

OF PATENTS AND COBRAS: EXPOSING THE PROBLEM OF ASYMMETRY[♦]

KATYA ASSAF*

Abstract

Patent law is about creating economic incentives to innovate. It grants the inventors of new, non-obvious, and useful technologies time-limited market exclusivity over their inventions. The idea behind this mechanism is to make socially desirable inventive activity privately profitable. As long as the invention withstands the patentability criteria, the inventor's contribution to technological progress is believed to justify the social costs associated with market exclusivity, such as premium prices, reduced variety, and deadweight losses. The Patent and Trademark Office (PTO) examines patent applications and decides whether the inventions in question fulfill these criteria.

Yet, as several scholars note, today many registered patents embrace technologies that would likely fail to withstand the legal patentability requirements. Several factors make the PTO prone to issuing such "weak" patents. Notwithstanding their doubtful validity, weak patents exert a significant market influence, allowing their owners to stop other firms from using similar technologies or to extract fees for such use. These practices impose significant costs on the public, without justification in terms of contribution to technological progress. Some fields of technology are overcrowded with patents, many of which are weak, creating significant risks and costs for productive firms. This has led Congress, courts, and scholars to seek solutions for reforming patent law, mainly focusing on improving the accuracy of the PTO examination and reducing the risks associated with patent infringement.

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This Article proposes an alternative way of coping with the phenomenon of weak patents. It identifies a basic flaw in patent law—the asymmetry of risk allocation. The system is predisposed in favor of patent holders and against alleged infringers. The considerable legal uncertainty associated with patent law affects parties to patent conflicts differently. When a firm uses a patented technology, or a similar one, neither the patent owner nor the user knows with certainty whether the patent is valid and whether the use is infringing. Yet, if a court finds the patent valid and the use infringing, the user will be liable for the damages inflicted upon the patent owner. In contrast, if the court finds the patent invalid or the use non-infringing, the patent owner will usually bear no liability for the damages inflicted upon the user and the public. This asymmetry gives much bargaining power to patent owners and invites opportunism. This Article proposes to reconsider the basic risk allocation in patent law and to introduce liability for damages caused by invalid patents.

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We cannot solve our problems with the same thinking we used when we created them.
*Albert Einstein*¹

INTRODUCTION

During the time of British rule in India, the British government grew concerned with the great number of cobra snakes wandering in the streets of Delhi. To cope with this problem, it offered a bounty for every killed cobra. In the beginning, this incentive functioned as expected—encouraging the residents of Delhi to kill cobras. However, that very incentive gave rise to a new business of breeding cobras and killing them for the governmental bounty. Occasionally escaping from their breeders, the bred cobras ultimately enlarged the population of street cobras in Delhi. Thus, the governmental incentive aimed at solving the cobra problem ultimately worsened the situation.¹

Although the veracity of this famous story is doubted,² it amply illustrates how an incentive policy may go wrong. This Article will discuss a similar “cobra effect” in the field of patents. Patent law is intended to spur technological innovation. It does so by providing an economic incentive to innovate: an inventor of a new, non-obvious, and useful technology is entitled to obtain a patent, which provides its owner with market exclusivity for a period of twenty years, starting from the filing date of the patent application. However, like the bounty for killed cobras, the patent incentive currently encourages much more questionable activities.

Scholars point out that today, many registered patents embrace trivial, anticipated, or already known technologies that most likely fail to withstand the legal patentability requirements.³ The Patent and Trademark Office (PTO), which is responsible for examining inventions to decide whether or not they are patentable, is overburdened with patent applications.⁴ Thus, the patent examiners of the PTO have very limited time to devote to each application. Meanwhile, new technologies demand increasingly specialized knowledge that the examiners frequently lack. In addition, continuation applications pressure examiners to issue patents and ultimately make it near

¹ *Cobra Effect*, WIKIPEDIA https://en.wikipedia.org/wiki/Cobra_effect (last visited Dec. 16, 2016).

² *Id.*

³ See *infra* notes 32–34.

⁴ The total number of patent applications for 2015 was 629,647. See U.S. Patent Statistics Chart: Calendar Years 1963-2015, U.S. PATENT & TRADEMARK OFFICE, https://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm (last visited Dec. 19, 2016).

impossible to ultimately reject an application.⁵ Finally, the salary structure of examiners encourages issuing patents rather than declining applications.⁶ These factors naturally result in a great number of erroneously issued patents.

In judicial processes, patents are invalidated almost half of the time.⁷ Yet, patent validity is seldom examined in courts. The notoriously high costs of patent litigation, coupled with the risk of an injunction or massive damages, lead alleged infringers to settle with patent owners in an overwhelming number of cases.⁸ To avoid the costs and risks of patent litigation, firms frequently opt to pay license or settlement fees, even if the validity of the patent is questionable. As a result, “weak” patents typically stay alive for the entire protection term, bringing profits to their owners.

Not surprisingly, this legal situation encourages firms to acquire patents on every possible technology, however banal or obvious. The practice of obtaining patents has gradually grown to become a common business strategy in several fields of technology, most notably computer software and semiconductors.⁹ For some firms, the business of acquiring and enforcing patents is their main activity; for others, it is a complementary income avenue. Some firms acquire patents in order to cross-license, should a big corporation sue them; others do so in the hope of impressing investors. The cumulative effect of these business practices clogs entire fields of technology with weak patents.

