because enablement is

85. *See* Symbol Techs., Inc. v. Lemelson Med., 277 F.3d 1361, 1363 (Fed. Cir. 2002) (recognizing the defense of prosecution laches when the relevant patent application was filed under the pre-1995 patent term statute and patents were valid for seventeen years after issuance), *on appeal after remand*, 422 F.3d 1378 (2005) (upholding the district court's finding that several patents, pending between eighteen and thirty-nine years from the filing due to the "culpable neglect" of patent applicant Lemelson, were unenforceable; agreeing with the district court's conclusion that "[i]f the defense of prosecution laches does not apply under the totality of circumstances presented here, the Court can envision very few circumstances under which it would."), quoting Symbol Techs., Inc. v. Lemelson Med., 301 F. Supp. 2d 1147, 1156 (D. Nev. 2004), *aff'd sub nom.*, Symbol Techs., Inc. v. Lemelson Med., 422 F.3d 1378 (Fed. Cir. 2005), *amended on reh'g in part sub nom.*, Symbol Techs., Inc. v. Lemelson Med., LP, 429 F.3d 1051 (Fed. Cir. 2005); *see also* Hyatt v. Hirshfeld, 998 F.3d 1347, 1367 (Fed. Cir. 2021) (upholding PTO application of prosecution delay laches to find patent applications unenforceable: "The PTO presented evidence establishing that Hyatt's four applications at issue claimed priority to applications filed in the early 1970s and 1980s, meaning that Hyatt delayed between 12 to 28 years to present his claims for prosecution."). The principle has been held to apply to post-1995 patent applications as well; these are subject to a patent term of twenty years measured not from issuance, but from application date. *See* Sonos, Inc. v. Google LLC, No. C 20-06754 WHA, 2023 WL 6542320, at *1 (N.D. Cal. Oct. 6, 2023) (holding claims unenforceable under doctrine of prosecution history laches, where the original 2006 application was left open and new claims added in 2019 to cover defendant products).

measured as of a patentee's filing date and remains a fixed and constant test throughout the life of a patent.[86] If an application is enabled when filed—if it adequately describes an invention given then-existing knowledge about it—it is enabled until the patent expires. Claim language, however, expands in meaning over time: the meaning of a claim is determined as of the date of the infringement and not the filing date.[87] That can be much later: fifteen or twenty years would not be unusual.[88] So, claim language is allowed to expand in meaning while the enablement test remains tethered to the original (filing date) state of knowledge.[89] As a result of the interaction of the two rules, it is not unusual for a claim filed early in the history of a new field to grow in scope, effectively, over the ensuing life of the patent after its issuance.

An early patent in the polymer field illustrates the point. A patent application filed in the 1950s covered the then-new polymer polypropylene.[90] A long delay in patent prosecution resulted. Not from strategic patent prosecution in this case, but instead a drawn-out fight among three inventive groups all claiming the earliest priority date for the invention. After priority was sorted out, the original inventor received a rejection from the Patent Office concerning the potential breadth of one claim in the 1953 application. That application taught only a "crystalline" form of polypropylene, which was the first version synthesized. The molecular chains that make up polypropylene are all oriented in the same direction in the crystalline form, which makes this a hard and strong polymer. But over time, "amorphous" forms were developed

86. For more on this issue, often called "after-arising technology" by patent scholars, see Jeffrey A. Lefstin, *The Formal Structure of Patent Law and the Limits of Enablement*, 23 BERKELEY TECH. L.J. 1141, 1173–74 (2008).

87. *See* Mark A. Lemley, *The Changing Meaning of Patent Claim Terms*, 104 MICH. L. REV. 101, 104 (2005).

88. *See, e.g.*, Herbert Hovenkamp, *Competition for Innovation*, 2012 COLUM. BUS. L. REV. 799, 828 (2012) ("the time a patent infringement action is filed . . . can be many years after [patent] issuance"); Gideon Mark & T. Leigh Anenson, *Inequitable Conduct and Walker Process Claims After Therasense and the America Invents Act*, 16 U. PA. J. BUS. L. 361, 398–99 (2014) ("the time a patent infringement action is commenced . . . may occur many years after a patent issues"); Christopher Buccafusco & Jonathan S. Masur, *Drugs, Patents, and Well-Being*, 98 WASH. U. L. REV. 1403, 1433 (2021) ("[P]harmaceutical drugs typically do not reach the market until many years after the filing of a patent application because of the need to run clinical trials and secure FDA approval.").

89. One scholar has proposed a fix: tie all patent doctrines to a single date—the patent filing date. *See* Lemley, *supra* note 87. The situation resulting from interaction of enablement and claim interpretation has been labelled by one grandiose theorist as patent law's "temporal paradox." *See* ROBERT P. MERGES, PATENT LAW AND POLICY 549–552 (1st ed. 1992) (section entitled "Enablement and the Temporal Paradox").

90. *See* U.S. Patent No. 2,825,721. The details of the patent, and the entire competitive backdrop to the development of commercial polypropylene, are discussed in ROBERT P. MERGES, AMERICAN PATENT LAW, *supra* note 27, at 299–303.

with more random polymer unit orientations; the result is a softer and more flexible material, now used in clothing, packaging, and related uses. The patent examiner noted that the meaning of polymer had expanded, and that the original specification did not teach the amorphous forms. So, the claim was not enabled. The Court of Customs and Patent Appeals (one predecessor to the Federal Circuit) reversed this on appeal.[91] The court reiterated the traditional standard for enablement and held that because the claim in question satisfied the enablement standard as of the filing date, the claim was valid. The courts could work out the claim interpretation issue later.

It is the same with other cases. A notorious example involved some patents held by a repeat inventor, who became master of the long-pending patent application: Jerome Lemelson. Lemelson filed bunches of patents over the years, but some of his most well-known patents covered the use of imaging technology to assist in manufacturing. His original applications, filed in the early 1950s, depict things like television-type cameras providing visual images of items moving down an assembly line. After an endless string of continuations and amendments, the patents issued. Because the claim language had been carefully generalized and broadened over the years, and because the claims were deemed adequately enabled by description of the primitive visual processing technology in use on the filing date, the patents were widely licensed. So, it came to be that patents depicting clunky TV cameras ended up covering laser scanners, bar code readers, and a host of improvements that neither Lemelson nor anyone else understood or described in the 1950s.[92]

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91. *In re* Hogan, 559 F.2d 595, 607 (C.C.P.A. 1977).

92. *Cf.* Jeffrey D. Sullivan & David Loretto, Symbol Technologies v. Lemelson, *Prosecution Laches, and the Still-Unmet Challenges of Junking "Junk Patents"*, 33 AIPLA Q.J. 285, 298 (2005) ("The problem that most defendants would see with the Lemelson patents was not that Lemelson, in the 1950s, disclosed in his patent specifications advanced scanner inventions that he had made, but then failed to claim them in his patent claims. Rather, parties such as Symbol would likely claim that Lemelson had never invented, contemplated, or disclosed the advanced, laser-based scanners in use today."). For a taste of Lemelson's black-belt-level patent prosecution technique, see Ford Motor Co. v. Lemelson, No. CV-N-92-545-LDG(PHA), 1995 WL 628330, at *11 (D. Nev. June 16, 1995), *report and recommendation adopted*, No. CV-N-92-545-LDG(PHA), 1996 WL 673595 (D. Nev. Apr. 11, 1996), *on reconsideration*, No. CV-N-92-545-LDG(PHA), 1997 WL 294430 (D. Nev. Apr. 28, 1997) (emphasis in original):

> On September 15, 1986, Lemelson filed Application Serial No. 906,969. This application, a continuation of the '183 application [which traced back through a chain of continuations until 1954], contained 50 claims, all of which were *new*. I.e., these claims appeared for the first time in this application, more than thirty years after the disclosures upon which Lemelson relies. Twenty of the fifty new claims were allowed, and issued in U.S. Patent No. 4,984,073 on January 8, 1991.

In sum, though enablement doctrine in many cases prevents overclaiming, in some egregious cases it falls prey to the "temporal paradox,"[93] and fails its essential purpose.

