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Abstract

Patent infringement has long been viewed as a tort that causes tort-like harm. This view is misguided. In tort, the measure of P's damages is the difference between her actual state and what her state would have been but for D's tort – "P's delta." P's delta is a passable measure of damages for most torts because it closely approximates the social loss from most torts.

For patent infringement, P's delta often diverges widely from the social loss, especially today. Indeed, in some technologies, infringement routinely results in social gain, *i.e.*, the world would have been worse off but for D's infringement. Yet courts treat infringement not only as a tort but as an absolute liability tort. Most torts require fault or inefficient conduct. Even trespass of land tends to be excused when it is manifestly non-negligent or efficient. The law of trespass is thus more lenient than patent law, even though trespassers can identify land boundaries far more easily than infringers can identify patent boundaries.

Perhaps the main reason that patent law is so strict is that it was built on the implicit assumption that most infringers are pirates. Today, this assumption is clearly false. Most infringers today are independent inventors and their inadvertent infringement often results in social gain.

This paper sets forth three conditions under which inadvertent infringement almost always results in social gain. When all three conditions are satisfied, courts should excuse D's infringement. The conditions are:

1. Either P or her licensee never practiced the invention (or a substitute for it) on a commercial scale, or P or her then-existing licensee did not start practicing the invention (or a substitute) on a commercial scale until more than one year after D started practicing the invention on a commercial scale;
2. D is an independent inventor; *and*
3. D's costs, including his costs of delaying commercialization of a product, to find and assess P's invention *ex ante* exceed the R&D expense that he would have saved had he relied on P's invention *ex ante* instead of inventing independently.

Were courts to excuse infringement when these three conditions are satisfied, many cases that currently result in liability would result in none, especially cases involving software patents and patents issued from continuation applications.

In effect, this reform amounts to a hybrid between a variant of an independent invention defense and a variant of prior user rights. Nevertheless, it can be implemented without legislation. When the three conditions are satisfied, courts can deny injunction and/or damages. They can deny injunction under the traditional multi-factor test, albeit with more than the traditional degree of emphasis on the last factor, the public interest. They can deny damages by reinterpreting 35 USC 284, which states that "[u]pon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement but in no event less

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than a reasonable royalty for the use made of the invention by the infringer.” Courts can interpret “adequate to compensate for the infringement” as adequate to compensate for the *social* harm from the infringement. Or, they can interpret “use made of the invention” as use made of *P*’s invention, meaning use made of *P*’s act of or disclosure of invention as opposed to use made of *the* invention in rem. Or, courts can interpret “a reasonable royalty” to be zero when zero is reasonable from a social standpoint, which it is when *D*’s infringement makes the world better off.

***BASING PATENT REMEDIES ON HARM TO THE WORLD
INSTEAD OF HARM TO THE PATENTEE***

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I. INTRODUCTION

Patent infringement has long been viewed as a tort that causes tort-like harm.¹ As Ted Sichelman argues, this view is misguided.² In tort, the measure of P’s damages is the difference

¹ See Ted Sichelman, Purging Patent Law of ‘Private Law’ Remedies, working paper, pp. 2-4 (2012); Mars, Inc. v. Coin Acceptors, Inc., 527 F.3d 1359, 1365 (Fed. Cir. 2008) (“Patent infringement is a tort.”).

² See Sichelman, Purging, *supra*, passim (sometimes infringement is efficient; the aim of patent law is invention, not protecting against private harms; the premise of restoring P’s “status quo ante should be

between her actual state and what her state would have been but for D's tort – hereafter “P's delta.” P's delta is a passable measure of damages for most torts because it approximates the social loss from most torts. For instance, if D negligently leaves a banana peel on the sidewalk and P slips on it and breaks her leg, her delta (the difference for P between breaking her leg and not) approximates the social loss (mainly, the difference for P between breaking her leg and not).³ Accordingly, in a personal injury case, it is usually sufficient to try to make P as well off as she would have been but for D's tort.⁴

In contrast, for patent infringement, P's delta rarely coincides with and often diverges widely from the social loss. Indeed, in software and other component technologies, infringement routinely results in social gain.⁵ Of course, courts cannot quantify how socially beneficial a particular instance of socially beneficial infringement is. But in many cases they can determine whether infringement is more likely to be socially beneficial than not.

D's infringement is very likely to be socially beneficial when the following three conditions are satisfied:

1. Either P or her licensee never practiced the invention (or a substitute for it) on a commercial scale, or P or her then-existing licensee did not start practicing the invention (or a substitute) on a commercial scale until more than one year after D started practicing the invention on a commercial scale;
2. D is an independent inventor; *and*
3. D's costs, including his costs of delaying commercialization of a product, to find and assess P's invention *ex ante*⁶ exceed the R&D expense that D would have saved had he relied on P's invention *ex ante* instead of inventing independently.

These conditions triangulate on cases in which D's activity contributes more to social welfare than P's activity does. Productive use is all-important. If P's inventive activity leads to no productive use, she might as well have not engaged in the inventive activity. Indeed, the world is better off if she does not – because then she might use the resources to engage in some activity that is productive. The ultimate purpose of the patent system is not to reward patentees or even “to promote invention.” The ultimate purpose is to further social welfare by efficiently increasing the utility enjoyed, overall and in the long run, from the use of operable embodiments of inventions. As shorthand – shorthand less misleading than “to promote invention” – we can

jettisoned as a fundamental tenet of patent law”; “patentees should only be entitled to the level of damages that promotes optimal innovation incentives...”)

³ The social loss also includes diffuse, intangible or unverifiable costs to witnesses, family, friends, employer, or colleagues.

⁴ Sichelman refers to restoring P's *status quo ante* as if it were the same as compensating P for P's delta. Cites. Strictly speaking, they are not quite the same. To restore P's *status quo ante* is to restore her to the position she was *in before D's conduct occurred*. To compensate for P's delta is to put her in the position she would have *ended up in had D's conduct never occurred*.

⁵ See, e.g., Sichelman, *Purging*, *supra*; Mark A. Lemley, *Ignoring Patents*, 2008 Mich. St. L. Rev. 19 (2008); Katherine Strandburg, *Patent Fair Use 2.0*; ...

⁶ See *Evolving IP Marketplace* at 7-8 (“Patent transactions that occur as part of a technology transfer agreement can be considered *ex ante* because they occur *before* the purchaser has obtained the technology through other means.”); Chiang, *Reciprocity of Search*

say that the purpose of the patent system is “to optimize *enjoyment* of inventions.”⁷ When the three conditions are satisfied, D’s infringement is very likely to optimize enjoyment of inventions.⁸ Often D’s infringement will still optimize enjoyment of inventions when one or more of these conditions is unsatisfied. But my aim here is not for an ideal system but only for a feasible improvement.

To excuse infringement when these three conditions are satisfied is in effect to adopt a hybrid between a variant of prior user rights⁹ (manifest in condition 1) and a variant of an independent invention defense (manifest in conditions 2 and 3). This hybrid defense easily withstands the main arguments that have been levied against a broad version of an independent invention defense, i.e., a version that applies regardless of whether conditions 1 and 3 are satisfied. One argument against a broad independent invention defense is that it could encourage potential infringers to keep their heads in the sand and thereby encourage wasteful duplication of P’s R&D. This argument is weaker than it might sound.¹⁰ In any event, condition 3 obviates it. Condition 3 limits the hybrid defense to cases in which it would be more wasteful for D to find and assess P’s invention than to duplicate her R&D.

Another argument against a broad independent invention defense is that, in some cases, it is possible that *no one* would have adequate incentives to invent unless inventors ex ante expect that whoever ends up as the patentee will have exclusivity against independent inventors as well as pirates, i.e., unless inventors who do not yet know whether they will be the patentee or the independent inventor expect the patentee to take all.¹¹ How much weight should be ascribed to this argument is unclear – with respect to a broad independent invention defense. With respect to the hybrid, this objection is largely moot. Were the hybrid adopted into law, an inventor ex ante would expect that, if she were to win the patent, she *would* have exclusivity against independent inventors as well as pirates – *unless* she further expects that she will not practice it or practice it late (condition 1) and also that someone else will independently invent it (condition 2) at lower cost than he can find and assess her version (condition 3). In most cases in which she has these expectations, undermining her incentive to invent is a good thing. We do not want her to waste resources on inventive activity that generates little to no social benefits only to then go on to generate social costs – due to administration, litigation, and over-deterrence – by obtaining and enforcing a patent arising out of her pointless inventive activity.

⁷ Alternatively, we could say that the purpose of the patent system is optimize “innovation,” whereby innovation refers to commercialized embodiments of inventions. This usage is not uncommon in the academic literature.

⁸ See *infra* Part III

⁹ The rights referred to as prior user rights protect a firm that practiced the invention (usually as a trade secret) before the patentee filed the patent application. Japan, and virtually all EU jurisdictions, recognize prior user rights, but they are seldom invoked in court. See *Evolving IP Marketplace* at 133. The US recently adopted prior user rights that protect a firm that practiced the invention more than one year before the patentee filed the application. See *AIA*. It is likely that the US prior user rights will likewise seldom be invoked in court. Prior user rights are seldom invoked in court because, unless the prior use is a trade secret use, it will normally serve as prior art that invalidates the patent, in which case prior user rights are irrelevant. However, the prior user concept manifest in condition 1 differs. Condition 1 may be satisfied even if D does not start practicing the invention after P’s patent issues.

¹⁰ See *infra*

¹¹ cite

When the three conditions are satisfied, as they routinely are in software, awarding any damages for infringement distorts incentives. Yet courts have long treated infringement as a tort and thus have long awarded damages based on P's delta,¹² which is large precisely when D's infringing product provides great value to consumers. Worse, courts routinely over-estimate P's delta.