Notwithstanding their questionable validity, weak patents have powerful market effects. In some technological fields, so many obvious technologies are covered by patents that it is virtually impossible to develop a product that does not incorporate numerous patents. Thus, the mere presence of countless patents creates significant search costs and litigation risks for productive firms. Moreover, the need to obtain numerous patent licenses, often from different companies, considerably complicates the process of product development and creates barriers to entry.¹⁰ Finally, the need to pay license and settlement fees just to be able to develop and distribute a new product imposes significant costs on inventive firms. All these costs naturally impede technological innovation and sometimes discourage firms from developing new products altogether.¹¹

⁵ See *infra* note 46.

⁶ *Id.*

⁷ See *infra* note 34.

⁸ See *infra* note 82.

⁹ See *infra* note 128.

¹⁰ Christopher R. Leslie, *The Anticompetitive Effects of Unenforced Invalid Patents*, 91 MINN. L. REV. 101, 114-115 (2006) (“It is hardly controversial that patents represent a barrier to entry in many markets”).

¹¹ See *infra* note 158.

Like the bounty offered for killed cobras, the patent incentive does not function as expected in certain fields of technology. And, as seen with the cobras, it may achieve the very opposite effect from the one desired by delaying technological progress rather than advancing it. This situation raises much concern among the legal community. Numerous academic articles have proposed various ways to improve the functioning of the patent system.¹² These proposals aim at improving the accuracy of patent examination, enabling and encouraging administrative and judicial challenges of patent validity, as well as reducing the costs and risks associated with patent litigation.¹³ While some of these proposals have been implemented in legislative and judicial reforms, abusive patent practices persist.¹⁴

Like Einstein's quote at the beginning of this Article suggests, a problem cannot be solved with the same thinking that created it. Accordingly, while attempts to improve the functioning of the current system may ameliorate the problem, they will hardly bring about a major change.

This Article proposes a fundamental shift in the legal conception of patent protection. Instead of viewing patents as legal mechanisms solely conveying rights, I propose conceptualizing them as institutions that create both rights and duties. A patent provides its owner with market exclusivity. This position sometimes allows the patentee to make significant profits, thereby imposing considerable costs on consumers and other market players. According to the logic of patent law, when the patent is valid, these costs are justified by the social benefits a novel technology brings. When the patent covers trivial or already known technology, however, these costs constitute a pure social loss. The damage usually affects the public at large rather than the individual and, therefore, does not evoke strong feelings of injustice. However, this is not a reason to leave that damage uncompensated.

The lack of accountability for damages caused by invalid patents is the main reason why weak patents have such powerful market effects. The patent field is characterized by great legal uncertainty. This uncertainty has asymmetrical effects on the parties to patent conflicts. A court decision holding the patent valid and infringed has dire consequences for the infringer. Yet, a court decision holding the patent invalid prevents the patentee from making further profits, but does not subject it to any further costs. This asymmetrical risk allocation naturally gives patent owners substantial bargaining power and allows them to reach lucrative agreements regardless of the validity of their patents.

¹² See *infra* Part II.E.

¹³ *Id.*

¹⁴ See *infra* note 181.

The fact that the patent system allows the making of significant profits at the public's expense naturally provides a great incentive to do so. Today, firms have every reason to patent every imaginable technology since this profitable strategy does not involve any serious risks. Fighting widespread patenting by measures such as improving the accuracy of the PTO examination, while at the same time encouraging this practice by allowing an invalid patent's owner to keep all the profits, is like pouring water into a bathtub without a stopper.

The incentive structure of patent law should change so that it clearly distinguishes between socially beneficial and socially harmful behavior—that is, between genuine innovation on the one hand, and obtaining and enforcing patents of questionable validity on the other. Under the current state of affairs, both these practices are rewarded similarly—just like killing a wild cobra and a bred cobra in colonial India.¹⁵ Establishing liability for the damages caused by invalid patents will create an incentive structure that better aligns with the public interest. Unlike the situation today, a firm will be motivated to acquire and enforce a patent only if it is convinced that the invention deserves legal protection.

The patent applicant is in the best position to investigate the patentability of its invention. Particularly, it usually has much more knowledge in its specific field of technology than the patent examiner. Therefore, putting the burden of investigation on its shoulders creates an efficient resource allocation.

This proposal is not as radical as it perhaps sounds. Consider that a *bona fide* purchaser of land will have to return the purchase it to its owner if there is a mistake in the chain of title.¹⁶ She will also have to pay rent, profits, and compensate the owner for any damages. The fact that the purchaser relied on the records of the land registry is no defense, although these records are accurate most of the time. The current Article, in essence, suggests adopting a similar rule in the field of patents. Given that patents are frequently mistakenly issued, there seems to be no reason to protect reliance on a patent more than reliance on the land registry.

This Article proceeds as follows: Part I discusses the incentive idea that stands behind the patent law. It explains why the free market is believed to lack sufficient incentives to innovate and how patents are supposed to solve this problem. Part II describes the phenomenon of weak patents and depicts the powerful market effects of such patents. Part II also demonstrates that while weak patents impose no significant risks on their owners, they do subject third parties to substantial costs.