The second doctrine, written description, can at least sometimes plug this hole. Written description cases are about a mismatch between patent specification and claims, as is true of enablement also. But the problem written description addresses is not a specification that inadequately enables or *teaches* a claimed embodiment. It is instead a specification that stresses, emphasizes, or strongly features a version of the invention that diverges from the claims in the issued patent.[94] Written description requires describing your invention in roughly the same terms you use to claim it. It prevents an applicant from describing invention version A but claiming version B. An alternative characterization is that written description requires you to do more than teach how to make and use a claimed invention. You have to show "possession" of the version of the invention claimed.[95] You cannot go to the edges of what you teach (enable) and claim something far different from the version of the invention you feature, promote, and fully describe in your application.[96]

This holds promise as a distinct limit on broad claim language, which should make it useful in preventing illegitimate patent encroachment. One minor scholar has argued that written description should be used to prevent the holder of a patent application from amending their claims to embrace an innovative product variant developed by a competitor—a situation the author calls "misappropriation by amendment."[97] But there are limits to the effectiveness of written description to address encroachment. Most importantly, tests for the written description requirement suffer from

93. *See supra* note 92.

94. *See supra* note 32 and accompanying text; *see also* Symbol Techs., Inc. v. Lemelson Med., 301 F. Supp. 2d 1147, 1165 (D. Nev. 2004), *aff'd*, Symbol Techs., Inc. v. Lemelson Med., 422 F.3d 1378 (Fed. Cir. 2005) ("[W]here a patentee seeks to rely on an earlier application to provide an effective filing date for a claim . . ., the disclosure of the earlier application must independently describe the claimed invention to satisfy the written description requirement.").

95. *See, e.g.*, Koito Mfg. Co., v. Turn-Key-Tech, LLC, 381 F.3d 1142, 1155 (Fed. Cir. 2004). For background and critique, see Timothy R. Holbrook, *Possession in Patent Law*, 59 SMU L. REV. 123, 127 (2006) (describing the written description requirement as a doctrine concerned with possession, which the author believes is redundant with a related patent law requirement—enablement).

96. Holbrook, *supra* note 95.

97. *See* Robert P. Merges, *Software and Patent Scope: A Report from the Middle Innings*, 85 TEX. L. REV. 1627, 1652–64 (2007) (describing a "misappropriation [of third-party inventions] by amendment" rationale for written description in certain broadening-amendment cases where the amendment intentionally covers a clever variant on the invention, independently developed by a third party, where the new variant is covered only by the amended claim and not the claims of the patentee's original application when filed).

vagueness. What does it mean to describe vs. teach? What does it mean to "possess" vs. teach, especially since "possession" of an invention variant does not require that the inventor actually build it ("reduce it to practice"). Written description—how to test for it; how precisely it relates to enablement—remains a bit of a cypher.[98] As such, it is not a reliable tool to rein in patent encroachment tactics.

Another patent rule that might help is the new matter doctrine. This says that a specification updated with new disclosures in the specification cannot add "new matter" while still claiming the priority date of the original patent filing.[99] Significant additions to a specification may support broader claims as compared to the original disclosure. But if some or all claims rest on and find support in only the new matter, and not in the specification as filed, those claims will not be afforded the benefit of the earlier filing date. Priority for those claims is measured from the date the new matter is added—not the original filing date. That means prior art appearing between those dates, which would be irrelevant and unable to defeat claims accorded the original priority date, will be considered in determining the validity of the new matter-supported claims.[100] This can be fatal in a fast moving field because prior art can proliferate rapidly, making it difficult to defend broad claims whose priority date is well after an initial pioneering patent application.

The new matter rule is undoubtedly helpful;[101] but even so many cases like these hold that although a specification amendment adds explication and expands on an original disclosure, the amendment does not violate the new matter rule because the new material was "inherent" in the original disclosure.[102] As a general matter, "inherent" disclosure is a tricky concept in

98. *See, e.g.*, Darlene M.J. Staines, *The Patent Written Description Requirement: A Requirement in Search of a Description*, 92 FORDHAM L. REV. 1195, 1195 (2023) ("The written description requirement has a reputation for being poorly defined and unpredictable.").

99. *See* 35 U.S.C. § 132 ("No amendment shall introduce new matter into the disclosure of the invention.").

100. *See supra* note 50 and accompanying text.

101. *See, e.g.*, Neutrino Development Corp. v. Sonosite, Inc., 423 F. Supp. 2d 673 (S.D. Tex. 2006); Schering Corp. v. Amgen Inc., 18 F. Supp. 2d 372 (D. Del. 1998) (holding that the reference to "a polypeptide of the IFN-α type," in patent covering use of recombinant DNA molecules in producing human interferon-like polypeptides, improperly introduced new matter, in violation of patent statute).

102. *See, e.g.*, Schering Corp. v. Amgen, Inc., 222 F.3d 1347, 1352-53, 55 USPQ2d 1650, 1654 (Fed. Cir. 2000) (re-naming of same element does not add new matter); *In re* Anderson, 471 F.2d 1237, 1244 (C.C.P.A. 1973) (reversing new-matter rejection where specification did not use the same language as in the claims because the specification nonetheless adequately supported the claim); *In re* Reynolds, 443 F.2d 384, 389 (1971) (using drawings of patent to find that one would inherently produce claimed capacitor and therefore specification adequately supported claims). *See generally* MPEP § 2163.07 (9th ed. Rev. 1, Nov. 2024).

U.S. patent law. And the case law shows a good deal of disagreement about application of inherency in various patent-related contexts, including with respect to the new matter rule.[103] In the end then there will be close cases that fall in favor of finding no violation of the new matter rule because the original disclosure "inherently" disclosed what was later made explicit in additions to the patent specification.

The final doctrine that can help police over-broad claim amendments is the doctrine of prosecution history laches. This is an equitable rule that makes unenforceable any patent whose issuance was intentionally and purposely delayed for an excessively long period, with the specific intent of engineering more and more inclusive claims over emerging technologies in a field.[104] The landmark case is *Symbol Technologies, Inc. v. Lemelson Medical, Educational & Research Foundation* (2002).[105] This case rendered unenforceable some of the patents previously described, those on "machine vision" and "automatic identification" technology.[106] As an application of equity in service of "interparty fairness," this represents a most welcome addition to the policing levers available where patent encroachment is a risk. The problem is that the doctrine touches only on the most egregious patent-extending, encroachment-by-claim-engineering scenarios. This is in part because sometimes perfectly legitimate patent prosecution results in a long string of related applications that may reach back nine or ten years—with good reason, and well within the bounds of conventional patent prosecution tactics.[107]

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103. *See, e.g.*, Abbott Lab'ys, Inc. v. TorPharm, Inc., 300 F.3d 1367, 1378–79 (Fed. Cir. 2002) (emphasis added):

> During prosecution of the '731 patent, Abbott's claims for an oligomer of "about 6" and "about 4 to 6" subunits were rejected under section 112, 1st paragraph, because the "about 6" or "about 4 to 6" language did not appear in the originally-filed specification. The Board of Patent Appeals and Interferences affirmed the rejection, and Abbott, rather than appeal the rejection to this court, instead *filed a continuation application and won allowance of the claims by submitting new evidence that the "about 6" or "about 4 to 6" limitations were inherent in its original disclosure.*

104. ROBERT P. MERGES & JOHN F. DUFFY, PATENT LAW AND POLICY: CASES AND MATERIALS 1059–67 (8th ed. 2021).

105. Symbol Techs., Inc. v. Lemelson Med., 277 F.3d 1361, 1361 (Fed. Cir. 2002).

106. *Id.* at 1363.

107. *See, e.g.*, Digital Control Inc. v. McLaughlin Mfg. Co., 248 F. Supp. 2d 1015, 1019 (W.D. Wash. 2003) ("Plaintiff's delay [in the form of a series of continuation applications on variations of the invention, filed over an eight-year period after the initial priority filing] is reasonable and explained by the directives of the PTO. This practice of continuation, even when it 'captures' technology or devices of a competitor, is lawful and has been consistently upheld by courts.") (citing Kingsdown Med. Consultants, Ltd. v. Hollister, Inc., 863 F.2d 867,

In summary, enablement, written description, new matter, and prosecution delay laches all serve a valuable purpose. But for various reasons there will be cases that do not run afoul of any of these requirements, but that still have some elements of questionable encroachment. Adding remedial flexibility can help. And unlike the validity doctrines, encroachment need not be an all or nothing proposition. There is room for courts to find varying degrees of encroachment. Remedies can be fine-tuned. In true equitable fashion, the remedy in an LLO harm case where some degree of encroachment is present might be varied to fit the particular case.