Why do courts in patent cases use P's delta as the measure of damages? One answer is that courts and commentators have long been misled by the analogy to tort, which uses P's delta as the measure of damages. Yet, something else seems to be at work, because courts treat infringement not just as a tort but as an *absolute liability* tort.¹³ Most torts are predicated on D's fault or inefficiency and on the absence of greater fault or inefficiency on the part of P.¹⁴ For example, if D causes personal injury to P, and P sues in negligence, D will avoid liability if the court finds either that D acted cost-effectively or reasonably¹⁵ or if the court, in most states, finds that P acted more cost-ineffectively or unreasonably than D.¹⁶ Even the law of trespass is more lenient than patent law – despite the fact that the existence and boundaries of real property and chattels are far easier to discover than the existence and boundaries of patent rights.¹⁷ A trespass

¹² See, e.g., Sichelman at 4 (“[T]he courts -- and essentially the entire body of academic literature -- have assumed that treating the patentee like a private right-holder entitled to private law remedies optimally promotes innovation.”); *Id.* at 16 (“[T]he standard view holds that patent damages should return the patentee to the hypothetical state of affairs that would have obtained but for the infringement.”); *Yale Lock Mfg. Co. v. Sargent*, 117 U.S. 536, 552 (1886) (stating that a patentee's damages are “the difference between his pecuniary condition after the infringement, and what his condition would have been if the infringement had not occurred”); *Dowagiac Mfg. Co. v. Minnesota Moline Plow Co.* 235 U.S. 641, 648-49 (1915) (“[a]s the exclusive right conferred by the patent was property, and the infringement was a tortious taking of a part of that property, the normal measure of damages was the value of what was taken.”); *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 507 (1964) (“[T]hat question [is] primarily: had the Infringer not infringed, what would Patent Holder-Licensee have made?”). Most commentators assume it is basically proper to treat patent infringement as a tort. See, e.g., Cotter, *Four Principles*, at 2 (“the baseline damages recovery for prevailing patent owners should be the amount that restores them to the position they would have enjoyed but for the infringement”); *Id.* at 10 (if courts awarded less than but-for damages, potential infringers could be better off infringing “and patent owners would be systematically be undercompensated, in comparison with a baseline under which they are free to charge whatever the market will bear for their technology.”); *The Evolving IP Marketplace* at 4 (“patent remedies should seek to replicate the market reward that the patent holder would have earned absent infringement... [T]he fundamental principles of [patent] damages law are sound...”); *Id.* at 7 (“Damages must make a patent owner whole or infringement will undermine the patent system’s incentives to innovate.”). Reitzig et al at 22 (the patentee should be put into the position it would have been in but for the infringement). Note, however, that in the 19th century, P had the option to recover what D had gained from the infringement instead of what P had lost from it – “D’s delta.” Cite. Some countries still allow P to recover what D gained. cite

¹³ See *infra* Part II (distinguishing absolute liability from standard strict liability in tort)

¹⁴ Even when strict liability applies to D's activity, courts may excuse D if P was contributorily negligent or assumed the risk.

¹⁵ See, e.g., Posner; Hand

¹⁶ The few states that have pure comparative negligence are an exception insofar as courts will award some damages to P even when P was more negligent than D.

¹⁷ See also Stewart Sterk

of real property, for instance, tends to be excused when it is due to a mistaken belief induced by the property owner, when it is efficient enough to satisfy the doctrine of privilege or necessity, or when it is otherwise clearly efficient.¹⁸

Perhaps patent infringement is treated like an absolute liability tort because courts and commentators in the past assumed that most infringers are pirates instead of independent inventors. This “piracy assumption” is the flipside of what Lemley refers to as the myth of the sole inventor.¹⁹ This myth is that the patentee is usually the sole source of the invention – that, but for the patentee, the invention probably would not exist or it would be long delayed.²⁰ Yet, if in most cases the patentee was the only bona fide source of the invention, then in most cases the infringer must have gotten the invention by copying it from the patentee or from someone else who copied it from the patentee. Thus, to the extent courts and commentators accept the myth of the sole inventor, they at least implicitly assume that most infringers are pirates.

When most infringers are pirates, it is more defensible to treat infringement like an absolute liability tort, because piracy is intentional and seldom efficient. If pirates systematically escaped liability for infringement, they would robustly reduce the incentives of patentees to invent expensive self-disclosing inventions, which would robustly reduce the number of these inventions and the social surplus they generate. Independent inventors, in contrast, create the same inventions that patentees create, such that reductions in patent incentives that flow from excusing independent inventors do not translate into robust reductions in the numbers of these inventions (if they translate into reductions at all).

The piracy assumption might have been more or less correct in the 1800s and possibly even up to the first half or so of the 20th century. Inadvertent infringement is less common when patents provide good notice.²¹ Today, notice is poor in the majority of technologies and especially so in the newest ones.²² Accordingly, most infringement today is inadvertent.²³

When most infringement is inadvertent, a lot of infringement is socially beneficial.²⁴ When a lot of infringement is socially beneficial, it becomes worthwhile to try to identify and to excuse the socially beneficial infringement. This can be done, and may have to be done,²⁵ without legislation to amend the Patent Act. As discussed in Part IV, courts can excuse socially beneficial infringement by denying a remedy to P. They can deny injunction through the

¹⁸ See *infra* Part II

¹⁹ See Lemley, The Myth of the Sole Inventor.

²⁰ *Id.*

²¹ See Bessen and Meurer, Patent Failure

²² See *generally* Bessen and Meurer

²³ See Lemley & Cotropia, Copying in Patent Law

²⁴ This is especially true in cases in which P deliberately increased the odds of D’s accidental infringement by hiding its pending patent from potential infringers, by drafting vague claims, or by amending claims after filing not to more accurately delineate what the patentee had possession of but to push the envelope of what the Patent Office will allow in an effort to cover products independently developed by potential infringers

²⁵ See Merges, The Trouble with Trolls at 1583, 1585-86 (arguing that the courts a more promising avenue for adjusting remedies to fix the troll problem because Congress is locked in stalemate by the diverging interests of the industries governed by patent law); Burk and Lemley, The Patent Crisis

traditional multi-factor test for injunctions, albeit with more than the traditional amount of emphasis on the public interest. Alternatively, they can postpone injunction.²⁶

Courts can deny damages by reinterpreting 35 USC 284, which states that “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.”²⁷ Courts can reinterpret “adequate to compensate for the infringement” as adequate to compensate for the social harm from the infringement. Or they can reinterpret “a reasonable royalty” as a royalty that is reasonable from a social standpoint, which should be a royalty of zero when the costs for D to find and assess P’s invention *ex ante* exceed the social benefit from doing so.²⁸ Or, they can reinterpret “use made of the invention” as use made of P’s invention, meaning the infringer’s use of P’s act of invention or P’s disclosure of the invention. In other words, courts can require a causal link between P’s activity and D’s activity.

Some would argue that it is improper for judges to look to the backdoor of remedies to exonerate defendants who cannot be exonerated through substantive liability rules.²⁹ I argue that it is proper when it does no violence to the language of the remedy statutes, when it is clearly efficient, when the IP clause of the Constitution implies that the Act should be construed with an eye toward promoting the progress of science and the useful arts, when the Patent Act already indicates that judges are supposed to exercise discretion vis-à-vis remedies, when other changes in the jurisprudence of substantive liability rules that could achieve the efficiency are unavailable, and when legislative reform is unavailable because Congress is locked in stalemate by the opposing camps affected by patent law.

Alternatively, courts might be able to implement the reform through standing doctrine. In antitrust, for example, courts eventually came to hold that, to have standing, P must be able to establish that D’s conduct is socially harmful, not merely that it is harmful to P.³⁰

II. PATENT INFRINGEMENT AS AN ABSOLUTE LIABILITY TORT

Ted Sichelman argues that infringement should not be treated like a tort³¹ because the tort measure of damages is not designed to create optimal incentives to invent³² and because infringement is sometimes efficient.³³ He understates his case. Courts treat infringement not like just any tort but like an absolute liability tort. Also, courts in patent cases today routinely overestimate the damages that the tort measure requires – they misapply it in ways that inflate

²⁶ Cf. *Evolving IP Marketplace* at 29, 238 (Courts sometimes delay the time when a permanent injunction commences to give the infringer time to design around the patent, which helps to prevent the patentee from holding up the infringer.)

²⁷ 35 USC 284

²⁸ This conception of “reasonable” would make patent law more consistent with other areas of the law. Cites

²⁹ See Epstein

³⁰ See Bohannon and Hovenkamp, *Creation without Constraint*

³¹ See Sichelman, *Purging*, *supra*

³² *Id.*

³³ *Id.*

damages above P's delta. Moreover, the tort measure of damages diverges even more widely from something more fundamental than incentives to invent, namely, enjoyment of inventions. Finally, infringement today is not merely sometimes but very often efficient.³⁴ In some new fields (e.g., software), probably most infringement is efficient.

A. Patent Infringement is Subject to Absolute Liability

Courts hold D liable for infringement regardless of whether he was at fault or his conduct inefficient and regardless of whether P was at greater fault or her conduct more inefficient – even if P deliberately engineered the infringement by tracking industry developments with continuation applications.³⁵ Compare patent infringement to negligence. To be liable for negligence, D's conduct must be faulty or inefficient and, in general, more so than P's conduct. Even when D's conduct is faulty or inefficient and more so than P's, courts may still let D off the hook when special considerations of policy indicate that holding D liable in the instant case could lead to inefficiencies in other cases.³⁶

Patent infringement is commonly referred to as a strict liability offense.³⁷ Yet, liability for patent infringement is stricter than strict liability in tort.³⁸ If D's activity is subject to strict liability in tort, courts can hold D liable regardless of whether D's conduct appears to be faulty or inefficient. Sometimes, however, strict liability in tort is qualified or it applies only after there is an initial harm or potential culpability on D's part.³⁹ Furthermore, in some jurisdictions D has a full or partial defense to strict liability if P: assumed the risk,⁴⁰ was contributorily or comparatively negligent,⁴¹ or misused D's product in an unforeseeable way⁴². And in probably

³⁴ Infringement is efficient more often than Sichelman implies. For example, he suggests that infringement is efficient when the transaction costs for the parties to enter into an agreement exceed the reduction in incentives that would result if D's infringement were unpunished. Yet he appears to assume that the relevant patent and parties have already been identified so that the only transaction costs are those due to differences between the parties in their views about whether the patent is valid and infringed. But there are other (and generally greater) transaction costs, such as the costs for D to find the relevant patent and concomitant delay in D's commercialization of the invention.

³⁵ See generally Lemley & Moore, Ending Abuse of Patent Continuations

³⁶ In such cases, the court typically holds that D owed no duty of care to P.

³⁷ See, e.g., *In re Seagate Techs., LLC*, 497 F.3d 1360, 1368 (Fed Cir 2007).

³⁸ The exception is that an infringer may not be liable if P fails to mark her product with the patent number. However, the marking requirement does not apply if P has no product or if P's patent is directed to a method. The marking requirement also does not eliminate post-complaint damages or the right to an injunction. See Roger D. Blair & Thomas F. Cotter, *Strict Liability and its Alternatives in Patent Law*, 17 *Berkeley Tech. L. J.* 799, 804-07 (2002).

³⁹ See, e.g., Restatement (2nd) of Torts Section X (strict liability does not apply to abnormally dangerous domestic animals, unless the owner knows or has reason to know in advance that the animal is abnormally dangerous); *Marshall v. Ranne*; first bite rule. In some states, strict liability for product defect only applies when P suffers personal injury. See, e.g., *Sacramento Regional Transit Dist. v. Gruman Flxible* (1984) 158 CA3d 289. See also *mink case*.