¹⁵ See *supra* note 1.

¹⁶ E.g., 1 PATTON AND PALOMAR ON LAND TITLES § 69 (3d ed. 2015).

Finally, Part II discusses the main legislative and judicial reforms that aim at improving the functioning of patent system, as well as academic proposals in this field.

Part III states my view on the topic. I argue that the root of the problem lies in the very incentive structure of patent law and, more specifically, the asymmetrical risk allocation it creates. Part IV describes the proposed solution: establishing liability for the damages caused by an invalid patent. Part V suggests directions for future research.

I. THE INCENTIVE MECHANISM OF PATENT LAW

Patents are time-limited exclusive rights granted to inventors for their inventions.¹⁷ The basic idea behind granting patents is spurring technological innovation. Inventions, so the argument goes, are public goods that are characterized by non-rivalry and non-excludability.¹⁸ That is, once an invention is disclosed, an unlimited number of people can use it without disturbing each other. Under these circumstances, the inventor is unable to control the circulation of the invention and is unable to charge fees for its exploitation. When inventing is costly and copying is cheap, the inventor will be unable to make a profit from her invention, and will probably not even recover the costs that she incurred. Because inventions enrich and benefit our society, this situation creates a market failure: the market in its natural state fails to reflect the real demand for inventions and to provide economic incentives for inventive activity.¹⁹ Insufficient incentives are associated with resource misallocation, whereby a gifted inventor that is unable to make a profit or recover costs may decide to turn to other activities that may bring more profit to her, but less of a benefit to society.

Patents are intended to solve these problems by providing economic incentives for invention and thereby channeling human behavior towards this socially desirable goal. They do so by affording the inventor with market exclusivity for a period of twenty years from the filing date of the patent application.²⁰ This mechanism should assist the market in distinguishing important inventions from insignificant ones—only a patent over a meaningful invention will enable its owner to enjoy market power for the protection period. During this time, the

¹⁷ U.S. CONST. art. I, § 8: “Congress shall have the power... 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.”

¹⁸ For discussion, see F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 MINN. L. REV. 697, 727-28 (2001).

¹⁹ See generally RICHARD POSNER, *ECONOMIC ANALYSIS OF LAW* 10–12 (Little Brown and Co. ed., 2d ed. 1977).

²⁰ 35 U.S.C. § 154(a)(2). This period may be extended under certain circumstances; see 35 U.S.C. § 156.

inventor will be able to recoup costs and make profits.²¹ Once the protection period ends, the invention enters the public domain and can be freely used.²²

This solution naturally has its costs.²³ Although very few patents result in monopolies in the antitrust sense, the market power of commercially significant patents is associated with supracompetitive (i.e., monopolistic) prices and correspondingly increased consumer expenses.²⁴ In addition, some of the consumers who would purchase the product at a competitive price might not acquire it at a monopolistic price. Some of those consumers will simply refrain from consumption, while others will opt for a cheaper, but less satisfying article. Both of these types of behavior create net deadweight losses rather than a mere reallocation of resources, since the damage incurred by such consumers is not matched by the profit made by the patent holder.²⁵ Supracompetitive prices and deadweight losses may sometimes extend beyond the market of the patented product.²⁶ Lastly, patent rights restrict the possibility of using the invention for further research and innovation, thus impeding technological and at times scientific development.²⁷

The main goal of patent law is to promote the public interest by creating an incentive for invention.²⁸ Theoretically, patent law should

²¹ David Fagundes & Jonathan S. Masur, *Costly Intellectual Property*, 65 VAND. L. REV. 677, 678 (2012) (“Patent . . . law . . . extend[s] to inventors . . . exclusive rights over the fruits of their intellectual labors, enabling owners to extract value from intangible goods that would otherwise not be profitable.”).

²² *Id.* at 678–79 (“[P]atents . . . last only for finite periods, . . . in order to both enrich the public domain and enable the creation of follow-on inventions . . .”).

²³ Richard Gilbert & Carl Shapiro, *Optimal Patent Length and Breadth*, 21 THE RAND J. OF ECON. 106, 106 (1990) (“Unfortunately, because [patent] rewards are based on the creation of market power, they necessitate some welfare loss.”).

²⁴ *See, e.g.*, *In re Ciprofloxacin Hydrochloride Antitrust Litig.*, 363 F. Supp. 2d 514, 523–24 (E.D.N.Y. 2005) (“It goes without saying that patents have adverse effects on competition.”); *see also* Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1059 (2005) (explaining that intellectual property rights by definition permit their owners to raise the price to consumers).

²⁵ Paul Klemperer, *How Broad Should the Scope of Patent Protection Be?*, 21 THE RAND J. OF ECON. 113, 114–15 (1990) (explaining and illustrating the two kinds of deadweight losses associated with patent protection).

²⁶ James R. Hines Jr., *Three Sides of Harberger Triangles*, 13 THE J. OF ECON. PERSPECTIVES 167, 178–79 (1999) (explaining how the deadweight loss can spill over into a market for another good).