E. REMEDIES FOR PATENT ENCROACHMENT: LOOKING TO RESTITUTION

Though encroachment is a branch of trespass, and so naturally belongs to property law, it is also conventionally included in restitution.[108] Conceptually, it's a good fit: the case of the accidental beneficiary of a resource owned by another is an old one in restitution. This is the position shown earlier in Figure 8 (Patent Encroachment). Encroacher A innocently but inescapably borrows

874 (Fed. Cir. 1988) (permitting claim amendments filed with specific intent to capture competitor technology)); *see also* Micro-Acoustics Corp. v. Bose Corp., 493 F. Supp. 356, 367 (S.D.N.Y. 1980) ("There is nothing wrong with broadening the claims to cover competitive devices about which the applicant's assignee learns after the application is filed, so long as the claims are supported by the specification and drawings."); Penn Yan Boats, Inc. v. Sea Lark Boats, Inc., 359 F. Supp. 948, 954–55 (S.D. Fla. 1972):

> There is nothing inherently wrong or dishonest in amending claims in a pending application during the course of prosecution before the United States Patent Office in order to insure that the claims which ultimately appear in the issued patent will cover the commercial activity of third parties, whose potentially infringing activities are discovered subsequent to the filing of a patent application, so long as the claims are supported by the original patent application disclosure.

108. This is relevant, too, because patent infringement was originally conceptualized as trespass. *See, e.g.*, Goodyear Dental Vulcanite Co. v. Van Antwerp, 10 F. Cas. 749, 750 (C.C.D.N.J. 1876) (No. 5,600) (analogizing patent infringement to a "trespass" of horse stables and unauthorized use of horses in determining a rule for damages owed to a patentee); Livingston v. Jones, 15 F. Cas. 669, 674 (C.C.W.D. Pa. 1861) (No. 8,414) (accusing defendants of having "made large gains by trespassing on the rights of the complainants"); *see also* Adam Mossoff, *Who Cares What Thomas Jefferson Thought About Patents? Reevaluating the Patent Privilege in Historical Context*, 92 CORNELL L. REV. 953, 992–98 (2007). This explains the early and seemingly automatic resort to strict liability, which was the characteristic liability regime in traditional (pre-twentieth-century) property law. The modern law of torts, and the triumph of negligence principles, came later. In some ways, the scholarly contest between strict liability and negligence is a debate over whether patent law should hew to its strict liability origins or join the modern world of fault-based liability. For a skeptical look at the relevance of this history in the modern debate, see Lynda J. Oswald, *The "Strict Liability" of Direct Patent Infringement*, 19 VAND. J. ENT. & TECH. L. 993, 1002 (2017).

a piece of land from B and thereby benefits in some measure. This is also the position of the accidental, innocent patent infringer. The infringer A, during its own productive activity, inadvertently borrows from a technology owned (via patent) by B. The inadvertent borrowing confers value on A; so A, having been unjustly enriched, must compensate B. The parallels between IP law and restitution were traced out in a series of pathbreaking articles by Professor Wendy Gordon.[109] So in pursuing this line of thought we are merely picking up a trail that has already been well-blazed.[110]

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109. *See, e.g.*, Wendy J. Gordon, *Toward a Jurisprudence of Benefits: The Norms of Copyright and the Problem of Private Censorship*, 57 U. CHI. L. REV. 1009 (1990) (reviewing *Copyright: Principles, Law and Practice* by Paul Goldstein); Wendy J. Gordon, *On Owning Information: Intellectual Property and the Restitutionary Impulse*, 78 VA. L. REV. 149 (1992). In the *Toward a Jurisprudence of Benefits* article, Professor Gordon says:

> To what other sources [beyond copyright law] might one look to determine *what* a lawmaker should decide when faced with a claimed right to suppress [copyrighted works]? One possibility is to look to decisionmakers in analogous contexts. This leads us to the common law, particularly the area known as substantive restitution or "unjust enrichment." This is the area of the common law most concerned with copyright's central issue, the question whether (and when) the law should impose noncontractual liability for benefits one person derives from another's efforts. Persons who feel it is illegitimate to be required to pay for copying should consider the restitution cases, in which persons who willfully take advantage of benefits made possible by others' efforts are sometimes required to pay for them.
>
> The restitution cases are, however, marked by a strong concern with preserving the defendant from an erosion of his autonomy, and with preserving the defendant from harm. Thus, when the choice is between leaving a laborer unrewarded and causing a net harm to the defendant, frequently the laborer is left without recourse.

57 U. CHI. L. REV. 1009, 1046–47 (1990) (footnotes omitted). In the *On Owning Information* article, Professor Gordon makes a similar point: "Just as some harms should be allowed to lie where they fall without the courts' ordering recompense, some benefits should be allowed to flow without court-ordered recapture or payment." 78 VA. L. REV. 149, 161 (1992) (footnote omitted). For an appreciation of Professor Gordon's work, see Robert P. Merges, *Restitution, Property, and the Right of Publicity: A Tribute to Professor Wendy Gordon*, 99 B.U. L. REV. 2415 (2019).

110. This is especially true of damages, where restitution has been invoked by numerous scholars as a useful framework to determine compensation for patent infringement. *See* Caprice L. Roberts, *The Case for Restitution and Unjust Enrichment Remedies in Patent Law*, 14 LEWIS & CLARK L. REV. 563, 665 (2010); John M. Golden & Karen E. Sandrik, *A Restitution Perspective on Reasonable Royalties*, 36 REV. LITIG. 335, 346 (2017) ("[A]n award of reasonable royalty damages can amount to a form of 'disgorgement-lite,' giving the patentee a substantial fraction of the infringer's relevant profits and entangling reasonable royalty determinations in questions of apportionment and technical computation that previously bedeviled court determinations on disgorgement."). On the treatment of restitutionary disgorgement in IP generally, see Roger D. Blair & Thomas F. Cotter, *An Economic Analysis of Damages Rules in Intellectual Property Law*,

Following these principles, restitution requires compensation. But how much?[111]

The Restatement of Restitution has some suggestions. Under it, we might consider the infringer A an "innocent recipient" of a benefit. The benefit is B's patented invention. A is innocent because under the circumstances there is no effective notice regarding the existence, validity, or coverage (scope) of B's patent; and because in designing Component 259, A did not willfully, recklessly, or even negligently choose an infringing design.[112] In sum, A is the quintessential innocent recipient: "one who commits no misconduct in the

39 WM. & MARY L. REV. 1585, 1650 (1998) ("The good news is that the formal prohibition on restitutionary awards [in patent law] may have little impact upon the courts' actual behavior."); Pamela Samuelson, John M. Golden & Mark P. Gergen, *Recalibrating the Disgorgement Remedy in Intellectual Property Cases*, 100 B.U. L. REV. 1999, 2000 (2020) ("This Article concludes by making recommendations about how courts can, within the statutory bounds of each IP regime, render disgorgement awards that are more consistent with traditional restitutionary principles in a manner that will promote the overall goals of the IP laws.").

111. Noted property theorist Henry Smith has called for encroachment-type analysis in patent cases as part of an excellent proposal that IP law turn more fully to the law of equity in general. *See* Henry E. Smith, *Putting the Equity Back into Intellectual Property Remedies*, 96 NOTRE DAME L. REV. 1603, 1609–10 (2021) (internal citation omitted):

> In intellectual property, we might expect injunctions for knowing violations, but often the contention is that a violator did not know of a patent or reasonably thought the plaintiff's patent was invalid or did not cover the accused activity. To the extent that notice is difficult or ineffective, the standard for good faith in injunctions must be correspondingly more accommodating and the disproportionate hardship defense easier to invoke than in [real property] building encroachments.

112. *See* Oskar Liivak, *Negligent Innovation*, 48 FLA. ST. U. L. REV. 607, 607 (2021):

> [Patent law should adopt] a tort-based commercialization theory focused on protecting actual innovators. Significant benefits flow from this view. First, it describes unintentional patent infringement as a real accident, like a car crash. This demystifies patent liability by emphasizing the real, wasted resources that infringement entails. Second, this accident model provides a compelling explanation for some (but not all) independent inventor liability. Independent inventors should be liable for infringement only when they could have reasonably avoided the accident. Independent inventors should be liable when they are negligent innovators. Conversely though, for patent assertion entities, their inaction contributes to the accident, and their contributory negligence should reduce or eliminate patent remedies against inadvertent infringers.

transaction concerned . . . and who bears no responsibility for the unjust enrichment in question . . . ."[113]

Under these circumstances, B's recovery in restitution is traditionally modest. As the Restatement says: "The liability in restitution of a person who qualifies as an innocent recipient is determined by rules that are notably solicitous of the [recipient of the benefit, i.e., the] defendant."[114] The law of restitution awards compensation to the "claimant"—the patent owner, in our case—using one of four measures.[115] In choosing among them, courts are given a clear directive: choose "the standard that yields the *smallest liability in restitution*."[116] One of the four is "the value of the benefit in advancing the defendant's purposes "[117]—a measure that comports well with the "reasonable

113. RESTATEMENT (THIRD) OF RESTITUTION & UNJUST ENRICHMENT § 50(1). We must read the second sentence as meaning that the recipient has "no [legally cognizable] responsibility," because even a totally innocent recipient is usually a cause in fact of the transaction leading to the restitution claim and thus bears some causative responsibility. In the classic case of the mistaken painters, a homeowner returns from vacation to find her fence painted. She will be liable in restitution, assuming the painters mistakenly conferred the benefit (intending to paint the fence next door, for example). Yet we cannot say that the homeowner bears "no responsibility" for the transaction because she chose to have a fence, chose to leave on vacation when she did, and the like. Just so, a patent infringer chooses a certain design for Component 259, as shown, and subsequently is a cause in fact of the infringement/restitution situation. Here, the infringer bears no *legally cognizable* responsibility, given the lack of notice regarding B's patent and the overall complexity of the relevant patent landscape.