⁴⁰ See, e.g., *Marshall v. Ranne* (assumption of the risk is defense to strict liability); *Hyde v. Chevron*, 697 F.2d 614 (5th Cir. 1983) (assumption of the risk is a defense to strict liability)

⁴¹ See, e.g., *Johnson v. McMahan* (1998) 68 Cal.App.4th 173, 176 ("The defenses of assumption of the risk and contributory negligence may still be asserted" in an action brought under statute imposing strict

every jurisdiction and for every activity governed by strict liability, D would prevail if D proved that P deliberately engineered the “accident.”⁴³

Liability for infringement is also stricter than liability for trespass. For example, trespass is excused when entry onto P’s property is involuntary and non-negligent.⁴⁴ If D is walking along a public sidewalk adjoining P’s store, and D, through no fault of his own, slips on ice and falls against and breaks a glass window in P’s store, D is not liable.⁴⁵ Or, if P owns land that adjoins D’s golf course and, through no negligence of D, P’s car is struck by errant golf balls, D is not liable.⁴⁶

Trespass is also excused when it is voluntary but satisfies the doctrine of privilege or public necessity. If a ferry is beset by a violent tempest, and if, in an effort to prevent the ferry from sinking, D-passenger throws P’s weighty belongings overboard, D is not liable.⁴⁷ Or, if in the course of fighting a raging fire, D-fireman removes P’s lawfully parked car to gain access to a fire plug, and unavoidably damages P’s car in the process, D is not liable.⁴⁸ Trespass may also be excused when it is voluntary but due to a mistaken belief induced by P-property owner about whether P owns the property, about the location of P’s property line, or about whether P consented to D’s entry.⁴⁹ Finally, trespass may be partially excused in other cases in which entry onto the property is voluntary but non-negligent.⁵⁰ For example, when D through innocent (cost-justified) error accidentally builds on P’s land, courts often limit P’s remedy to money damages or some other remedy short of permanent injunction.⁵¹

In contrast, courts do not excuse socially beneficial patent infringement. When is patent infringement socially beneficial? It helps to first step back and consider how the patent system benefits society. The patent system benefits society by efficiently increasing the utility enjoyed,

liability for dog bites.); *Daly v. General Motors*, 20 Cal.3d 725 (1978) (fault on part of P does not bar recovery but the total amount of damages shall be reduced to the extent P’s contributed to P’s injury).

⁴² See Restatement

⁴³ In many states, P’s contributory negligence is not a bar to recovery unless the plaintiff knowingly subjects herself to a risk of harm (e.g., P cannot recover if she knows that an animal is dangerous and then intentionally taunts it by poking it with a stick). In other states, a court could still find for D by holding that D was not the proximate cause of P’s injury, because P’s deliberate conduct superseded D’s causal contribution.

⁴⁴ See Restatement (2nd) of Torts, Section 166 Non-Liability for Accidental Intrusions.

⁴⁵ Restatement (2nd) of Torts, Section 166 Non-Liability for Accidental Intrusions, Illustration 1.

⁴⁶ See *Malouf v. Dallas Athletic Country Club*, 837 S.W. 2d 674 (Tex. App. 1992).

⁴⁷ See *Mouse’s Case*, 77 Eng. Rep. 1341 (K.B. 1609).

⁴⁸ See Restatement (2nd) of Torts, Section 262, Illustration 1. See also *Surocco v. Geary*, 3 Cal. 70 (1853) (D, mayor of a city, not liable where D ordered that P’s house be destroyed to stop the progress of a fire raging through the city).

⁴⁹ See Restatement (2nd) of Torts, Section 164 Intrusions Under Mistake (suggesting that one who intentionally enters another’s land under a mistaken belief of fact or law is liable for trespass provided the mistake was “not induced” by the possessor of the land).

⁵⁰ See examples discussed by Sterk; Cite Restatement (trespass excused when it is both inadvertent and non-negligent).

⁵¹ See Sterk at 1320-26.

overall and in the long run, from the use of operable embodiments of inventions.⁵² Or, as shorthand, we can say that the patent system furthers social welfare by optimizing *enjoyment* of inventions. We can also say that infringement is socially beneficial when it optimizes enjoyment. When infringement fails to optimize enjoyment, let's say that infringement "reduces enjoyment."

Infringement can reduce enjoyment when it undermines those incentives to invent that are attributable to the promise of patent protection ("patent incentives").⁵³ Undermining patent incentives can reduce enjoyment when such incentives are necessary to deliver operable embodiments of inventions to the world without delay. Whether infringement actually reduces enjoyment in a given case depends on the facts. Relevant facts concern: the nature of the industry, the amount of R&D required to create the invention, the proportion of invention hits to misses, the relative strength of non-patent incentives (such as first mover advantage and the inherent competitive advantage of a new or improved product), the cost for competitors to copy the invention,⁵⁴ whether D is an independent inventor, the severity of notice problems, how the threat of being sued for infringement compares to the value of winning a patent, whether P's claims cover the type of activity that P initially expected them to cover (do the claims vary greatly from the claims originally filed?),⁵⁵ and P's behavior (did P submarine the patent application? is P putting the invention to productive use?).

Consider the significance of D being an independent inventor. If D invented independently soon after P invented, patent incentives may not have been necessary to induce at least one of them to invent the invention and failure to induce P to invent it is less likely to translate into reduced enjoyment. To be sure, there is another way that D could have caused social harm. By independently inventing, D repeats P's R&D, which could be wasteful. Whether repeating P's R&D is actually wasteful, however, likewise depends on the facts. Suppose notice is poor enough that it would cost D more to find and assess P's invention *ex ante* than to repeat P's R&D, i.e., that it would cost D more to avoid repeating P's R&D than to repeat it.⁵⁶ Under these conditions, repeating P's R&D is efficient. This does not by itself mean that it would be efficient for courts to excuse D's infringement. But adding one more condition tips the balance. Suppose P's business model is not to practice the invention but only to license it to independent inventors who have already created the invention without inputs from her. With this added condition, it is very likely that excusing D's infringement is efficient. Excusing it may still undermine P's incentive to invent the invention at hand but, under the assumed conditions, that

⁵² Golden suggests (p.528) there are various behaviors that patent law could seek to optimize, such as initial invention, disclosure of invention, improvement of invention, dissemination, etc. He also suggests that it is not obvious which is the right behavior to optimize. Yet, on reflection it should be clear that enjoyment of inventions is the ultimate goal, and that what Golden really means to say is that it is not obvious which of these behaviors best optimizes enjoyment of inventions.

⁵³ Cf. Sichelman, *supra* at 37: "[I]nfringement of a patent is not harmful per se; rather, infringement is only harmful to the extent it denies the patentee an opportunity to be compensated in an amount sufficient to induce it to engage in innovative activity."

⁵⁴ Cf. Boldrin and Levine; Burstein, *Exchanging*

⁵⁵ When a patent issues from a continuation application whose claims vary greatly from the claims filed with the original application and cover a type of activity that P did not foresee at the time of invention, infringement has little to no effect on P's *ex ante* incentives to invent. cite

⁵⁶ This is condition 1, which is summarized in Part I and elaborated in Part III.

would be a good thing. Under the assumed conditions, *P*'s R&D is much more likely than *D*'s to be wasteful.

To repeat, we do not want *P* to invent if: she will put the invention to no productive use, an independent inventor who will put it to productive use is fast on her heels, and it is cheaper for the independent inventor to repeat her R&D than to find and assess her invention *ex ante*. Patent law, however, largely ignores all this and proceeds as if *D*'s infringement always makes the world worse off.

B. *P*'s Loss vs. the World's Loss/Gain

In tort, compensatory damages are measured by the difference between *P*'s actual state and what *P*'s state would have been but for *D*'s tort. We can refer to this difference as “*P*'s delta.” For most torts, *P*'s delta approximates the effect of *D*'s conduct on social welfare. Suppose *D* negligently crashes his boat into *P*'s dock, rendering it unstable. In *P*'s actual state, she spends money to repair her dock and loses some use of it in the interim. In her but-for state, in which *D* did not crash into her dock, she would have kept the repair money and enjoyed full use of her dock. Thus *P*'s delta consists of her costs of repair and the value of her lost use. Assuming that *P* and *D* are the only people significantly affected by *D*'s negligence, *P*'s delta – plus any crash injury suffered by *D* and thus internalized by *D* – coincides with the world's delta.

P's delta is also the basic measure of compensatory damages for patent infringement.⁵⁷ Courts try to put *P* in the position she would have been had *D* not infringed. If *P* practices the invention, her damages may be based on the sale profits she would have made had *D* not practiced it in competition with *P*. If *P* does not practice the invention, her damages are based on the royalty *D* would have paid her had he practiced the invention but with a license from her.

The problem is that, in patent, *P*'s delta seldom coincides with the world's delta; often they diverge widely. Indeed, today, patent infringement frequently makes the world better off. It is for this reason that I use the term “*P*'s delta” as opposed to a more familiar term such as “*P*'s harm.” We need to remind ourselves that in patent *P*'s harm is a legal construct and the validity of that construct is sensitive to the facts. Many acts make someone worse off are perfectly legal. If I offer to sell my house at a lower price than yours and thereby sell mine to a buyer who would have otherwise bought yours, you are made worse off relative to a counterfactual in which I do not undersell you. Nevertheless, the law affords you no cause of action because this loss for you does not translate into a loss for the world. Whatever you lost, the buyer and I gained and then some. No social harm, no legal foul. Yet, in patent, *P*'s delta mandates the same damages regardless of whether and the extent to which *D*'s infringement makes the world worse off or better off.

Another potential problem with *P*'s delta is that it approximates the invention's intrinsic utility, which can lead to very high damages. Most commentators assume that *P*'s damages

⁵⁷ See Reitzig et al, at 6-7; Cotter, *Four Principles*, at 2 (“the baseline damages recovery for prevailing patent owners should be the amount that restores them to the position they would have enjoyed but for the infringement”); *Id.* at 10 (if courts awarded less than but-for damages, potential infringers could be better off infringing “and patent owners would be systematically be undercompensated, in comparison with a baseline under which they are free to charge whatever the market will bear for their technology.”)

should approximate the invention's intrinsic utility,⁵⁸ but that assumption is questionable.⁵⁹ Imagine a civil suit for theft or conversion of one million gallons of water. Clearly it would not be optimal to award the plaintiff damages that approximate the intrinsic utility of water, i.e., to base damages on the centrality of water to life and so forth. So why should damages for patent infringement approximate the intrinsic utility of the invention? Would it be better to base damages on what it costs to obtain the invention, i.e., on the R&D required to create it plus premiums to adjust for risk and dry holes⁶⁰? (Admittedly, this method might go beyond what courts are capable of.)