²⁷ *See, e.g.*, Wendy J. Gordon, *A Property Right in Self-Expression: Equality and Individualism in the Natural Law of Intellectual Property*, 102 YALE L.J. 1533, 1557 (1993) (“For new creators to flourish, they must be able to draw on an array of prior creations that are not privately owned.”).

²⁸ *See* U.S. CONST. art. I, § 8, cl. 8. (granting Congress the power 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.”); *see also* *Motion Picture Patents Co. v. Universal Film Mfg. Co.*, 243 U.S. 502, 511 (1917) (“It is undeniably true, that the limited and temporary monopoly granted to inventors was never designed for their exclusive profit or

provide the minimum level of protection necessary to ensure a socially desirable level of innovation.²⁹ Social price paid beyond what is necessary to achieve this goal is a public waste. Yet, economists point out that it is virtually impossible to estimate how much patent protection is enough, but not too much, for ensuring the optimal level of innovation.³⁰ Patent law currently assumes that the social benefits of inventions outweigh, at least on average, the costs associated with temporary market exclusivity, as long as those inventions are new, non-obvious, and useful.³¹ In other words, patent law assumes that inventions satisfying all the patentability criteria, but only such inventions, justify the social price of patent protection. For the purposes of the current debate, I will adopt this basic assumption. The PTO examines all patent applications to make sure that only inventions that satisfy all the patentability criteria get patented.

II. A FAILURE IN THE INCENTIVE MECHANISM OF PATENT LAW

A. *The Phenomenon of Weak Patents*

Unfortunately, the mechanism for patent protection currently functions rather differently than expected, causing considerable concern to the federal legislator, courts, and legal scholars. The latter point out that the PTO issues a great number of “weak” patents, *i.e.*, patents embracing trivial, anticipated, or already known technologies that most probably do not withstand the legal patentability requirements.³² Famous examples of ridiculous patents include one on the process of

advantage; the benefit to the public or community at large was . . . doubtless the primary object in granting and securing that monopoly.”) (quoting *Kendall v. Winsor*, 62 U.S. 322, 327–28 (1858)); Lemley, *supra* note 24, at 1031 (“Intellectual property protection in the United States has always been about generating incentives to create.”).

²⁹ See Lemley, *supra* note 24, at 1031 (“[T]he proper goal of intellectual property law is to give as little protection as possible consistent with encouraging innovation.”); Anup Malani & Jonathan S. Masur, *Raising the Stakes in Patent Cases*, 101 GEO. L.J. 637, 642 (2013) (“The patent system is premised on the idea that an inventor’s payoff for innovation should be proportional to the ex post social surplus from that innovation.”).

³⁰ Lemley, *supra* note 24, at 1065–66 (“Economic theory does not, however, give us a very clear answer to the question ‘how much control is optimal?’ . . . George Priest went so far in 1986 as to say that economists could tell lawyers virtually nothing about the appropriate scope of intellectual property rights.”); Thomas B. Nachbar, *The Comedy of the Market*, 30 COLUM. J.L. & ARTS 453, 463 (2007) (“[T]he utilitarian paradigm that dominates American intellectual property law tells us very little about how to formulate optimal intellectual property regulation for the real world.”). See generally Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839 (1990).

³¹ Megan M. La Belle, *Patent Law as Public Law*, 20 GEO. MASON L. REV. 41, 42–43 (2012).

³² Fagundes & Masur, *supra* note 21, at 687 (“[T]he PTO has granted invalid patents on thousands, if not tens of thousands, of ‘inventions’ in innovative fields such as software, biotechnology, and electronics. . . . [I]nventions that either would have been obvious to scientists in the field or were anticipated by prior work”); Michele Boldrin & David Levine, *The Case Against Intellectual Property*, 92 THE AM. ECON. REV. 209, 210 (2002) (“Individuals exploit the relative ignorance of patent examiners by patenting ideas already in wide-spread use”).

toasting bread, on a method for swinging on a swing, on an umbrella protecting beer cans from sunlight, and on a method of exercising a cat with a laser pointer.³³ A recent empirical study shows that 43% of patents are invalidated at trial.³⁴ Yet, since only a small fraction of patents are ever litigated, and a much smaller number reach a decision on the merits, the exact percentage of erroneously issued patents is difficult to estimate.³⁵

Scholars cite several reasons for why so many weak patents withstand the PTO examination. First, the examiner often lacks expertise in the specific area of technology, as well as access to relevant information about the already existing knowledge.³⁶ This makes it next to impossible for the examiner to conduct a meaningful search in the fifteen to twenty hours he can devote to each application,³⁷ especially given the increasing complexity of patent applications.³⁸ The applicant, who is usually far more knowledgeable in the specific field of the invention, must disclose any prior art that might be material for its application, and risks penalties for failing to do so.³⁹ Yet, the patent applicant itself is not required to conduct a search for such prior art. There is actually good reason for the applicant to refrain from seeking information that might undermine the validity of its application.⁴⁰

Second, the incentive structure of the PTO is predisposed towards granting patents rather than rejecting applications. The key issues in the examination process—novelty, non-obviousness, utility, and disclosure requirements—are rebuttably presumed in the applicant's favor.⁴¹ This

³³ Fagundes & Masur, *supra* note 21, at 686–87; Sean B. Seymore, *The Presumption of Patentability*, 97 MINN. L. REV. 990, 991 (2013); *see also* Robert P. Merges, *As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform*, 14 BERKELEY TECH. L.J. 577 (1999).