114. *Id.* § 50 cmt. f.

115. *Id.* § 49(3):

> Enrichment from the receipt of nonreturnable benefits may be measured by
>
> (a) the value of the benefit in advancing the purposes of the defendant,
>
> (b) the cost to the claimant of conferring the benefit,
>
> (c) the market value of the benefit, or
>
> (d) a price the defendant has expressed a willingness to pay, if the defendant's assent may be treated as valid on the question of price.

116. *Id.* § 50(2):

> If nonreturnable benefits would be susceptible of different valuations by the standards identified in § 49(3), the liability of an innocent recipient is determined as follows:
>
> (a) Unjust enrichment from unrequested benefits is measured by the standard that yields the smallest liability in restitution.

117. *Id.* § 49(3)(a). The phrasing recognizes, implicitly, that receipt of a benefit might be worth very little to a particular recipient. Contrast this formulation with that for *requested* benefits, which sets compensation at the reasonable market value of the benefit to the recipient. *Id.* § 50(2)(b) ("Unjust enrichment from requested benefits is measured by their reasonable value to the recipient."). According to § 49 cmt. d:

royalty" measure of damages set by the Patent Act for licensing-oriented patent owners. Two additional limitations are also salient. First, the recovery in favor of the claimant (patent owner) "may not leave the recipient worse off (apart from the costs of litigation) than if the transaction giving rise to the liability had not occurred."[118] Second, the recovery "may not exceed the cost to the claimant of conferring the benefits in question."[119]

A "reasonable royalty" for engineered encroachment should include a discount as compared to normal encroachment. Though infringement liability pays no attention to the culpability or knowledge of an infringer, patent remedies can and should. Scholars have argued this is wrong: innocent infringement, including true independent invention, should be a defense. While these arguments go too far in my view, engineered encroachment is different. The infringer not only had no knowledge of infringement, but the patent owner has also *opportunistically schemed to conceal* patent boundaries. The infringer lacks notice precisely because the patent owner has made efforts to obscure it.

In these circumstances, a court might harken back to the old restitutionary formula for limiting damages in cases of innocent receipt of an unsought-for

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> An expression such as "subjective value to the recipient" is often used to convey the same idea [as the phrase "value of the benefit in advancing the purposes if the defendant/recipient"]. The word "subjective" is potentially misleading in this context . . . The relevant comparison is normally between demonstrable value to the recipient, given what we know about the recipient's situation, and the available measures of market value between willing buyers and sellers.

Id. § 49 cmt. d. Some patented technologies inadvertently borrowed by a recipient/defendant might contribute little "demonstrable value" to that particular recipient. *See, e.g.*, Grain Processing Corp. v. Am. Maize-Prods. Co., 185 F.3d 1341 (Fed. Cir. 1999), *aff'g* 979 F. Supp. 1233 (N.D. Ind. 1997) (Easterbrook, J., sitting by designation) (awarding a minimal royalty for a very brief period for infringement of patented food production process that (1) had many good unpatented substitutes; (2) was infringed inadvertently by error in measuring one parameter of food product and thereby falling within the claimed parameter range recited in the patent; and (3) was replaced by a substitute noninfringing process within two weeks after learning of infringement). The *Grain Processing* opinion did not discuss restitution principles, but the result certainly embodies them.

118. RESTATEMENT (THIRD) OF RESTITUTION & UNJUST ENRICHMENT § 50(3) ("The liability in restitution of an innocent recipient of unrequested benefits may not leave the recipient worse off (apart from the costs of litigation) than if the transaction giving rise to the liability had not occurred.").

119. *Id.* § 50(4) ("The liability in restitution of an innocent recipient of unrequested benefits may not exceed the cost to the claimant of conferring the benefits in question, supplemented when appropriate by the rules of § 53.").

benefit: cost or value, whichever is less.[120] So for example if patent troll A purchased a patent application for $500,000 and, after amending the claims to cover B's products, asserts it against infringer B, the judge should consider capping A's recovery at $500,000, making the entire transaction a wash for A financially (putting aside A's expenditure of time and effort in identifying, quality-checking and asserting the patent at issue).

1. Summary: Lessons from Restitution

So, to bring it home, consider the three listed principles: "reasonable value to the recipient/infringer," "don't leave the recipient worse off," and "don't exceed the cost to the claimant/patent owner of conferring the benefits." In the context of patent infringement, these could be interpreted in an appropriate case as:

- The infringer should pay the reasonable value of the patented technology under the circumstances, measured conventionally by the value-added from the patented technology, as compared to the infringer's next-best alternative, measured before the infringer finalizes and "locks in" its design;
- A royalty that results in a large loss in overall value for the infringer is forbidden. This would occur when the required royalty far exceeds the value of the patented technology as determined in the first point. The infringer is "worse off than if the transaction [the infringement/patent litigation interaction] had never occurred"[121] if the royalty it is ordered to pay leaves the infringer worse off than if the infringer had adopted the next-best technology. The quality-adjusted price of the royalty, in other words, must not leave the infringer worse off than if it paid the prevailing price for the next-best technology;

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120. *Id.* § 50 cmt. c:

> A benefit that is costly to confer, with a substantial market value, may be of no value at all in advancing the purposes of the recipient . . . . In such cases the unjust enrichment of an innocent recipient is ordinarily calculated by whichever of the available measures . . . yields the smallest liability in restitution . . . . Because "value to the recipient" is usually the most restrictive measure of enrichment, it is the customary measure of the restitutionary liability of an innocent recipient of unrequested, nonreturnable benefits; though in particular contexts the rule of § 50(2)(a) yields the formula "cost or value, whichever is less."

For illustrations, see, e.g., *id.* § 50 illus. 1 (illustrating mistaken delivery of a requested benefit, showing that cost of supplying remodeling construction services was lower than increase in value to the home due to the remodel; recovery limited to the cost of providing construction services, rather than the increase in value of the home after the remodel).

121. *See id.* § 50(3).

- Though it could be controversial to apply it in the patent context, the "don't exceed the cost to the claimant" principle could be applied to limit the recovery of one type of patent troll: those who acquire patents from third parties to assert in litigation against potential infringers. This principle would limit the recovery by such parties to the price they paid to acquire the asserted patent(s). The price A pays on the "secondary market" for a patent, in other words, could be used as the restitutionary measure of A's recovery when that patent is asserted against infringer B. Or A's acquisition cost could be a starting point, with courts permitting patent trolls to earn a reasonable profit in cases where the troll does not act egregiously.[122]

III. PATENT HARMS: SUMMING UP

The two types of harm from patent infringement point to two different "remedial clusters." The following chart lays out the key features of both.

122. *Id.* § 50(2)(c):

> Reasonable value may be measured by a more restrictive standard if the validity of the recipient's assent [to the transaction] is in question . . . ; if the claimant has not performed as requested [e.g., in a restitution case based on mutual exchange]; or if prevailing prices include an element of profit that the court decides to withhold from the claimant.

I am suggesting that a court could punish an overly aggressive patent troll—one who engages in vexatious litigation tactics. For example, a court could eliminate the troll's profit margin from a restitutionary recovery. This is perfectly in keeping with the statutory requirement of the Patent Act (§ 284) that the court award "in no event less than a reasonable royalty," because rewarding a bad actor is not "reasonable." *See* 35 U.S.C. § 284.