In any event, when courts routinely award excessive damages and perversely punish efficient infringement, they generate unnecessary monopoly loss through reduced output of and higher prices for products that incorporate inventions, which reduces our enjoyment of inventions. Excessive and perverse awards also reduce enjoyment of inventions by biasing activity away from practicing inventions and toward patenting them – especially when notice is inherently poor or when the patentee can make it poor. That is, excessive and perverse awards encourage an inventor to invent in order to get a patent that someone will inadvertently infringe⁶¹ while simultaneously discouraging an inventor from inventing in order to practice an invention that could infringe someone's patent.⁶²

C. The Implicit Assumption that Most Infringers are Pirates

Why do courts treat infringement like an absolute liability tort and use P's delta as the measure of damages? One possible answer is that courts and commentators have been overly influenced by the analogy of patent infringement to tort, especially to trespass of tangible property.⁶³ But this answer is unsatisfying because, as discussed earlier, courts come nowhere near treating trespass of tangible property like an absolute liability tort.

Perhaps a better answer is that patent law rests on the implicit assumption that most infringers are pirates (the "piracy assumption"). The language of early patent cases and treatises

⁵⁸ Cf. *Evolving IP Marketplace*, at 17-18; *In re Kirk*, 376 F.2d 936, 964 (CCPA 1967) (Giles, J.) ("[I]t is one of the legal beauties of the system that what is given by the people through the government – the patent right – is valued automatically by what is given by the patentee. His patent has value directly related to the value of his invention, as determined by the marketplace."); Cotter, *Four Principles* at 14-15 ("From a purely economic perspective, the value of a patent at any given point in time is no more (and no less) than the present value of the expected profit (or cost saving) attributable to the use of the patented invention in comparison with the next-best available alternative.").

⁵⁹ See, e.g., Louis Kaplow (criticizing the presumption)

⁶⁰ Such risks include: the risk that the inventor would fail (and dry holes), the risk that the inventor could underestimate the value of the pay-off from invention and thus forego an invention that generates great positive externalities or tremendous value to consumers, and the risk that infringement could go undetected or that P will otherwise be unable to sue and collect from infringers.

⁶¹ Cf. *Evolving IP Marketplace* at 146-47 ("Overcompensation of certain patented technologies... over-incentivizes the pursuit of patents for their own sake, unnecessarily increasing the number of patents in a given field beyond what is necessary to encourage productive innovation.").

⁶² cite

⁶³ cite

implies that patent law was viewed primarily as a safeguard against piracy.⁶⁴ The piracy assumption also accords with the fact that patent law placed the burden to avoid infringement solely on infringers,⁶⁵ because pirates are very low cost avoiders of infringement. Moreover, the piracy assumption is implicit in what Mark Lemley refers to as the myth of the sole inventor.⁶⁶ The myth is that in most cases the patentee is the only source of the invention – that, but for the patentee, most inventions would not exist or would be long delayed. Implicit in this myth is that in most cases the infringer is a pirate. If the patentee was the only one who could create the invention, then the infringer must have gotten the invention by copying it from the patentee or from someone else who copied it from the patentee. Thus, insofar as courts and commentators believe the myth – or treat it as a salutary legal fiction – they implicitly assume or tacitly presume that most infringers are pirates.

What is the link between the piracy assumption and treating infringement like an absolute liability tort subject to a stiff a penalty? When most infringers are pirates, treating infringement harshly is simply more defensible. To bring this point into relief, let's pretend for a moment that all infringers are pirates and consider the reasons why that would matter. These reasons apply with only somewhat diminished force when most rather than all infringers are pirates.

First, pirates are inherently the lower cost avoiders of infringement.⁶⁷ If all infringers are pirates, it makes sense to place the burden solely on infringers to avoid infringement. Second, independent inventors incur R&D costs to independently invent; pirates do not. Thus pirates face a greater net gain from infringing,⁶⁸ which must be countered by a harsher penalty. Third, when all infringers are pirates, we need not worry much about over-deterrence. That is, we need not worry about deterring non-pirates from engaging in socially useful activity.

Fourth, pirates cause more harm than independent inventors do. Infringement is socially harmful when it robs the world of enjoyment of inventions. Pirates who escape liability rob the world of enjoyment more than do independent inventors who escape liability, because independent inventors bring to the world the same inventions that the patentees bring to the world, and because the types of inventions that are independently invented by multiple parties are the types that are likely to be invented by at least one party even when the expected reward is somewhat lower than the expected reward for the types of inventions that only one party can invent.⁶⁹ Moreover, some independent inventors cause social benefit instead of social harm.⁷⁰

⁶⁴ See Livak, Rethinking the Concept of Exclusion in Patent Law

⁶⁵ See *generally* Chiang, Reciprocity of Search (discussing fact that patent law places burden to avoid infringement solely on infringers).

⁶⁶ See Lemley, The Myth of the Sole Inventor

⁶⁷ Cf. Chiang, Reciprocity of Search

⁶⁸ Assuming pirates' costs to copy inventions are lower than independent inventors' costs to independently invent inventions.

⁶⁹ In theory, if inadvertent infringers escape punishment, it could moderately reduce the incentives of both patentees *and* inadvertent infringers to invent, which could, under certain conditions, translate into a modest reduction in the number of inventions. That is, if independent invention were a full-blown defense to infringement, inventors *ex ante* – who do not yet know whether they will be patentees or independent inventors – would foresee a smaller profit at the end of the rainbow, because they would foresee that they would compete with each other in the future, thereby driving monopoly returns down close to the smaller returns under competition. In other words, excusing independent inventors would diminish the incentives

Fifth, when all infringers are pirates, the counterfactual reasoning that defines P's delta is more straightforward. If D pirated the invention, we can easily imagine a straightforward counterfactual in which D did not infringe. We just imagine that D did not use P's invention or that D licensed P's invention before using it. In contrast, if D was an independent inventor who could not find P's invention ex ante – because, for instance, P had not commercialized the invention and P's patent had yet to issue when D starting selling an infringing product – we cannot imagine a straightforward counterfactual in which D does not infringe. Instead, we must pretend that D refrained (inexplicably) from using the invention or that D discovered P's (undiscoverable) invention ex ante. It is not clear that these extra-counterfactual counterfactuals are valid. Do they violate the norms of counterfactual reasoning?

From the time of the U.S. Patent Act of 1790 to maybe the 1950s or so, the piracy assumption *might* have been correct.⁷¹ It was at least less wrong than it is today. Today, the vast majority of accused infringers are independent inventors.⁷² If the vast majority had been independent inventors from 1790 to the 1950s or so, it seems like we would have heard more about independent invention in the case law, academic commentary, legislative history, and industry press.

Moreover, it stands to reason that a greater proportion of infringers today would be independent inventors. Independent invention rises as patent notice erodes,⁷³ because if potential infringers cannot find or evaluate someone else's solution to a technological problem they are much more likely to solve it on their own. Notice has eroded.⁷⁴ We have witnessed recent and dramatic increases in: the number of patents, in their degree of abstraction,⁷⁵ and in the complexity of products and the consequent lack of one-to-one correspondence between products and patents.⁷⁶ We have also seen increases in the time between application filing and patent issuance with simultaneous increases in the pace of technological change, such that it is now common for independent inventors to invent before patentees' patents issue. In addition, patent law now covers technologies (e.g., software) in which multiple parties very often have the means and incentive to independently create the same invention at roughly the same time.⁷⁷

of all inventors ex ante, not only those who would end up as patentees but also those who would end up as independent inventors. But compare this effect on incentives to the effect of piracy on incentives. If pirates routinely escaped punishment, inventors ex ante would often foresee net *losses*, especially for inventions that are expensive to invent but cheap to copy. In any event, the reform proposed here applies only to a subset of cases in which we do not have to worry that allowing inadvertent infringers to escape liability will undermine incentives to invent ex ante. See *infra* Part I and Part III(D).

⁷⁰ See *infra* Part I and Part III(D).

⁷¹ But cf. Lemley, Myth of Sole Inventor (showing that most of the most important inventions in the past were independently invented by multiple parties working independently).

⁷² See Lemley & Cotropia, Copying in Patent Law

⁷³ See generally Bessen & Meurer, Patent Failure

⁷⁴ *Id.*

⁷⁵ *Id.*

⁷⁶ See Bessen & Meurer, Patent Failure; Burk and Lemley, The Patent Crisis

⁷⁷ Cf. Golden, Principles at 549-50 (software inventions are often independently invented many times over).

In technologies with severe notice problems, in which patent searching is futile or otherwise not worth doing, most patented inventions are de facto secrets – they are known only to their owners. Notice failure \approx de facto secrecy. In contrast to patent law, the law of trade secrecy confers no right against an independent inventor. Why? Probably because the independent inventor is not a pirate. Whether the defendant is a pirate or not makes a big difference.

Insofar as more infringers in the past were pirates, it was more defensible then (though still non-ideal)⁷⁸ to treat infringement like an absolute liability tort. Today, most infringers are independent inventors and their infringement often makes the world better off.⁷⁹ Patent law has not caught up with the times. Courts still treat all infringers as if they are pirates – without explanation. For example, in dismissing a complaint by D that an injunction would impose great hardship, courts have stated that one who “elects” to build a business on a product found to infringe cannot be heard to complain if an injunction against infringement destroys its business.⁸⁰ This statement would be appropriate were D a pirate. It may even be appropriate if D could have found P’s invention ex ante at reasonable cost. But if D is an independent inventor who could not have found P’s invention ex ante, D did not actually “elect” to do anything that should render his hands unclean or otherwise void his right to complain of hardship.

III. CONDITIONS UNDER WHICH COURTS SHOULD EXCUSE INFRINGEMENT

A. The Ultimate Purpose of the Patent System

Infringement is often efficient when the patent involves software or another component technology or when the patent is based on a continuation application.⁸¹ Of course, courts cannot quantify how efficient a particular case of efficient infringement is. But in many cases courts can determine that the infringement is more likely efficient than not.

Infringement is very likely efficient when the three conditions discussed below are satisfied. When they are satisfied, D’s infringement is a good thing, because it translates into earlier practice of the invention and at lower social cost than if D had first obtained a license from P. To put it another way, these conditions triangulate on cases in which, as a practical matter, D’s R&D results in more social benefit than P’s R&D.⁸² If no one ever made productive

⁷⁸ Even when D is a pirate, P’s delta is not a tight proxy for the social harm from the infringement. The harm from infringement is reduced incentives to invent, which in turn leads to fewer inventions, which translates into less enjoyment of inventions. The degree to which piracy translates into less enjoyment of inventions hinges on when the piracy occurs, the cost of copying the invention, the value of first mover advantage, the cost and riskiness of the invention, the probability that the invention would be independently invented by another before the patent expired, whether the invention was accidental, and other variables.