³⁴ John R. Allison et al., *Understanding the Realities of Modern Patent Litigation*, 92 TEX. L. REV. 1769, 1801 (2014).

³⁵ *Id.* at 1777–78.

³⁶ Jay P. Kesan & Andres A. Gallo, *Why 'Bad' Patents Survive in the Market and How Should We Change?—The Private and Social Costs of Patents*, 55 EMORY L.J. 61, 67 (2006) (“[T]he type and complexity of patents have changed over the last decade, and this has made it more difficult for the Patent Office examiners to decide which patents should issue. The experience of the Patent Office in examining some of these types of patents is virtually nonexistent, thereby increasing the chance of error.”); Leslie, *supra* note 10, at 107 (“In some cases, examiners are not adequately trained in the necessary technical field of a particular patent application.”).

³⁷ Joseph Farrell & Carl Shapiro, *How Strong Are Weak Patents?*, 98 AM. ECON. REV. 1347, 1347 (2008) (“[A]n average application gets only about 15–20 hours of patent examiner time.”).

³⁸ *See supra* note 36.

³⁹ 37 C.F.R. § 1.56 (2015).

⁴⁰ Leslie, *supra* note 10, at 108–09 (“[G]iven the strict penalties for failure to disclose known prior art . . . , patent applicants have a strong disincentive to research the prior art themselves.”).

⁴¹ FED. TRADE COMM’N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY, Ch. 5 at 9 (2003), <http://www.ftc.gov/os/2003/10/innovationrpt.pdf> (“Many of the key issues are rebuttably presumed in the applicant’s favor.”); *see also* Seymore, *supra* note 33, at 995 (“An applicant enjoys a presumption of patentability, which means that at the time of filing the application is rebuttably presumed to

presumption puts the burden of proving why not to issue a patent on the examiner's shoulders, making it much easier for him to accept rather than reject an application.⁴² Severe time constraints press the examiner to issue his decision quickly, especially given his salary bonuses system, which is based on the number of patent applications that he is able to process.⁴³

Finally, while a decision to issue a patent is a simple one, a decision to reject must be accompanied by a detailed justification of the examiner's objections.⁴⁴ While issuing a patent concludes the examination process, a decision to reject can be followed by a request for reexamination, which prevents the examiner from receiving credit for this application.⁴⁵ Furthermore, continuation applications pressure the examiners to issue patents and make it essentially impossible to ultimately reject a patent application.⁴⁶ Given all these factors, it hardly comes as a surprise that patent examiners tend to accept the vast majority of patent applications, regardless of their objective quality.⁴⁷

While all this explains the great number of weak patents issued by the PTO, it does not explain why we should be concerned with this phenomenon. An alleged infringer can always challenge a patent's validity before a court. Consequently, one may argue that competitors, who know better than the PTO which patents are genuinely novel, will opt to infringe weak patents knowing they will prevail in litigation.⁴⁸ Moreover, the patent owner, who is also in a good position to evaluate the strength of its patent, is unlikely to try enforcing a patent of a questionable validity. An owner of a weak patent will thus be unable to

comply with the utility, novelty, nonobviousness, and disclosure requirements of the patent statute.”).

⁴² Fagundes & Masur, *supra* note 21, at 688 (“The examiner must decide whether to grant or reject the patent application. Yet, these two activities are not symmetric. Rejecting a patent application is more difficult and time-consuming for the examiner than granting one.”).

⁴³ *Id.* (“Patent examiners receive salary bonuses based on the number of patent applications that they are able to process.”); Mark A. Lemley & Carl Shapiro, *Probabilistic Patents*, 19 J. OF ECON. PERSP. 75, 79 (2005) (“[The PTO] incentive system . . . rewards examiners for allowing but not for rejecting applications.”).

⁴⁴ Fagundes & Masur, *supra* note 21, at 688 (“If the examiner grants the application, there is little process required – the examiner simply announces that she is allowing the application to mature into a patent. If the examiner rejects the patent, however, she must justify that decision and identify the relevant prior documents and the section of the Patent Act that has caused her to reject the application.”).

⁴⁵ *Id.* at 688–89.

⁴⁶ *Id.*

⁴⁷ *Id.* (“The rational, self-interested examiner thus has a tremendous incentive to grant the vast majority of patent applications. By consequence, essentially all observers agree that the substantive examination of patents at the PTO is of very poor quality.”); Kesan & Gallo, *supra* note 36, at 67–68 (“[E]xaminers’ incentives are not conducive to good review of patent applications.”).

⁴⁸ See *Brunswick Corp. v. Riegel Textile Corp.*, 752 F.2d 261, 265 (7th Cir. 1984) (“[A] patent known to the trade to be invalid will not discourage competitors from making the patented product or using the patented process . . .”).

stop a competitor from using the patented invention, or to collect license fees. Therefore, the argument might go, weak patents are not expected to have any significant impact on the market and should not be a matter for concern.