Table 1: Patent Harms and Remedies

Type of Infringement	Fault/Culpability Considerations	Remedies
Harm to Product Market (HPM): Illicit Market Incursion	• Competitor-vs.-competitor infringement • For patents on end products or features, patent "marking" (notice) required • Fair to place infringer on inquiry notice about patents not marked on end products (routine practice of "freedom to operate" (FTO) reviews)	• Lost Profits measure of damages: harm to patent owner caused by unwarranted interference with market for patent owner's product • Permanent Injunction routinely granted upon finding of infringement liability
Omitted License: Uncompensated Use of Valuable Intangible Input ***Special Case of <u>Strategically Engineered Encroachment</u>***	• Patent owner sells (licenses) an intangible input into infringer's product or service • Patentee sells no product, so no patent notice required, thus no explicit notice to infringer; but many established technology licensing companies are well-known in their industry, so inquiry notice may be appropriate • License settles infringement suit; a cost of doing business, no real input into product or service • Patentee sells no product, so no patent notice required, thus no explicit notice to	• Reasonable Royalty measure of damages: Patent owner's loss from infringement is royalty revenue that should have been paid by the infringer for use of the patented intangible input • Permanent Injunction will be granted in the absence of extreme hardship/undue leverage • Reasonable Royalty should be based on encroachment model from real property: innocent trespass/ restitution measure of damages is preferred; in extreme cases, apply restitution rule for innocent recipient of

	infringer; inquiry notice for large "patent aggregators" may be fair, but many troll companies exist only to litigate one or a few patents so an infringer cannot fairly be on inquiry notice as to them	unrequested benefit: lesser of cost (to patent owner) or value (to infringer) • Under the concurrence in *eBay*, permanent injunctions will usually be denied to prevent undue leverage. Traditional equitable outcome reflecting undue hardship, abuse of right, and basic fairness.

A. PAYOFFS FROM THE TWO-HARM CONCEPT

In the Introduction, I said that the two types of patent damages are more than alternative measures of compensation for the single harm of patent infringement. I posited two types of infringement-related harm, Harm to Product Markets (HPM) and Lost Licensing Opportunity (LLO), each of which points to a distinct set of remedies. The two damage measures are a manifestation of these two distinct harms.

The HPM/LLO typology sharpens our understanding of patent law's two statutory remedies. Each addresses a distinct type of harm, depending on the business model adopted by the patent owner. And each presents distinct challenges to proper application of compensatory principles.

Lost profits are a market-based remedy: this measure compensates for unauthorized incursions into the patent owner's product market. The law here tries to remediate a harm that occurs in a competitive product market. When patents are acquired and deployed to protect a profitable market niche or feature, they serve as tactical instruments in a greater competitive struggle. The violation of a patent instrument shifts the dynamics between and among competitors, throwing a new wrinkle onto the competitive tableau. Patent law seeks to iron-out this wrinkle through the device of a counterfactual: the market not as it was (with an infringer roaming free) but as it should have been (the patent owner alone in the market segment affected by the patent).

The remedial situation is in many ways the mirror image of the standard scenario under antitrust law. As described in more detail just below, patent remedies give center stage to a character that is entirely missing from the dramatis personae of an antitrust suit: the Virtuous Monopolist. Perhaps

counter-intuitively, I emphasize that patent law can learn a few things from the law of antitrust damages. The key point to grasp is that both fields model disturbances to a status quo situation among industry competitors. Antitrust is about unauthorized interference with competition—an illicit *reduction* in competition. Patent law is about an unauthorized interference with what should be an exclusive patentee niche—an illicit *increase* in competition. The point is that, in their Opposite Day relationship, both fields involve remedies that contrast an actual competitive situation with the situation that should have (and would have) prevailed if there had been no illegal interference with the competitive equilibrium in the industry.

We can also learn something about the distinct harm that is meant to be remedied by an award of LLO damages. The estimation of a reasonable royalty takes place in the setting of a "hypothetical contract negotiation." The key insight is the *transactional* nature of the remedy. The typical contract terminology obscures the fact that the actual remedy is imposed by a court. It may simulate a formal bilateral contract, but at its heart the remedy is court-ordered compensation for conferral (by patentee) and receipt (by infringer) of a benefit completely outside a true contractual relationship. This pattern—involuntary conferral of a valuable benefit—follows the fundamental structure of restitution.

And precisely because the ensuing exchange is *not* the creature of voluntary bargaining, a court has considerable latitude under the law of restitution to mold the recovery to the contours of the exchange. Interparty fairness should be its guiding star. A court can account for the actions of the infringer (e.g., whether it expended any effort to prevent receipt of the benefit); the value to the infringer of the benefit conferred; the cost to the plaintiff/patentee of providing the benefit; and the good or bad faith of the benefit provider/patentee, including especially whether the patentee opportunistically engaged in "engineered encroachment" by manipulating patent boundaries (via amendments to an open patent application) with the aim of capturing third-party contributions. As in the law of real property encroachments, restitution invites courts to craft a remedy with an eye toward situational fairness. A court can closely tailor compensation to the relative culpability of the parties, while also preventing the opportunistic exploitation of legal remedies. The *eBay* opinion's reference to "undue leverage,"[123] we might say, can be assimilated into the larger equitable principle of undue hardship—a principle closely connected to encroachment cases. All of which shows the payoff from

123. *See* eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, 396 (2006) (Kennedy, J., concurring).

classifying LLO-type harm as a form of unjust enrichment to be handled under the general law of restitution.

B. THE RESTITUTIONARY SPECTRUM AND THE GUIDANCE OF LEGAL STANDARDS

American patent law is in many ways quite formalistic. A patent can be invalidated by the indexing of a master's thesis in an overseas library, and the subsequent placing of one copy of the thesis on the library shelf, just one day before an inventor files their patent application.[124] A patent claim can be invalidated notwithstanding that its wording was, beyond any doubt at all, accidentally transposed into nonsense, with the intended meaning as clear as it could be.[125] And the law of patent infringement has, since creation of the Federal Circuit in 1982, become a formalist exercise more centered on interpretive canons and the hair-splitting parsing of words and phrases than on the substance of the underlying technology, its contribution (if any) to the progress of the field, and the relative merits of the patent owner's and the infringer's technologies.[126] These tendencies are offset to some degree by other

124. This hypothetical case is an amalgamation of two actual cases: (1) *In re* Hall, 781 F.2d 897 (Fed. Cir. 1986) (holding that a single copy of a Master's thesis added to the catalogued collection of a university library in Freiburg, Germany, was a "printed publication" under 35 U.S.C. § 102(b), and so was available as prior art to bar a later third-party patent on the same technology); and (2) STX, Inc. v. Brine, Inc., 37 F. Supp. 2d 740, 759 (D. Md. 1999) (holding that for a patent filed on September 20, 1985, under the Patent Act, any prior art (including an offer of the invention for sale) relating to the same invention and *dated before September 20, 1984*, would invalidate the application for lack of patentable novelty) ("The undisputed facts show that STX and [an STX distributor] had a longstanding relationship and that *the September 18, 1984, transaction* constituting a sale of the [items covered by the STX patent] to Bart's was of a piece with their ordinary course of dealing."), *aff'd sub nom.*, STX, LLC v. Brine, Inc., 211 F.3d 588 (Fed. Cir. 2000), *aff'd*, 232 F.3d 915 (Fed. Cir. 2000). While this hypothetical posits prior art one day before the critical date instead of two, you get the idea: § 102 is a strict rule.

125. The unfortunate mistake relates to a patent for preparing dough used to make microwavable cookies. *See* Chef Am., Inc. v. Lamb-Weston, Inc., 358 F.3d 1371 (Fed. Cir. 2004). The preparation involved heating the raw dough *at* an oven setting of from 450 to 800 degrees Fahrenheit (this left it in a semi-cooked state that was ideal for cookies that sold to be reheated by the consumer in a microwave oven). *Id.* at 1373. Unfortunately, the claim was mistakenly written as requiring the dough to be heated *to* and not *at* that very high temperature range. *Id.* at 1375. Obviously cooking dough "to" 800 degrees leaves it a blackened lump of carbon, but the court would not save the claim. *Id.* at 1373–75. It found the defendant non-infringing because of course its cookies were not baked "to" this high temperature (if they had been, they would no longer be cookies). *Id.* at 1376. Whatever its other merits, *Chef America* serves as the nightmare cautionary tale for all patent lawyers learning the art of claim drafting.

126. *See* ROBERT P. MERGES & JOHN F. DUFFY, *supra* note 104, at 676–89 (describing and illustrating the pre-1982, pre-Federal Circuit "traditional approach" to claim interpretation, which includes these factors).

parts of patent law,[127] but the Federal Circuit has harped again and again on those stolid legal virtues, certainty and predictability.[128]

What's needed, in my view, is patent law heresy. We need a little more wiggle room in at least parts of patent law. Formalism—or better, a *stale* formalism—stands in the way of flexibility, adaptability. Rules dominate over standards, when sometimes it ought to be the reverse. It seems at least odd, if not in fact heretical, to argue for the exercise of more judicial discretion. That goes against the grain of patent law in the Federal Circuit era. And it raises the anti-democratic specter of elite Platonic Guardians—monarchs in black robes—who are in charge because "they know better." I realize all that.