⁷⁹ See Lemley & Cotropia, Copying in Patent Law

⁸⁰ See, e.g., *Windsurfing v. AMF*, 782 F.2d 995, 1003 n.12 (Fed Cir 1986); *3M Innovative Properties Co. v. Avery Dennison*, 2006 WL 2735499 at #2 (D Minn 2006); *Johns Hopkins*, 513 F. Supp. At 586; *Smith v. Synthes*, 466 F. Supp. 2d, 978, 983 (WD Tenn 2006).

⁸¹ See, e.g., Sichelman, Purgings, *supra*; Mark A. Lemley, Ignoring Patents, 2008 Mich. St. L. Rev. 19 (2008); Katherine Strandburg, Patent Fair Use 2.0; ...

⁸² Cf. Merges, Trouble with Trolls, at 1583 (defining a patent troll as one who “does not contribute to the social goal of the patent system was meant to serve: technological innovation.”); *Id.* at 1587 (“The true

use of P's inventive activity, P might as well have not engaged in it.⁸³ The ultimate purpose of the patent system is not to reward patentees. Rewarding patentees is a qualified means for achieving the ultimate purpose.⁸⁴ Often that purpose is said to be "to promote invention,"⁸⁵ but this phrase is mere shorthand. We do not promote invention for its own sake.⁸⁶ A patent system that generated ten times as much invention as the current system but that required that all inventions be thrown immediately into the sea would be vastly inferior to the current system.

What matters is the utility derived from the use of operable embodiments of inventions. In addition, we want to achieve this utility efficiently, to leave resources for socially valuable things other than invention. The phrase "to promote invention" glosses over all this. It also glosses over the tension between promoting the invention at hand and promoting other

distinction of the troll label concerns the difference between patentees who make real contributions to innovation and those who do not."); *Id.* at 1588 ("There is such a thing as a patent troll – someone who engages in inefficient, socially wasteful patent transactions."); *Id.* at 1600 (The market for true troll activity is analogous to the market for blackmail activity. "It is a market for a product that has no social value at all.").

⁸³ *Cf.* Cotter, Four Principles at 15 ("[P]atents have no inherent value; rather, their value is solely *relational* inasmuch as it depends on what the patent enables the user to do" relative to what the user can do with the next-best alternative.") I would add to Cotter's point the clarification that the value of a patented invention depends not on what it could enable a user to do in an ideal world (e.g., with low transaction costs) but on what it will enable a user to do in the real world.

⁸⁴ *Cf.* Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502 (1917) ("the primary purpose of our patent laws is not the creation of private fortunes for the owners of patents, but is 'to promote the progress of science and the useful arts'"); *Pennock v. Dialogue* (Story, J.) ("While one great object [of our patent laws] was, by holding out a reasonable reward to inventors and giving them an exclusive right to their inventions for a limited period, to stimulate the efforts of genius, the main object was "to promote the progress of science and useful arts."); *Kendall v. Winsor*, 62 U.S. at 327-28 (1859) ("any private benefit that an inventor receives from a patent is merely a means to an end of providing a benefit "to the public or community at large."); *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 9 (1966) ("[t]he patent monopoly was not designed to secure the inventor his natural right in his discoveries. Rather, it was a reward, and inducement, to bring forth new knowledge.").

⁸⁵ *Cf.* Constitution, art. 1, § 8 ('to promote the progress of science and the useful arts'), and cases cited in note above.

⁸⁶ *Cf.* *Evolving IP Marketplace*, at 9 ("[I]nvention is only the first step in a long process of innovation. Even if PAEs [patent assertion entities] arguably encourage invention, they can deter innovation by raising costs and risks without making a technological contribution."); *Id.* at 40-41 ("For the patent system to promote innovation effectively, it must do more than encourage invention. It must also encourage the development of inventions to the point of commercialization, either by the original inventor or through technology transfer..."); *Id.* at 50-53 (When a firm commercializes technology that it invented independently and later faces a patent suit, the resulting ex post license confers no direct benefit on consumers. Indeed, it may raise costs to consumers. And the threat of suit can deter the firm from commercializing in the first place.) *Id.* at 69 ("Even if it is correct that PAEs [patent assertion entities] incentivize and fund the work of inventors, the effect of this activity on innovation can be detrimental if efforts focus only on ex post licensing and not ex ante technology transfer. Paying inventors only to invent and patent may generate more invention and patents, but it may not generate more innovation." Indeed, patenting for purposes of ex post licensing may deter innovation.)

inventions that come before and after the invention at hand.⁸⁷ It further glosses over the distinctions among the different referents of ‘invention,’ including the invention as claimed, the invention as disclosed, the patentee’s operable embodiment of the invention, and an independent inventor’s operable embodiment of the invention.⁸⁸

It is more precise to say that the ultimate purpose of the patent system is to further social welfare by efficiently increasing the utility enjoyed, overall and in the long run, from the use of operable embodiments of inventions. As shorthand – shorthand less misleading than “to promote invention” – we can say that the patent system is supposed “to optimize *enjoyment* of inventions.”

D’s infringement is very likely to optimize enjoyment of inventions when the three conditions discussed below are satisfied. D’s infringement may optimize enjoyment of inventions even when one or more of these conditions is not satisfied. But my aim here is not for an ideal system but only for a feasible improvement. The reform proposed here is feasible because it employs criteria courts can handle and because it mandates no liability only when excusing D’s infringement is much more likely to be efficient than not.

Others have contemplated the possibility that liability should be excused or modified when infringement is inadvertent.⁸⁹ But some point out that such reform could result in a very different patent system and they would prefer to see more research and study first.⁹⁰ The particular reform proposed here, however, applies only to a subset of cases of inadvertent infringement, cases for which one would be hard pressed to explain how D’s infringement makes the world worse off.

B. Condition 1: P never practiced the invention or practiced it late

Condition 1 helps to isolate cases in which the activity of D likely caused more enjoyment of the invention than the activity of P, or at least in which the activity of D likely increased the public’s total enjoyment of the invention. Condition 1 is satisfied if: (i) P or her licensee never practiced the invention (or a substitute for it) on a commercial scale, or (ii) P or her then-existing licensee did not start practicing the invention (or a substitute) on a commercial scale until more than one year after D started practicing the invention on a commercial scale. Hereafter, “P” refers to both P and her licensee, unless otherwise indicated.

⁸⁷ Cf. select cites in preceding footnote; Merges and Nelson, On the Complex Economics; *Atl. Works v. Brady*, 107 US 192, 200 (1883) (The design of the patent laws is to reward those who make some substantial discovery or invention, which adds to our knowledge and makes a step in advance of the useful arts.... [I]ndiscriminate creation of exclusive privileges tends rather to obstruct than to stimulate invention. It creates a class of speculative schemers who... lay a heavy tax upon the industry of the country, without contributing anything to the real advancement of the art. It embarrasses the honest pursuit of business with fears and apprehensions of concealed liens and unknown liabilities to lawsuits and vexatious accountings for profits made in good faith.”)

⁸⁸ Cf. Tun-Jen Chiang, The Levels of Abstraction Problem in Patent Law, 105 *Northwestern University Law Review* 1097 (2011) (The word “invention” means different things. The invention that the patentee creates is an embodiment. The invention that defines monopoly scope is an idea.); Oskar Livak, Rethinking the Concept of Exclusion in Patent Law, 98 *Geo. L. J.* 1643 (2010).

⁸⁹ cites

⁹⁰ See, e.g., *Evolving IP Marketplace* at 17; Lemley, *Proof of Copying*

1. The features of condition 1

Various features of condition 1 sacrifice the ideal for the feasible. For example, P's practice of a substitute for the invention will defeat condition 1. The main reason is to obviate difficult inquiries into whether P in fact practiced the same invention that D practiced, i.e., into whether P practiced an embodiment that would infringe the same claim that D infringes. When it is not clear that P practiced the claimed invention, courts can answer the easier question of whether P practiced something that substitutes for it. An additional reason for allowing P's practice of a substitute to defeat condition 1 is that, if the substitute is close, P provided enjoyment equivalent to that produced by practice of the claimed invention. Hereafter, "invention" includes the invention or a substitute unless the context indicates otherwise.

Why allow the option to satisfy condition 1 through part (ii)? Why not limit the defense to cases in which P and her licensee never practiced the invention? After all, if P started practicing the invention at some point, it is less clear that D is a crucial source of the public's enjoyment of the invention. One answer is that the defense would be too limited and easy to circumvent if it were limited to cases in which neither P nor her licensee ever practiced the invention. P could simply license the invention or a substitute to anyone who practices it, even to someone who copied from D.

Another answer is that, even if condition 1 is satisfied through part (ii), D's infringement is probably socially beneficial as long as conditions 2 and 3 are also satisfied. In general, the sooner an operable embodiment of an invention gets into the hands of the public, the more enjoyment the invention generates. Indeed, the primary benefit of the patent system is not so much that it brings us inventions that we would never get without it as that it brings us inventions sooner.⁹¹ Accordingly, if P did not start practicing the invention until more than one year after D did, D's infringement probably produced enjoyment of the invention that more than offsets any reduction in enjoyment attributable to harm to P's incentives to invent from excusing D's infringement. This is especially probable if P's licensee was himself an independent inventor such that the license between P and her licensee entailed a mere transfer of legal rights rather than a genuine transfer of technological information.⁹² If the licensee independently invented, P's inventive activity did not actually cause the licensee to produce enjoyment of the invention. Finally, the fact that multiple parties independently invented the same invention at roughly the same time implies that the promise of patent protection was unnecessary to induce its creation.

What is meant by "then-existing licensee" as recited in part (ii)? By "then-existing licensee" I mean a licensee who got the license from P before D had been practicing the invention for more than one year. Accordingly, practice by P's licensee does not defeat condition 1 unless both the date the license was executed *and* the date the licensee started practicing were on or before the one-year anniversary of the date D started practicing (the "cut off date").

Why require that the execution of the license precede the cut off date? One reason is that, without the requirement, P could still game the system too often. If a license executed at any time could defeat condition 1, then often P could find some firm who practiced the invention *or a*

⁹¹ It is possible for inventions to be commercialized too soon. But this risk is highly mitigated by the fact that the defense confers no monopoly power on D.