This argument might be theoretically appealing, but the market reality is vastly different from its predictions. There is substantial evidence that weak patents *do* have considerable commercial significance. In fact, competitors take such patents very seriously, doing their best to avoid infringements, entering into license agreements that subject them to high fees, and reaching settlements that oblige them to pay astronomical sums just to avoid or stop an infringement suit. The next paragraphs explain why weak patents provide their owners with such strong power.

B. *The Strength of Weak Patents*

As numerous scholars explain, avoiding patent litigation, even at very high costs, constitutes, in most cases, perfectly rational business behavior.⁴⁹ A rational firm would weigh its expected profits from a product infringing a patent against the possible costs of the infringement.⁵⁰ First and foremost, that firm will consider the notoriously high litigation costs of patent cases—for instance, in 2013, these costs ranged from \$350,000 to \$5.5 million,⁵¹ sums that in and of themselves often exceed what it would cost for the firm to design a non-infringing product, to obtain a license, or to reach a settlement with the patent owner.⁵² Indeed, there is much evidence that patent licenses and other settlement agreements are frequently accepted regardless of the patent's strength, just to avoid paying astronomical litigation costs.⁵³

But, even if we put aside the litigation costs issue, it might still be

⁴⁹ Leslie, *supra* note 10, at 136–37.

⁵⁰ *Id.* (“If the likely costs (i.e., the probability of losing the infringement suit multiplied by the damages from losing, plus litigation costs) are greater than the expected profits from selling potentially infringing products, then the rational firm will not compete even though the product is not protected by a valid patent.”).

⁵¹ Megan M. La Belle, *Against Settlement of (Some) Patent Cases*, 67 VAND. L. REV. 375, 403 (2014).

⁵² Kesan & Gallo, *supra* note 36, at 68–69 (“In fact, even when the patent is not valid, using the courts may be more expensive than both licensing costs and the transaction costs of the bargaining required to reach a private agreement.”).

⁵³ *Improving the Patent System to Promote American Innovation and Competitiveness: Hearing on H.R. 3309 Before the H. Comm. on the Judiciary*, 113th Cong. (2013) (statement of Kevin T. Kramer, Vice President & Deputy Gen. Counsel of Intell. Prop., Yahoo! Inc.) (“The high cost of patent litigation means that settlement is almost always the least costly option[.]”), <http://www.innovation-america.org/beware-patent-trolls>; *Protecting Small Businesses and Promoting Innovation by Limiting Patent Troll Abuse: Hearing Before the S. Comm. on the Judiciary*, 113th Cong. (2013) (statement of Dana Rao, Vice President & Assoc. Gen. Counsel of Intell. Prop. & Litig., Adobe Sys., Inc.) (“Bad Actors are taking advantage of asymmetric costs of patent litigation to pressure defendants into settlements.”), <https://www.judiciary.senate.gov/imo/media/doc/12-17-13RaoTestimony.pdf>.

perfectly rational for a firm to make substantial efforts to avoid a patent infringement, even if it believes the patent to be invalid. This is because patent cases are characterized by extraordinary uncertainty.⁵⁴ The increasing technological complexity, coupled with the vague doctrines of patent law, makes it very difficult to estimate the chances of proving patent invalidity in a court.⁵⁵

To make things worse, notwithstanding the great number of invalid patents issued, a patent enjoys a statutory presumption of validity.⁵⁶ This presumption may only be rebutted by clear and convincing evidence, rather than a mere preponderance,⁵⁷ which puts a heavy burden on the shoulders of a party attempting to prove the patent invalid. The presumption of patent validity applies even to evidence that the PTO was unaware of during the examination process.⁵⁸ Though much criticized,⁵⁹ this presumption was affirmed by the Supreme Court in 2011.⁶⁰

In other words, even if the alleged infringer is convinced that the patent in question is invalid, it must be aware that a court could decide otherwise. This scenario, whose probability is hard to appreciate, may be associated with disastrous perspectives for the firm. First of all, the court may enjoin the distribution of its product. Prior to 2006, courts issued injunctive relief almost automatically upon a finding of a patent infringement.⁶¹ The Supreme Court overturned this precedent in *eBay, Inc. v. MercExchange, LLC*,⁶² making it more difficult for patent plaintiffs to obtain injunctions. This decision has considerably reduced the frequency of injunctive relief in patent cases.⁶³ Nevertheless, this

⁵⁴ Leslie, *supra* note 10, at 134–35 (“Uncertainty increases the deterrent effect of invalid patents. While the result of any litigation is uncertain, it is particularly so in patent infringement suits.”); La Belle, *supra* note 51, at 405 (“A common observation about patent litigation is that it is unpredictable.”).

⁵⁵ Leslie, *supra* note 10, at 117 (“[I]t is exceedingly difficult to estimate the probability of prevailing on an invalidity defense in a patent infringement suit.”); *see also* Lemley & Shapiro, *supra* note 43, at 76 (“[T]he uncertainty associated with patents is especially striking[.]”).

⁵⁶ 35 U.S.C. § 282(a) (“A patent shall be presumed valid.”).