But I have two extremely powerful responses. First, ironically perhaps, is history: patent law has *always* been a flexible and adaptable body of law. It has not, traditionally, been (as the Supreme Court put it in a not-long-ago opinion) "the prisoner of a formula."[129] Most notably, federal judges have at times invented doctrine out of thin air. In response to felt needs, they made up more stringent tests for patentability,[130] resolved a knotty issue of follow-on inventions,[131] adapted remedies (as we have seen) to fit different types of patent-related harms (HPM vs. LLO),[132] and so on.[133] More importantly, in the pre-Federal Circuit era, the Supreme Court and influential judges such as Learned Hand championed a style of infringement analysis that looked deeply

127. Nonobviousness, 35 U.S.C. § 103, is more of a standard than a rule. And the Doctrine of Equivalents is a highly flexible, semi-equitable infringement doctrine that can, at times, serve as a relief valve from the strictures of formalist claim interpretation.

128. For evidence that the Federal Circuit prioritizes third-party notice as the paramount goal of patent claim interpretation, and a critique of this emphasis, see John F. Duffy, *Counterproductive Notice in Literalistic Versus Peripheral Claiming*, 96 B.U. L. REV. 1197, 1200 (2016).

129. *See* Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605, 609 (1950) (explaining that in patent law, DOE is "not the prisoner of a formula").

130. The Supreme Court created the "invention" (later nonobviousness) requirement in the 1850s. *See* ROBERT P. MERGES, AMERICAN PATENT LAW, *supra* note 27, at 166.

131. The Supreme Court created the "double patenting" doctrine in a case in 1894. *See id.* at 169.

132. The *eBay* case opened the way for LLO damages to replace permanent injunctions in some cases. eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, 396 (2006).

133. Rochelle Cooper Dreyfuss, *In Search of Institutional Identity: The Federal Circuit Comes of Age*, 23 BERKELEY TECH. L.J. 787, 801 (2008) ("[T]he Patent Act . . . has always depended on common law elaboration."); Craig Allen Nard, *Legal Forms and the Common Law of Patents*, 90 B.U. L. REV. 51, 54 (2010) (footnotes omitted):

> [A] significant portion of U.S. patent law, including some of the most important and controversial patent law doctrines, is either built upon judicial interpretation of elliptical statutory phrases, or is devoid of any statutory basis whatsoever. Thus, while Congress and the courts each have a hand in constructing the latticework of patent law, judges . . . are the principal architects.

into a patent's technological context.[134] The older cases show judges striving to understand what contribution a claimed invention makes, and allowing that information to influence its determination of the meaning of patent claims.[135] Those cases also at times weighed the patentee's contribution against the infringer's technology, keeping in mind two questions the Federal Circuit unerringly avoids: (1) Given what we know about the context and genesis of this patented invention, is it fair for this patent claim to cover the defendant's allegedly infringing technology? And (2) When all doctrine is spoken for, is this the type of patent, and the type of invention, we should recognize and reward?[136]

The Federal Circuit has wandered far from this history. My appeal for more flexibility is nothing more than an appeal that the patent field return to a point closer to its roots.

The second reason to install more flexibility in patent infringement doctrine is that flexible standards will promote true innovation more than the current rigid formalism. This is certainly true when it comes to remedies for LLO-type infringement harm.[137] Engineered patent encroachment may be in some sense legitimate in more than a few cases. But in many others, intentional boundary-shifting to capture third-party contributions will be the real story. There is little social value in this. Buying an open application filed years ago; massaging the claim language to capture valuable technologies later developed by others; asserting the patent, once issued, as widely as might be profitable; and reaping as many lawsuit settlements as possible—these opportunistic acts are not what the patent system is about.[138] Attracting development capital,

134. ROBERT P. MERGES & JOHN F. DUFFY, *supra* note 104, at 676–89.

135. *Id.*

136. *Id.*

137. The other type of harm, HPM, has its own challenges: it can be very hard to accurately calculate all the effects of an unauthorized player (the infringer) at large in the market for the patented product. Because HPM occurs between direct competitors, notice of relevant patents can be fairly assumed, whereas in LLO cases, notice failure is much more common, adding an element of good faith innocence to the infringer's side of the ledger. Notice problems, together with features of patent prosecution that invite patentee tactics such as "engineered encroachment," mean that many infringers are positioned as a recipient of an unasked-for and unwelcome benefit—use of the patented invention. This makes for a more complex culpability analysis in LLO cases and justifies the flexible remedial attitude that accompanies the law of restitution.

138. There are two standard retorts to this, neither of which convinces me. (1) The secondary market for patents, which supplies most of the open applications and issued patents asserted by patent litigation concerns, provides indirect incentives for innovation. For example, the sale of patents can reward past R&D and support future R&D. (2) The benefits of simple, inflexible rules outweigh the costs. For example, money lost because rent-seekers

protecting a market niche made possible by a value-adding new technology, and forming the hub of various private orderings built around the new technology—these are more like it.[139]

The kind of balancing I am calling for ensures continued attention to overall fairness, and to the primary goals of the patent system. A conventional objection to this sort of attention to the big picture is that it is subjective, it is unpredictable. But absolute predictability through strict adherence to clear rules can produce unfairness. Especially when clever and creative actors take advantage of strict rules to manufacture an injustice (as, arguably, small component patent owners did when receiving a permanent injunction, pre-*eBay*). To prevent the "gaming" of rules, it is sometimes necessary to resort to meta-rules or principles whose very purpose is to modify strict rules when they lead to an unfair outcome.[140]

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abused fixed rules is outweighed by the advantages of certainty and predictability that attend fixed rules. While there is a place for the secondary patent market, as I have noted in (1), the social value of patent sales and purchases varies widely depending on circumstances. As for (2), scholars, especially in recent years, have begun to assemble a strong counterargument to the "certainty above all" view. *See, e.g.*, JEREMY WALDRON, THOUGHTFULNESS AND THE RULE OF LAW 139, 144 (2023) ("Standards promote reflection; vagueness can be a virtue . . . . I believe we need to approach the question of unclarity, vagueness, and imprecision in law with a more sophisticated notion of guidance than the one we often use."). For these very reasons, property law especially has trended toward more open-ended standards over time. *See* Joseph William Singer, *The Rule of Reason in Property Law*, 46 U.C. DAVIS L. REV. 1369, 1372–73 (2013) (footnote omitted):

> [C]ontrary to the intuitive view, property law has always contained flexible standards as well as clear rules. Nor has it relegated those standards to peripheral or unimportant areas of the law. More surprising still, property law seems to be moving away from clear rules and toward flexible standards. Over the last fifty years or so, both courts and legislatures have discarded many technical rules of traditional property law and replaced them, not with modernized rules, but with standards of one form or another. Reasonableness tests now abound in property law. If predictability is crucial to property law—and if the way to achieve predictability is to adopt clear rules—then property law is in a sorry state and getting worse. If so, we should reverse course at once. Yet the intuitive view may well be wrong. Rules may be less important and standards more important in property law than we might have thought.

139. *See* ROBERT P. MERGES, AMERICAN PATENT LAW, *supra* note 27, at 495.

140. *See* Henry E. Smith, *Equity as Meta-Law*, 130 YALE L.J. 1050, 1080–81 (2021):

> To prevent opportunism, the law could attempt to anticipate every type of evasion ex ante. But announcing a clear list of ex ante rules enables evaders to exploit their knowledge of where the bright line is. Plugging nine out of ten holes is sometimes no better than plugging none . . . . [E]quity as meta-law enables a more targeted and ex post intervention against opportunism

C. CULPABILITY IN INFRINGEMENT DOCTRINES

The strict liability infringement standard obscures just how important bad faith, notice/knowledge, and culpability are in patent infringement cases. It is in remedies most of all that patent law lightens up on some of the "strictness" of strict liability. There is in patent remedies a hidden pattern of graded liability that manifests in several ways. The label "strict liability" would seem to make it irrelevant whether a patent owner gives notice to potential infringers, but this is not always so. A patented product sold on the market must indicate its patented status, otherwise an infringer is free from liability until notice of the patent is given directly by the patent owner. As I emphasized in an earlier section, between direct competitors, the generous lost profits damage measure (from HPM harm) and the ready availability of permanent injunctions are justified in part by the realistic presumption that competitors normally keep track of each others' patents. Though formally a strict liability regime, presumptive notice tips the fault calculus in favor of the patent owner, opening the door to a robust cluster of remedies.