⁹² It may be ideal to allow only a genuine transfer of technological information between P and the licensee to defeat condition 1. For reasons of judicial economy, however, this may not be feasible. *See infra*.

substitute before the cut-off date and offer that firm a cheap license, thereby eliminating the defense for everyone else. Many of the software patents asserted by non-practicing entities (NPEs) have been asserted against numerous defendants, up to 97 in some cases.⁹³ If these NPEs can find one firm who practiced the invention or a substitute before the cut-off date and then grant a license to that firm, the defense would be too often circumvented in cases in which patent litigation undermines social welfare.

Another reason to require that the license date precede the cut-off date is that doing so increases the odds that the license entailed a true transfer of technological information instead of a mere transfer of legal rights to a licensee who had already invented independently of P. But why not just expressly require that the license entail a true transfer before it can defeat condition 1? It does not seem that P should triumph against D (an independent inventor) merely because P already put the squeeze on another independent inventor. However, to ensure that the license entailed a true transfer of technology, courts would have to conduct a separate inquiry to determine whether the licensee (who may not be a party to the suit at hand) was truly an independent inventor. This would unduly complicate litigation and widen discovery. Perhaps the best we can do is rely on rough proxies that are easy to verify. It is easy to verify whether the date the license was executed predates the start of D's practice. The execution date is written on the face of the license and the courts already have to determine the date that D started practicing when they determine the date that D started infringing. The fact that the license predates D's practice falls well short of guaranteeing that the license entailed a true transfer of technology, but it is a rough proxy for a true transfer.

Why allow the practice of a licensee to defeat condition 1? Why not require that P practice the invention herself? The reason is that specialization and division of labor are too valuable to society and, relatedly, many bona fide inventors (including universities, start-ups, and individuals) are too small or otherwise poorly positioned to practice their inventions.

2. *Overlap with NPEs*

When condition 1 is satisfied, we can refer to P as an NPI, which stands for "non- or late-provider of the invention." In contrast, a "non-practicing entity" or NPE commonly refers to an entity that produces no product (except a patent license) but who may or may not have licensed the invention to a third party who signed the license and who practiced the invention (or a substitute) by the cut-off date.⁹⁴ The NPE label concerns the type of entity that P is in general. For purposes of condition 1, the NPE label is both over- and under-inclusive.⁹⁵

The NPI label concerns P's behavior vis-à-vis the invention in suit,⁹⁶ specifically, whether and when P practiced the invention (or a substitute). The NPI set and the NPE set

⁹³ cite

⁹⁴ In the empirical literature on NPEs, a plaintiff in a patent suit is considered an NPE if the plaintiff produces no product -- even if the plaintiff licenses the patent in question to a third party who produces a product that incorporates the invention. Cf. Love, at 15-17. Roughly one third of the litigated patents that are owned by NPEs are exclusively licensed to firms that produce products. See Love at 16-17 [is this interpretation of his numbers correct?]

⁹⁵ NPEs do not file the majority of patent suits, [Love at 34]. NPIs may.

⁹⁶ Cf. Merges, *Trouble with Trolls*, at 1610-11 ("[T]ypically, it is not specific entities but rather specific tactics or practices that are most relevant.... Trolling, to put it simply, is a matter of behavior rather than

overlap; many NPIs are also NPEs and vice versa. But if P produced a product without practicing the invention (or a substitute), P is an NPI but not an NPE. And if P produced no product at all but licensed the invention to someone who practiced it before D, P is an NPE but not an NPI. Nevertheless, the overlap between NPEs and NPIs is great enough that the evidence and arguments that tend to damn NPEs also tend to damn NPIs, especially in cases in which conditions 2 and 3 are also satisfied.

The economic evidence suggests that, through patent litigation, NPEs generate direct and indirect social costs that greatly exceed their contribution to invention (much less to their contribution to enjoyment of inventions).⁹⁷ Indeed, NPEs reduce enjoyment of inventions by deterring others from practicing new inventions.⁹⁸ The success of their business model – NPE litigation is growing rapidly⁹⁹ – also skews R&D away from disruptive technologies and toward mainstream technology that will be adopted by large incumbents.¹⁰⁰ Worse, their success encourages firms to divert investment from inventing to patenting.¹⁰¹ Of course, patenting requires some inventing. But when the value to be extracted is more tightly linked to the patent document and to legal strategy than to the technological merit of the disclosed invention, when notice is poor, and when infringement is punished harshly, it becomes profitable to invest relatively more in the patent document and legal strategy than in the underlying invention.

3. Patentees who wanted to practice but failed

Some NPIs did not plan to be NPIs. They originally tried but failed to practice the invention early on or tried but failed to license it to a firm that could practice it early on.¹⁰² Should we treat these unintentional NPIs better than, say, those who never intended to practice or facilitated practice of the invention from the very beginning?

For the most part, we should probably treat them the same. Again, the purpose of the patent system is not to promote invention for its own sake but to optimize enjoyment of inventions. Once we focus on enjoyment of inventions, it becomes clear that failure to practice an invention is equivalent to a failed attempt to invent it. In either case, society gets little to no

status. One can act as a troll, but it will usually not be true that one simply is a troll. The ‘troll line,’ in other words, must be policed case-by-case and fact-by fact.”)

⁹⁷ See Bessen & Meurer, *The Direct Costs from NPE Disputes*, at 2, 21-22.

⁹⁸ See *Id.* at 21-22 (companies become targets for NPE litigation mainly when they introduce innovative products); *Id.* at 24 (“NPE patent assertions effectively impose a significant tax on investment in innovation.”); Catherine Tucker, *Patent Trolls and Technology Diffusion* (Dec. 2011) (finding that medical imaging firms sued by an NPE stopped innovating during the litigation period out of concerns that new product innovations could pose risks in the on-going litigation)

⁹⁹ Bessen & Meurer, *The Direct Costs from NPE Disputes*, at 2, 4, 5. Between 2005 and 2011, the number of defendants in NPE lawsuits quadrupled, from almost 1500 to almost 6000. *Id.* at 33.

¹⁰⁰ B&M, *Direct Costs* at 22.

¹⁰¹ B&M, *Direct Costs* at 22.

¹⁰² *Cf.* Love, *An Empirical* at 7 (many NPEs purchased their patents from failed companies); *Evolving IP Marketplace* at 36 (“If a company makes a promising invention that does not fit well with its business plan, it may seek to sell or license that technology to another firm rather than leave it on the shelf.”)

value from the inventor's effort.¹⁰³ Furthermore, my proposal is to excuse D's infringement only when D is an independent inventor who could not discover the NPI's invention ex ante at reasonable cost. Under these conditions, we need not worry much about protecting the incentives of NPIs who tried to practice but failed.

If courts nonetheless want to treat unintentional NPIs better, they can do by postponing the former's injunctions instead of denying them altogether, or by awarding low damages (as opposed to zero damages), or by resolving doubts about the satisfaction of conditions 2 and 3 in their favor.

B. Condition 2: D is an Independent Inventor

Condition 2 is satisfied if D invented independently and practiced it. By practicing the invention, D enabled the public to enjoy it. Condition 2 ensures that the enjoyment that D provided is independent of P's incentives to invent. If D copied the invention from P, then of course the enjoyment that D provided is predicated on P having had adequate incentives to invent in the first place, which implies that we should punish D's piracy and thereby protect P's incentives.

An argument against a full-blown independent invention defense is that, in some cases, it is possible that *nobody* would have adequate incentives to invent unless the patentee has exclusivity against independent inventors as well as copyists ("complete exclusivity"), i.e., unless inventors ex ante expect the winner of the patent race to take all. Ex ante, P and D do not know whether they will end up as the patentee or the independent inventor. Both P and D may be induced to invent by the promise of complete exclusivity (over and above being deterred by the threat of losing the race and of facing the winner's complete exclusivity¹⁰⁴). In other words, the expected payoff when the patentee earns monopoly profits may exceed the sum of the expected payoffs to the patentee and the independent inventor when they earn duopoly profits. Accordingly, valuable inventions might be lost (or significantly delayed) if the patentee cannot exclude the independent inventor.

This argument, however, weighs only or mainly against a full-blown independent invention defense unqualified by conditions 1 and 3.¹⁰⁵ The defense proposed here largely moots this argument. Under the defense proposed here, which is in effect a hybrid between a variant of prior user rights and a variant of an independent invention defense, an inventor ex ante *does* expect that, if she wins the patent, she will obtain complete exclusivity – *unless* she also expects that she will not practice the invention (condition 1) and further that other parties can independently invent more cheaply than that they can transact for her version ex ante (condition 3). That is, the hybrid undermines an inventor's incentive to invent only to the extent that she expects that she would provide the public with no or late enjoyment of the invention (condition

¹⁰³ One exception is when others build on the technological disclosure in the NPI's patent. As an empirical matter, follow-on inventors seldom look at patent disclosures for technological information. Cite.

¹⁰⁴ See generally Patent Failure. But cf. Lemley, Myth of the Sole Inventor (suggesting the carrot of winning the patent and the stick of losing it may work together to accelerate invention).

¹⁰⁵ See, e.g., Samson Vermont, Independent Invention as a Defense to Patent Infringement (acknowledging the argument that an independent invention defense could lower incentives for all inventors ex ante)

1), that someone else would independently provide the public with at least earlier enjoyment of it (condition 2), and that the invention would so easy to create or that her version would be so hard to find and assess that it would be cheaper for the independent inventor to invent on his own than to find and assess her version (condition 3).

To put it another way, the reform proposed here undermines an inventor's incentive to invent only when she anticipates that, instead of enabling the public to enjoy the invention, she will go after those who do so independently of her and who cannot transact for her invention ex ante at reasonable cost. In short, the reform proposed here undermines an inventor's incentive to invent only when that inventor predicts that, by inventing, she contribute nothing to society. In this case, her invention would be wastefully duplicative over the independent inventor's, even though hers preceded his. In short, if an inventor predicts that all three conditions would be satisfied were she to win the patent, undermining her incentive to invent is a good thing.

What if D pirated the invention from an independent inventor other than P? Should D be liable in the suit by P? Yes, probably. P probably should not qualify for the defense if D free rode on a third party. In general, it is good policy to punish pirates. Furthermore, if D could pirate from a third party and still qualify for the defense, it would then become relevant to ask whether that third party had pirated from the patentee. If the third party had pirated from the patentee, then D would be pirating from the patentee – just indirectly. Requiring that D invent independently of everyone sidesteps this thornbush.

To avoid overburdening D, however, courts should probably presume that D invented independently of everyone if D started practicing the invention on a commercial scale before the patentee's patent application published or before the patentee otherwise made the invention public (e.g., through publication of the invention in a technical journal). Conversely, if D did *not* start practicing the invention until after that date, the burden should probably be on D to establish that he invented independently (e.g., by submitting lab notebooks, etc.).