⁵⁷ *See, e.g.*, *Radio Corp. of Am. v. Radio Eng’g Lab.*, 293 U.S. 1, 2 (1934) (“[T]here is a presumption of validity, a presumption not to be overthrown except by clear and cogent evidence.”); *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1323 (Fed. Cir. 2004) (“[T]he party seeking to invalidate a patent must prove invalidity by clear and convincing evidence.”).

⁵⁸ *Kahn v. Gen. Motors Corp.*, 135 F.3d 1472, 1480 (Fed. Cir. 1998) (“The presentation of evidence that was not before the examiner does not change the presumption of validity . . .”).

⁵⁹ *See, e.g.*, Doug Lichtman & Mark A. Lemley, *Rethinking Patent Law’s Presumption of Validity*, 60 STAN. L. REV. 45, 47 (2007); Leslie, *supra* note 10, at 133–34.

⁶⁰ *Microsoft Corp. v. i4i Ltd. P’ship*, 564 U.S. 91, 97, 113 (2011).

⁶¹ 2 JOHN W. SCHLICHER, PATENT LAW: LEGAL AND ECONOMIC PRINCIPLES § 9:5 (2d ed. 2012) (“Prior to the Supreme Court’s *eBay* decision in 2006, an injunction against future infringement usually issued in a patent action.”).

⁶² *eBay, Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006).

⁶³ Colleen V. Chien & Mark A. Lemley, *Patent Holdup, the ITC, and the Public Interest*, 98 CORNELL L. REV. 1, 2, 9–10 (2012) (“[C]ourts have granted about 75% of requests for

remedy remains common in patent legal practice, thus continuing to represent a real threat for companies accused of patent infringement.⁶⁴

Most firms do not consciously choose to infringe a patent, even a weak one. Most frequently, they develop a product with the same technology without being aware of the patent's existence.⁶⁵ This should not be surprising, given that so many patents are issued on trivial inventions. In addition, some fields of technology, most notably the software industry, are so densely overcrowded with patents that it is very difficult to conduct a comprehensive search and exclude the possibility of an infringement.⁶⁶

The threat of an injunction usually helps the patent holder to reach a lucrative settlement with the alleged infringer of its weak patent. When a firm that already uses the patented technology faces a suit, it is usually willing to reach a settlement reflecting the prospective costs of switching to a new technology. These costs often greatly exceed the value of the invention; that is, what the firm would have been willing to pay before it developed its product.⁶⁷ This is especially true if the technology has become accepted as an industry standard.⁶⁸ If the allegedly infringing product is significant for the firm's business, a judicial order to withdraw it from the market may result in a serious reduction of the firm's value, or even bankruptcy.⁶⁹ This naturally enhances the firm's willingness to settle.

The second threat associated with the possibility that a court will

injunctions, down from an estimated 95% pre-*eBay*."); Lily Lim & Sarah E. Craven, *Injunctions Enjoined; Remedies Restructured*, 25 SANTA CLARA COMPUTER & HIGH TECH. L.J. 787, 798 (2009) ("Before *eBay*, courts granted patentees injunctions 95% of the time after finding infringement. After *eBay*, this number has dipped to 72%.")

⁶⁴ La Belle, *supra* note 51 at 402 ("[E]ven after *eBay*, permanent injunctions remain the norm in patent cases when there is a finding of infringement.")

⁶⁵ Mark A. Lemley & A. Douglas Melamed, *Missing the Forest for the Trolls*, 113 COLUM. L. REV. 2117, 2149 (2013) ("[I]n software and computer technology, roughly 97% of patent suits are filed against independent inventors, not copiers.")

⁶⁶ Tun-Jen Chiang, *The Reciprocity of Search*, 66 VAND. L. REV. 1, 3 (2013) ("[P]roducers face excessively high search costs because a commercial product is often covered by thousands of overlapping patents and finding every last patent is impossible.")

⁶⁷ Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, 1993 (2007) ("[T]he threat of an injunction can enable a patent holder to negotiate royalties far in excess of the patent holder's true economic contribution."); Ted Sichelman, *Purging Patent Law of "Private Law" Remedies*, 92 TEX. L. REV. 517, 546 (2014) ("[T]he threat of an injunction coupled with high switching costs can enable the patentee to extract more than the social value of its invention in rents from the potential user.")

⁶⁸ Lemley & Shapiro, *supra* note 67, at 2009 ("For example, one patent owner charges a 0.75% royalty for patents that do not cover industry standards and 3.50% for patents that do cover industry standards. The technology does not have any greater inherent value when used as part of an industry standard, but the patent holder can demand almost five times as much money once the industry has made irreversible investments.")

Id.