Fault is front and center when it comes to punitive damages, i.e., willful patent infringement. The Supreme Court has confirmed that a negligent infringer—one who fails to conduct any kind of patent search before entering a new market, or who fails to keep track of competitor patents—is not subject to punitive damages.[141] Enhanced damages require greater culpability;

> that leaves less room for sophisticated actors to take advantage of the rules or the legal system overall.
>
> Even ex post, the law need not define opportunism directly. As we will see, it employs proxies and presumptions that are aimed at opportunism. The idea is to impose enough of a cost ex post on a somewhat hard-to-predict set of actors who are highly likely to be engaged in opportunism—and to send them a message. If successful, such a system can obtain more benefit in preventing rent seeking and the chilling effect of opportunists on other people's behavior than it imposes costs in chilling legitimate behavior and destabilizing expectations.

141. *See* Halo Elecs., Inc. v. Pulse Elecs., Inc., 579 U.S. 93, 103–04 (2016). *Halo* rejected the pre-existing Federal Circuit test for willfulness; reviewed general culpability principles, with an emphasis on recklessness; and made this general statement:

> Awards of enhanced damages under the Patent Act over the past 180 years establish that they are not to be meted out in a typical infringement case, but are instead designed as a "punitive" or "vindictive" sanction for egregious infringement behavior. The sort of conduct warranting enhanced damages has been variously described in our cases as willful, wanton, malicious, bad-faith, deliberate, consciously wrongful, flagrant, or—indeed—characteristic of a pirate . . . . District courts enjoy discretion in deciding whether to award enhanced damages, and in what amount. But . . .

recklessness, at least. If a company knowingly disregards a known risk, or makes an intentional decision to infringe a patent, then damages can be increased up to three times the actual harm.[142] Though courts have wide discretion in assessing willfulness, knowledge of the patent in question is generally thought to be a requirement for a finding of willful infringement.[143]

Culpability also matters in cases of "aiding and abetting" (i.e., indirect) infringement. Patent doctrine names two types: contributory infringement and inducement to infringe. The former covers cases where a defendant sells an item that is missing some "final piece" which the purchaser has to supply. If the product for sale does not include all elements of the relevant patent claim (i.e., the claim covers the item as sold *plus* the missing piece supplied by the end user), it is the end user who commits the infringing act (making or using the entire claimed invention). Where the facts and circumstances establish that the defendant sold its incomplete product intending that the consumer add the "final piece," and where the only realistic use of the item sold is for it to be completed by the end user (i.e., no "substantial noninfringing use" for the

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> such damages are generally reserved for egregious cases of culpable behavior.

Id. One scholar notes the open-endedness of this guidance. *See* Karen E. Sandrik, *An Empirical Study: Willful Infringement & Enhanced Damages in Patent Law After* Halo, 28 MICH. TECH. L. REV. 61, 74 (2021) ("[I]t is unclear from the *Halo* opinion what the standard for willfulness is moving forward. Beyond repeated, descriptive language . . . there is little guidance for district courts.").

142. Courts can award attorney fees—which can reach millions of dollars—in patent infringement cases; culpability matters here, too. *See, e.g.*, Octane Fitness, LLC v. ICON Health & Fitness, Inc., 572 U.S. 545, 553 (2014) (interpreting § 285 of the Patent Act as permitting courts to award "in exceptional cases . . . reasonable attorney fees to the prevailing party"). The *Octane Fitness* court interpreted what qualifies as "exceptional" to award attorney fees under 35 U.S.C. § 285:

> An "exceptional" case is simply one that stands out from others with respect to the substantive strength of a party's litigating position (considering both the governing law and the facts of the case) or the unreasonable manner in which the case was litigated. District courts may determine whether a case is "exceptional" in the case-by-case exercise of their discretion, considering the totality of the circumstances.

Id. at 554; *see also* Park-In-Theatres v. Perkins, 190 F.2d 137, 142 (9th Cir. 1951) (explaining that the fee shifting provision in the Patent Act should allow an award of attorney fees in the presence of "unfairness or bad faith in the conduct of the losing party, or some other equitable consideration of similar force").

143. Rachel Weiner Cohen, Holly Victorson & Kellye Quirk, *The Halo Effect: Willful Infringement and Enhanced Damages in Light of* Halo, 69 AM. U. L. REV. 1067, 1082 (2020) ("Without facts supporting knowledge of the alleged patent infringement, courts have granted motions for summary judgement of no willful infringement [post-*Halo*]."); Dmitry Karshtedt, *Enhancing Patent Damages*, 51 U.C. DAVIS L. REV. 1427, 1466–69 (2018) (arguing that reckless failure to search for relevant patents ought to be enough to show willfulness).

defendant's incomplete product), the defendant is liable for contributory infringement.[144] Inducement is different in that the defendant is liable for instructing, urging, or guiding a third party to perform acts that the defendant knows will infringe a patent.[145] Liability for inducement depends on the defendant knowing the patent and that the directed acts will infringe it. As with contributory infringement, liability turns on an assessment of the defendant's degree of culpability. Under current law, one who induces another to act, knowing or recklessly ignoring that the instructed act will infringe a patent, can expect to be found liable.[146]

Another section of the Patent Act allows an infringer to escape liability if it can be proved that the infringing company independently invented the patented thing and made "commercial use" of it well before the patent owner filed for its patent.[147] The defense applies, however, only to a person who,

144. Per the statute, 35 U.S.C. § 271(c):

> Whoever offers to sell or sells within the United States or imports into the United States a component of a patented machine, manufacture, combination or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer.

See also Aro Mfg. Co. v. Convertible Top Replacement Co., 377 U.S. 476, 476 n.14 (1964) (requiring proof that the defendant knew of the relevant patent and knew that the sale of defendant's product would, when completed by the consumer, infringe that patent to be held liable).

145. The statute reads: "Whoever actively induces infringement of a patent shall be liable as an infringer." 35 U.S.C. § 271(b).

146. Glob.-Tech Appliances, Inc. v. SEB S.A., 563 U.S. 754, 764–65 (2011) (holding that an accused infringer who commissioned a Freedom to Operate (patent clearance) opinion but withheld from the patent lawyer knowledge of the patented invention the infringer was trying to duplicate and met the culpability requirement, and so was liable for inducement; the infringer's "willful blindness" regarding infringement of the key patent was enough to establish reckless disregard for the patent owner's rights, which made for knowing inducement, and hence liability). To plead induced infringement under 35 U.S.C. § 271(b), "a complaint must plead facts plausibly showing that the accused infringer 'specifically intended [another party] to infringe [the patent] and knew that the [other party]'s acts constituted infringement.'" Lifetime Indus., Inc. v. Trim-Lok, Inc., 869 F.3d 1372, 1379 (Fed. Cir. 2017) (alterations in original); *see* Cleveland Med. Devices Inc. v. ResMed Inc., No. CV 22-794-GBW, 2023 WL 6389628, at *3 (D. Del. Oct. 2, 2023) (citing *Lifetime Industries* in opinion denying a motion to dismiss an inducement claim in the complaint).

147. 35 U.S.C. § 273, which reads in part:

> (a) In General.—A person shall be entitled to a defense under section 282(b) with respect to subject matter consisting of a process, or consisting

"*acting in good faith*, commercially used the subject matter in the United States"[148] more than a year before the filing of the patent application that, after issuance, is asserted against the defendant who raises the prior use defense. "Good faith" in this context is not defined. But it would seem to apply to a defendant who, to create a defense against competitor patents that may issue later, makes a "token" commercial use of a technology—a use whose purpose is to defend against possible later patents, rather than to develop the technology for productive use.[149]

IV. CONCLUSION

The two statutory damage measures for patent infringement represent two distinct types of harm to patent owners. Working backward from the remedies, this Article took a close look at these two harms. Harm to a product market (HPM) might be described as "classical" patent harm. The exclusive right to occupy a product market was the earliest conception of patent rights. The

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> of a machine, manufacture, or composition of matter used in a manufacturing or other commercial process, that would otherwise infringe a claimed invention being asserted against the person if—
>
> (1) such person, acting in good faith, commercially used the subject matter in the United States, either in connection with an internal commercial use or an actual arm's length sale or other arm's length commercial transfer of a useful end result of such commercial use; and
>
> (2) such commercial use occurred at least 1 year before the earlier of either—
>
> (A) the effective filing date of the claimed invention; or
>
> (B) the date on which the claimed invention was disclosed to the public in a manner that qualified for the exception from prior art under section 102(b).
>
> (b) Burden of Proof.—A person asserting a defense under this section shall have the burden of establishing the defense by clear and convincing evidence.