A possible reservation about condition 2, as with any independent invention defense, is that there may be a better alternative to it. Instead of excusing independent inventors, perhaps we should focus on invalidating or denying patents for inventions that are likely to be independently invented. One can characterize the main function of the non-obviousness requirement as screening against inventions that are likely to be independently invented soon after the patentees invented them.¹⁰⁶ If this is right, many inventions that are independently invented would seem to be obvious. Why not screen out patents on such inventions as invalid for obviousness rather than render them unenforceable against independent inventors through the backdoor of remedies?

I sympathize with the impulse to improve the screen for obviousness.¹⁰⁷ But improving the screen and the reform I propose are not mutually exclusive, and they would have different effects. The improved screen would not address condition 1 and would thus ignore the question of who has provided enjoyment of the invention and when. The improved screen would also

¹⁰⁶ See TJ Chiang, A Cost-Benefit Approach to Patent Obviousness (characterizing this as the function of the non-obviousness requirement).

¹⁰⁷ See Samson Vermont, A New Way to Determine Obviousness: Applying the Pioneer Doctrine to 35 USC 103(a), 29 *American Intellectual Property Law Assoc. Quarterly J.* 375 (Summer 2001) (arguing, quixotically, that we can improve the screen for obviousness by regarding an invention as obvious when the technological step between it and the relevant prior art is smaller than the technological step between the relevant prior art and the closest prior art that precedes the relevant prior art).

ignore condition 3 and the notice problems that it concerns. Accordingly, if P did nothing with the invention and notice was bad, the reform proposed here could immunize D even if D did not independently invent until, say, 15 years after P. In contrast, the improved screen would probably not screen out this patent, because it aims to filter out only those inventions that are likely to be independently invented soon after P invents them.

In any event, it is hard to imagine how the screen for obviousness can be improved much unless we rely on independent invention itself as compelling evidence of obviousness.¹⁰⁸ Relying on independent invention itself as compelling evidence of obviousness may be justified, but it would entail guesswork about how soon after P invented D must independently event before we will regard P's invention as obvious. Also, it is more radical, sweeping and difficult than my reform. More than 9 out of 10 accused infringers appear to be independent inventors.¹⁰⁹ And in some cases in which the accused infringer did not independently invent, some third party independently invented. Thus, if independent invention were compelling evidence of obviousness, courts in the vast majority of cases will to have decide whether the the fact of independent invention renders the patent obvious.¹¹⁰ My proposal is humbler.¹¹¹ I do not propose to invalidate any patent no matter who independently invented but only to, in effect, render an under-used patent (condition 1) unenforceable against an independent inventor (condition 2) provided it would have been inefficient for the independent inventor to license the patent from P ex ante (condition 3).

C. Condition 3: Cheaper for D to invent than to find P's invention

Condition 3 discourages wasteful duplication of effort, encourages better and earlier patent notice, and serves as strong (though non-dispositive) evidence that condition 2 is satisfied. Condition 3 is satisfied if D's costs, including the costs of delay, to find and assess¹¹² P's invention ex ante exceed the R&D expense that D would have saved had he found and assessed P's invention ex ante instead of inventing independently. In short, condition 3 is satisfied if D's search costs exceed his independent invention costs. If searching is more expensive than inventing, we want D to invent instead of search.

¹⁰⁸ Cf. Lemley, Proof of Copying; Vermont, Angel is in the Big Picture

¹⁰⁹ See Lemley and Cotropia, Copying in Patent Law

¹¹⁰ Some of the infringers may not have independently invented *soon* enough after the patentee. But, presumably, independent invention soon enough after the patentee by someone other than the infringer would count as evidence of obviousness.

¹¹¹ In one situation, however, infringement is excused under my proposal where it is not excused under the more radical proposal. My proposal applies even if D independently invents late in the life of the patent and not only if D independently invents soon after P invents.

¹¹² To perform patent clearance, D must identify potentially relevant patents or pending applications, interpret and apply the claims (are they valid and infringed?), and predict what claims might emerge from pending applications (published and unpublished) and potential continuation or reissue applications. Cf. The Evolving IP Marketplace, chapter 3. Note that the costs for D to obtain estimates of the probabilities that a claim is valid and infringed differ from the estimates themselves. Taking into account these costs does not violate the rule that, to avoid double discounting, courts should assume that, at the time of hypothetical license negotiations, the patentee and the accused believed that the patent was valid and infringed. With respect to this rule, See Cotter, Four Principles at 23-24.

In contrast, if D's independent invention costs exceed his search costs – if it would cost D more to repeat P's R&D than to find and assess P's invention *ex ante* – D can avoid wasteful duplication of effort by transacting for P's invention *ex ante*. In this case, it *might* be efficient to punish D's infringement *even if conditions 1 and 2 are satisfied*. Under what scenario would it be efficient to punish D's infringement when conditions 1 and 2 are satisfied? Well, suppose there was no condition 3 and that D's infringement was excused as long as conditions 1 and 2 were satisfied. Under that rule, D might independently invent even when D's R&D savings from licensing P's invention exceed D's costs to find and assess it. The main reason is that, if D licenses P's invention, D will have to split the gains from trade, i.e., D will have to pay P for the license. Even if D's savings on R&D exceed his search costs, his search costs *plus* what he pays P for the license could exceed his R&D savings. In these cases, and under a regime in which there is no condition 3, D may, if he expects not to practice the invention (condition 1), choose to independently invent (condition 2). But that could be inefficient, because what D pays P for a license represents a transfer of wealth, not a social cost. In short, condition 3 encourages D to transact for P's invention when doing so may be efficient.

Condition 3 also tends to encourage patentees to specifically notify potential infringers *ex ante* when patentees can find potential infringers at lower cost than potential infringers can find patentees' inventions.¹¹³ After all, if P specifically brought her invention to D's attention *ex ante*, D will have a hard time in litigation proving that condition 3 is satisfied. More importantly, condition 3 discourages patentees from postponing notice through extended prosecution and continuation applications. The reason is that, if P's patent had yet to issue or otherwise publish at the time D independently invented, D will have an easy time proving that his costs to find and assess P's invention *ex ante* exceeded whatever R&D savings he stood to gain from finding it.

As such, condition 3 has an effect similar to the effect of placing the burden on the patentee to avoid infringement when the patentee can do so at lower cost than the infringer. Patentees are often the lower cost avoiders of infringement.¹¹⁴ Indeed, when they deliberately facilitate infringement by spending resources to pursue amendments and continuation applications to track the product developments of independent inventors, the patentees' costs of avoiding infringement are negative. In effect, these patentees are themselves pirates. These patent pirates, like infringer pirates, specifically intend to cause infringement.

D. The Conditions Synergize

The conditions synergize. They correlate with and mutually reinforce each other. When one is satisfied, the others are more likely to be satisfied, because they causally stimulate each other.

This synergy is comforting. It ameliorates some of the concern about the difficulty of determining whether all three conditions are satisfied. Once one condition is established, the other two should be easier to establish, and once two are established, the third should be even easier. More fundamentally, these synergies suggest that cases that satisfy all three conditions form a salient group that can be delineated without exceptional line drawing problems.

Consider how satisfaction of condition 3 makes it more likely that condition 2 is satisfied. If it costs D more to transact for P's invention than to independently invent (condition 3), D is

¹¹³ See generally TJ Chiang, The Reciprocity of Search

¹¹⁴ See *Id.*

much more likely¹¹⁵ to independently invent (condition 2). Accordingly, condition 3 and in turn condition 2 are very often if not usually satisfied in fields plagued by notice problems,¹¹⁶ fields in which patents are high in number, abstract, vague, overlapping, and/or issued from continuation applications¹¹⁷ or after lengthy prosecution¹¹⁸.

When a field has a high number of patents, there is another reason that condition 3 and in turn 2 are more likely to be satisfied. The number of patents in a field may be high because the R&D per patentable invention in that field is relatively low, as in software.¹¹⁹ The lower the R&D necessary to obtain a patentable invention, the lower the R&D necessary to independently invent it. The lower the R&D to independent invent, the more likely it is that D possesses the resources to do so and the less R&D expense D stands to avoid by finding P's invention ex ante instead of independently inventing.

Satisfaction of conditions 2 and 3 also make it more likely that condition 1 is satisfied. How can P profit from her invention if she does not practice it? By obtaining licenses from those who do. This business model – “being infringed”¹²⁰ – succeeds best when P can extract a settlement that greatly exceeds P's R&D in the invention. P can extract such a settlement when courts overestimate P's damages¹²¹ and/or when P can hold up D, i.e., when it would cost D a lot to switch to an alternative technology ex post. When would D ever let himself fall into the trap of being held up and liable for an excessive damages award? When it would cost him more to avoid falling into it. That is, D tends to get trapped ex post when his costs to transact for P's invention ex ante are higher than his costs to create the invention on his own.¹²² Accordingly, of patent

¹¹⁵ More likely but not cannot say likely because D has another reason to search: avoid litigation, legal fees, hold-up, inflated damages, willfulness damages.

¹¹⁶ “Notice failure is likely for NPE lawsuits. Sixty-two percent of the time they feature software patents which are notoriously difficult to interpret.” Bessen and Meurer, *The Direct Costs from NPE Disputes*, *supra* at 7 (citing Bessen, Ford & Meurer); *Id.* at 6 (“NPE patent litigation has all the hallmarks of patent notice failure...”); Bessen, Ford & Meurer (~40% of patent suits in software involve NPE patents)

¹¹⁷ *See* Allison et al, 2009; Love 2010; Risch 2012; FTC 2011. When conditions 1 and 2 are satisfied, and when P's patent did not issue until after D independently invented (which is perhaps the norm when P's patent issued from a continuation application), condition 3 is almost always satisfied. In this case, it is hard to imagine how D could have found and licensed P's invention ex ante more cheaply than D could independently invent.

¹¹⁸ Lemelson example

¹¹⁹ *See* *Evolving IP Marketplace* at 55 and notes (“The high level of patenting in the IT industry is in part attributable to the incremental nature of innovation in IT products, where small changes can be patentable.”). *Cf.* Brian Love, *An Empirical Study*, at 2 (NPE litigation concentrates in high-tech fields, “where patents tend to be plentiful, cheap, and broad”). *Id.* at 30, 33 (about 80% of patent suits by NPEs concern software or other high-tech); *Id.* at 35 (“In essence, where innovation is rapid and cheap, NPEs dominate, and where innovation is slow and expensive, NPEs are nowhere to be found.”)

¹²⁰ Reitzig, Henkel & Heath, *On Sharks, Trolls, and Other Patent Animals: “Being Infringed” as a Normatively Induced Innovation Exploitation Strategy* (Feb 2006) (“‘Being infringed’ has become a profitable business model for entities with no products on the market.”)