For a discussion of the purpose and impact of § 273, see Robert P. Merges, *A Few Kind Words for Absolute Liability in Patent Law*, 31 BERKELEY TECH. L.J. 1, 38–42 (2016). On § 273(a)(2)(B), the "public disclosure date" time limit for this defense, see Robert P. Merges, *Priority and Novelty Under the AIA*, 27 BERKELEY TECH. L.J. 1023, 1033–44 (2012) (describing the difference between a "disclosure" and a "public disclosure" under the post-AIA version of 35 U.S.C. § 102(b)).

148. *Id.* (emphasis added).

149. The "good faith" requirement might also reinforce a separate provision, 35 U.S.C. § 273(e)(2), which disallows use of the defense when the defendant is proven to have "derived" (misappropriated) the inventive technology from the party who later acquires the patent asserted against the defendant. This section says: "Derivation.—A person may not assert a defense under this section if the subject matter on which the defense is based was derived from the patentee or persons in privity with the patentee." 35 U.S.C. § 273(e)(2).

assumption was that the patent owner would make and sell the patented device, so the purpose of the patent was to boost profits in the product market. This being the case, patent infringement manifests as unauthorized competition in that product market. The remedy followed from the nature of that harm. The remedy is assessed by comparing (1) the patent owner's experience in the actual market that included the infringer against (2) the market that *should have been*: the market in the absence of the illicit competition.

But from the earliest era of the U.S. patent system, some patent owners chose a business model other than product sales. They profited from patent licensing. The reasonable royalty damages measure emerged to redress lost licensing opportunities (LLO), in recognition of this discrete type of harm. Though licensing has been around from the beginning in the U.S., the volume and complexity of licensing and related practices have undergone rapid growth since roughly the 1980s.[150] More firms than ever depend, at least in part, on patent licensing royalties for their economic survival. And firms continue to acquire patents that cover competitor products, or that block market niches adjacent to those a firm operates in, as an indirect way to enhance market profits. All these developments make the reasonable royalty measure of damages more important than ever.

Difficult as it can be to assess harm to the patent owner's market in an HPM case, the intangible nature of the inputs in an LLO case poses unique challenges. Some firms repeatedly introduce new technologies in their industries, and are repeat-player licensors. These "idea factories" are an accepted part of some industry ecosystems. For them reasonable royalty damages duplicate the award of lost profits for firms suffering HPM-type harm. Other firms suffering LLO-type harm sometimes contribute valuable technologies also; a company with a good idea whose products lose out on the market sometimes salvages some value by licensing their patents to the product-firm "winners." Useful technologies can come from other quarters as well. Industry ecosystems can be quite varied. But for a final group of firms that seek reasonable royalties in patent damages, it is almost a misnomer to say they "suffer" LLO-type harm. Their business model is to acquire third-party patents, and in some cases manipulate their boundaries, with the intent of capturing as much value as possible from successful product market firms. These firms seek out patent infringement: buying or creating infringement is

150. *See* Robert P. Merges, *A Transactional View of Property Rights*, 20 BERKELEY TECH. L.J. 1477, 1513–14 (2005) (explaining that modular products and smaller firms in the contemporary economy require more economic transactions, including patent licensing, to coordinate production). *See generally* Yuichi Watanabe, *Patent Licensing and the Emergence of a New Patent Market*, 9 HOUS. BUS. & TAX L.J. 445, 460 (2009).

in some sense their business model. Their (unwritten) motto may as well be "Infringement R Us."

In an ideal world, all patents cover technologies that have actual value. Therefore, use of any patented technique or technical advance should rightfully require compensation. But sometimes, the long string of invalidity tests and other statutory requirements fails to weed out patents whose legal coverage is considerable but whose technical merits are thin. In these cases, remedies represent patent law's last line of defense. A patent owner's true creative gift may involve clever strategies to deploy existing patents and manipulate claim boundaries in pending applications. Especially when these patents and their owners are very difficult to identify in advance, an infringer has little chance to avoid harm. But the harm here is not the standard one of not being paid for valuable intangible input. It is the "harm" of a large product firm operating over an invisible boundary line and unwittingly occupying a few inches of a neighboring land parcel—a parcel purchased and cultivated to make this "harm" as likely as possible. The analogy is clean enough that I can borrow the real property label and apply it to the case of patents. Thus, patent encroachment.

The encroachment business model leverages patent prosecution and amendment tactics to shift patent claims to cover already-existing products made by others. The product it provides is legal settlements. It receives money not so much from creating something useful as from taking payoffs to extinguish a legal encumbrance. A trespass case is first manufactured or engineered through careful boundary-shifting; and then, for a price, the trespass case is made to go away. For a defendant, this is more wealth extraction than the provision of a useful technical input.

Though they are quite different there is a basic similarity between legitimate in-licensing, such as from an "idea factory" firm, and payments to settle encroachment-based claims. They both feature a claimant who holds an entitlement, a second party who wants to (or at least needs to) use the claimant's entitlement, and an obligation to pay for that use. If the obligation to pay is not fulfilled, the claimant turns into a plaintiff and the second party becomes a defendant. And the cause of action sounds in restitution: uncompensated use of an entitlement by a recipient who is "unjustly enriched" by that use.

The virtue of the restitutionary frame is that this body of law operates at two levels. On the general, big-picture plane, it is a simple concept whose general outline fits a wide variety of situations. Patent infringement cases are a good example. Entitlement; claimant; recipient—these fit bona fide productive licensing claims as well as the settlement of sterile legal claims. But beyond

this, restitution law is sensitive to the specific details and context of each case of unjust enrichment. The recipient's innocence, negligence, recklessness, and overall intent during receipt of the benefit conferred by the claimant: this matters in restitution. Likewise, the quality of the claimant's notice to the recipient, the level of care the recipient shows in avoiding uncompensated uses, and the value of the entitlement as measured in various ways—these all matter too.

Patent infringement is subject to strict liability.[151] But this applies only to the single issue of direct infringement. For indirect infringement, and a host of other patent doctrines, an innocent infringer earns better treatment at the hands of patent law. Under numerous patent doctrines, in other words, defendant culpability matters. For example, an innocent infringer gets no relief from the fact of patent liability, but will avoid treble damages, because that requires willfulness—the opposite of an innocent state of mind and knowledge. Likewise, a patent owner who would opportunistically use an injunction for "undue leverage" in negotiations (e.g., with a defendant who has vast sunk costs in the infringing product) can expect, under principles of equity, that their request for an injunction will be denied.

Though LLO harm fits the basic restitution narrative, I have argued that the law of restitution be consulted much more thoroughly when LLO-type harm is at stake. This is because restitution as a field of law is rich in fine gradations of fault, liability, and compensation, which matches well with the wide spectrum of different incidents of LLO harm. When a recipient receives a benefit under conditions where they should foresee the need to compensate the claimant who contributed the benefit, restitution can mirror a well-functioning licensing market. This does no more than duplicate the function of lost profits in an HPM case. But where the "benefit" conferred by the claimant is marginal, and especially when the claimant has engineered property boundaries to ensnare the defendant into receiving an unwanted "benefit," compensation can be reduced accordingly. In the right case, it can even be reduced all the way down to zero.

The Patent Act says that a "court shall award the [patent owner] 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 . . . ."[152] Restitution can help decide what is "reasonable" in light of "the use made of the invention by the infringer." Some uses cause more harm to the patent owner than others. And "the use made" varies between cases. Sometimes the

151. *See* Robert P. Merges, *Patent Infringement, Private Law, and Liability Standards*, *supra* note 22, at 161.

152. 35 U.S.C. § 284.

claimed invention is a valuable addition to the defendant's business. Other times, there is infringement, but the "use made" has more to do with inadvertently creeping over a strategically drawn legal line than gaining a true benefit from a patented invention. Restitution can differentiate between these, and among many other variants as well.

Once LLO-type harm is understood in contrast to HPM harm, it seems only reasonable to address LLO harm using the age-old principles of restitution developed to capture a wide array of claimant-recipient situations. Just as HPM harm benefits from comparison to antitrust injuries (of which it is a mirror image), so LLO harm would benefit from being assimilated into the broad framework of restitution. The more thoroughly the legal system assesses the nature of the harm—its patterns and variations—the better that system can fashion just remedies that fit each patent infringement case.