¹²¹ Reitzig et al, *passim*.

¹²² *Cf.* *Evolving IP Marketplace* (Manufacturers often license ex post because of poor patent notice ex ante.); Bessen & Meurer, *Direct Costs* at 6 (“NPE patent litigation has all the hallmarks of patent notice failure...”). When courts overestimate P's damages by basing them in part on the value of non-infringing

suits filed by NPEs (which overlap with NPIs), 80% concern software or other high tech (where notice is poor), whereas none concern biotech¹²³ (where notice is good). In short, when conditions 2 and 3 are satisfied, being infringed becomes a profitable business model, so condition 1 is more likely to be satisfied.

Being infringed has become a very profitable business model. From 1995-2001, median damage award for practicing entities (\$6.3 million) exceeded the median damage award for NPEs (\$5.2 million). From 2001-2009, median damage award for NPEs (\$12.9 million) dramatically exceeded the median damage award for practicing entities (\$3.9 million).¹²⁴ The percentage of patent suits filed by NPEs has also increased substantially in the last 15 years and is growing rapidly.¹²⁵ Between 2005 and 2011, the number of defendants in NPE lawsuits quadrupled, from almost 1500 to almost 6000.¹²⁶

Satisfaction of condition 1 causally increases the odds that conditions 2 and 3 are satisfied, for at least two reasons. First, if condition 1 is satisfied because P never practiced the invention, her invention is more likely, other things equal, to be technologically trivial. The more trivial her invention, the less R&D savings D stands to gain from finding it ex ante, so the more likely that condition 3 and thus 2 are satisfied. P's invention is more likely to be trivial if she never practiced it because it is less likely that she perfected it close to the point that it could be commercialized. Her patent is likely to be short on details and she is unlikely to have much know-how to transfer to D beyond what is explicitly disclosed in her patent.¹²⁷ In a modern economy, development (as opposed to research) accounts for more than three-fourths of

components of a product that are intertwined with the infringing component, "being infringed" can become a more profitable business model than licensing the invention ex ante, especially when the infringing component is relatively trivial compared to the non-infringing components. See Reitzig et al, at 3, 11-12. In these situations, hiding the patent emerges as a dominant strategy for patentees who cannot practice the invention. See Reitzig et al at 4. "[T]hese firms hope to be infringed and do everything they can to keep their patent-protected technology as invisible as possible..." Reitzig at 12; *Id.* at 17-18, 24 (Being infringed succeeds as a business model when (a) potential infringers cannot find the patented invention ex ante *and* (b) courts overestimate damages.); *Evolving IP Marketplace* at 146 ("Overcompensation through damages encourages ex post transactions at the expense of ex ante transactions with technology transfer.")

¹²³ Love at 35

¹²⁴ See PricewaterhouseCoopers, 2010 Patent Litigation Study, Chart 2.

¹²⁵ Bessen & Meurer, *The Direct Costs from NPE Disputes*, at 2, 4, 5.

¹²⁶ *Id.* at 33

¹²⁷ *Cf.* *Evolving IP Marketplace* at 69-70 ("Representatives of large companies explained that they generally viewed early-stage invention of the type offered in a bare patent license as insufficiently developed to present a good opportunity for bringing new technology into the company.... This is consistent with the experience of large companies seeking to sell their own internally-developed technology. Microsoft found that simply offering a bare license was insufficient to generate interest in potential buyers. More development and infrastructure was needed.") The fact that NPEs assert their patents much later in the patent term than practicing entities do, [Love at 3] and that NPEs are half as likely to prove infringement (Love at 31-32), implies that that NPEs tend to rely on "strained claim interpretations to stretch aging patents so that they arguably cover more advanced technology." Love at 30.]

industrial R&D expenditures.¹²⁸ According to one commentator, “Much more time and substantially more investment is required to commercialize a product or service embodying an invention than to create the invention in the first place.”¹²⁹ To reiterate, if P never practiced her invention, the R&D that D stands to save by transacting for P’s invention ex ante tends to be lower, making it more likely that condition 3 and thus 2 are satisfied.

Second, when P practices her invention, she usually practices it in a way that discloses it to anyone who keeps an eye on products in the industry, either because the invention is self-disclosing or because P marks her product with the patent number. Conversely, when P does not practice the invention or does not practice it until after D, this avenue for discovering P’s invention ex ante is unavailable to D. That is, all other things equal, when condition 1 is satisfied, D’s costs to transact for P’s invention ex ante tend to be higher, thereby making it more likely that condition 3 and thus 2 are satisfied.

E. All Three Conditions Are Routinely Satisfied in Software

[to be completed]

F. Narrowing or Broadening the Conditions

[to be completed]

1. *Casting a Wider Net*

2. *Casting a Narrower Net*

IV. IMPLEMENTING THE REFORM

The literal language of the Patent Act is not much of an obstacle to the reform proposed here. My proposal to deny money damages, however, runs counter to the most relevant case law.¹³⁰ Accordingly, I argue for flat out changes in the jurisprudence of money damages. These changes will require that lower courts distinguish Supreme Court precedent or that the Court overrule it.¹³¹

A. Deny Money Damages

Section 284 of the Act states that “[u]pon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement but in no event less than a reasonable royalty for the use made of the invention by the infringer...”¹³² Everyone appears to

¹²⁸ Frederic M. Scherer & David Ross, *Industrial Market Structure and Economic Performance* (3d ed. 1990), at 440.

¹²⁹ *Evolving IP Marketplace*, at 41.

¹³⁰ cite

¹³¹ See, e.g., *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 US 476, 507 (1964) (stating that but-for measure of damages is appropriate); other cases

¹³² 35 USC 284

interpret this language as requiring that courts put the *patentee* in as good a position as it would have been had there been no infringement.¹³³ And the legislative history reinforces that interpretation.¹³⁴ The language of 284, however, does not itself mandate that courts put the patentee in as good a position as it would have been had there been no infringement. The phrase “damages adequate to compensate for the infringement” could be interpreted as damages adequate to compensate for the social harm from the infringement. Nor would it be a stretch to interpret a *reasonable* royalty as requiring a royalty that is reasonable from a social standpoint. After all, in other areas of the law “reasonable” usually means reasonable from a social standpoint.¹³⁵

Note also that there is a constitutional argument against interpreting 284 in the way that it is currently interpreted. The IP clause empowers Congress “To *promote the progress* of science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”¹³⁶ In their book *Patent Failure*¹³⁷ and in compelling follow-up work that responds to the main criticism of that book,¹³⁸ Jim Bessen and Mike Meurer present evidence that, outside of chemistry and pharmaceuticals, the patent system actually retards the progress of science and the useful arts. If their claim is true, and if the current interpretation of Section 284 exacerbates the problem, then the current interpretation of Section 284 offends the IP clause....

[to be completed]

B. Deny or Postpone Injunction

[to be completed]

1. Irreparable Harm/Inadequacy of Money Damages

2. Balance of Equities and Hardships

¹³³ See, e.g., *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 US 476, 507 (1964) (the question is “had the Infringer not infringed, what would the Patent Holder-Licensee have made?”); *Evolving IP Marketplace* at 17 (“Courts have defined damages ‘adequate to compensate’ as those that would make the patent owner whole by placing it in the position it would have been but for the infringement.”); *Id.* at 141-42; *Id.* at 167 (“the goal of compensatory damages is to put the patentee in the position it would have been in but for the infringement... The case law rightly equates this goal with the statutory mandate that the patentee receive “damages adequate to compensate for the infringement.”); *Riles v. Shell Exploration and Prod. Co.*, 298 F.3d 1302, 1311-12 (Fed Cir 2002) (“Compensatory damages, by definition, make the patentee whole...”); *Brooktree Corp. v. Advanced Micro-Devices, Inc.*, 977 F.2d 1555, 1579 (Fed Cir 1992); Sichelman, *supra* at 35 (“[T]he reason courts impose make-whole damages is because they are mandated by the Patent Act itself.”)

¹³⁴ Cite

¹³⁵ Cite Posner

¹³⁶ Article I, Section 8, Clause 8, US Constitution [emphasis added].

¹³⁷ Bessen & Meurer, *Patent Failure*

¹³⁸ cite

3. The Public Interest

C. Alternatively, Hold that P Lacks Standing

...It is not unprecedented to explicitly require social harm for standing. In antitrust, for instance, courts now predicate standing on P's allegation that D's conduct causes *social* harm.¹³⁹ Indeed, the case for requiring social harm seems easier in patent law because patent law is born of the IP clause, which reads: "To *promote the Progress* of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."¹⁴⁰ Today, there is evidence that in most technologies the patent system affirmatively retards science and the useful arts.¹⁴¹

[to be completed]

D. The Legitimacy of Judicial Implementation

Some would argue that it is illegitimate for judges to look to the backdoor of remedies or the front door of standing to exonerate infringers who cannot be exonerated under substantive liability rules.¹⁴² [elaborate]

I argue that it is legitimate here, for the following reasons. It is clearly efficient; improvements in substantive doctrine that could achieve the efficiency are unavailing or would depart more radically from longstanding doctrine; legislative reform is unavailable because Congress is locked in stalemate by the opposing camps affected by patent law; and the plain language of the Act can be interpreted in several equally plausible ways¹⁴³ and the way I advocate comports with the IP clause. Also, with respect to remedies, the Patent Act already indicates that judges are supposed to exercise discretion. The Act expressly leaves it to the discretion of judges to enhance damages¹⁴⁴ and to award injunctions,¹⁴⁵ and it employs loose phrases that inherently leave room for discretion, such as "adequate to compensate for the infringement" and "reasonable."¹⁴⁶

[to be completed]

[END OF DRAFT]

¹³⁹ Bohannon and Hovenkamp, Creation without Constraint

¹⁴⁰ US Constitution, Article 1, Section 8, Clause 8 (emphasis added)

¹⁴¹ Bessen and Meurer. *Cf.* Evolving IP Marketplace at 145-46 (When infringers are also innovators, "[i]nflated awards, just like inadequate awards, can have the perverse effect of retarding innovation."); Carl Shapiro, Patent Reform: Aligning Reward and Contribution, 8 Nat'l Bureau of Economic Res. 111, 113, in *Innovation and the Economy* (2007).

¹⁴² Cite Epstein

¹⁴³ The damages provision, 35 USC 284, does not actually state that P's delta is the proper measure of P's damages; other interpretations are plausible.

¹⁴⁴ cite Act

¹⁴⁵ cite Act

¹⁴⁶ Admittedly, however, the phrase "but in no event less than a reasonable royalty" implies that Congress assumed that a reasonable royalty would exceed zero.