⁶⁹ Leslie, *supra* note 10, at 136–37.

find the patent valid and infringed is that of the notoriously high patent damages.⁷⁰ Patent law provides that damages should compensate the patent owner for lost profits, but should amount to no less than a reasonable royalty.⁷¹ Lost profits and a reasonable royalty are both difficult to estimate, especially when the patented element is only one component of a larger product.⁷² The intensive focus on the patented technology during litigation leads courts to overestimate its market importance.⁷³ Scholars point out that courts systematically overestimate patent damages.⁷⁴ Indeed, patent damages reach extraordinarily high levels. For instance, in 2013, Samsung was subjected to \$935 million in damages for infringing Apple's patents on smartphone technology.⁷⁵ The average damages rate issued as an estimation of a reasonable royalty is 13.13%, which is much higher than the average patent royalties negotiated outside of court.⁷⁶ Furthermore, if the court finds the infringement to be willful, it may enhance damages up to three times and force the infringer to pay the patent holder's attorney fees.⁷⁷

The threat of massive, possibly bankrupting, damages pressures the alleged infringer to settle, even at a high price.⁷⁸ No matter how weak the patent may be, the stakes are simply too high to gamble. To make things worse, while establishing the amount of damages, courts use license and settlement fees paid out of fear of litigation as evidence of the market value of inventions, thus further elevating the damages standard.⁷⁹ This practice has a circular effect, since the enlarged

⁷⁰ Stijepko Tokic, *The Role of Consumers in Deterring Settlement Agreements Based on Invalid Patents: The Case of Non-Practicing Entities*, 2012 STAN. TECH. L. REV. 2, 10 (2012).

⁷¹ 35 U.S.C. § 284 (2012).

⁷² Lemley & Shapiro, *supra* note 67, at 2018; Lemley & Melamed, *supra* note 65, at 2143 ("Patent damages are unpredictable because the criteria most commonly used are imprecise and difficult to apply.").

⁷³ Lemley & Melamed, *supra* note 65, at 2144 ("[T]he intense focus in the trial on the patents-in-suit almost guarantees that their importance will be exaggerated relative to that of the other technologies and, thus, that the damages award will be based on an inflated sense of the value of the patents-in-suit.").

⁷⁴ Lemley & Shapiro, *supra* note 67, at 2018; *see* Lemley & Melamed, *supra* note 65, at 2143 ("[D]amages in patent infringement suits . . . are not only somewhat unpredictable but, as a general matter, excessive.").

⁷⁵ Julianne Pepitone, *Jury orders Samsung to pay Apple another \$290 million*, CNN: MONEY (Nov. 21, 2013, 6:21 PM ET), <http://money.cnn.com/2013/11/21/technology/mobile/apple-samsung-damages/>.

⁷⁶ Lemley & Shapiro, *supra* note 67, at 2032–33 ("The average royalty rate granted in all reasonable-royalty cases is 13.13% of the price of the infringing product. This number will strike many patent lawyers as surprisingly high; very few patent licenses negotiated without litigation (or even in settlement of it) result in royalty rates anywhere near that high.").

⁷⁷ 35 U.S.C. § 284.

⁷⁸ La Belle, *supra* note 51, at 402 ("[T]he potential for massive damages pressures many patent defendants into settlement."); Lemley & Melamed, *supra* note 65, at 2144 ("[S]ettlements and other transactions in the shadow of actual or threatened litigation will be influenced by the prospect of [the] inflated damages awards.").

⁷⁹ Lemley & Shapiro, *supra* note 67, at 2021.

damages increase the negotiation power of patent owners, further boosting settlement awards that are then used as evidence of the market value of inventions.⁸⁰

In addition to the risks associated with patent litigation itself, threats of such litigation scare away potential consumers and investors, making it difficult for the firm to obtain financing.⁸¹

Given the considerable threat associated with a weak patent for potential and alleged infringers on the one hand, and the high rates of court decisions invalidating patents on the other, one might expect that potential technology users would undertake steps to invalidate weak patents. Invalidating a patent would enable the competitors to use the invention without fear of litigation. Yet, as a matter of fact, weak patents are very rarely challenged in courts, and when this happens, parties usually settle, leaving the weak patent in force.⁸² Moreover, at times, parties settle even *after* a court's decision invalidating a patent. In such cases, the parties ask the court to vacate its own verdict, bringing the already invalidated patent back to life.⁸³ This might seem puzzling given the great potential benefits technology-users may gain from invalidating a patent. The answer to this puzzle is twofold.

First, even if the risks associated with litigation are relatively small for the particular firm, there is still a good chance that it will refrain from challenging the weak patent. Because of the collateral estoppel doctrine, once invalidated in one suit, the patent can no longer be enforced against any alleged infringers.⁸⁴ That is, invalidating a patent creates a public good—every firm on the market will be able to use the technology after the patent is declared invalid.⁸⁵ This situation creates a free-rider problem inherent to public goods: since patent litigation costs are extremely high and the “freed” technology will be enjoyed by everyone, usually no firm has sufficient incentive to bear the burden of pursuing patent invalidation. The millions of dollars a firm must spend to invalidate the patent can hardly be recouped in a market where multiple competitors drive prices down.⁸⁶

⁸⁰ *Id.* at 2022.

⁸¹ Leslie, *supra* note 10 at 125–27 (explaining how an invalid patent can scare away competitors' customers and venture capital); Fagundes & Masur, *supra* note 21, at 697 (“[I]nvalid patents can hamper a firm's ability to raise capital or write contracts with potential customers.”).

⁸² Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1501 (2001) (“The overwhelming majority of [patent] lawsuits settle or are abandoned before trial.”).

⁸³ Lemley & Shapiro, *supra* note 43, at 92–95.

⁸⁴ *Blonder-Tongue Laboratories, Inc. v. U. of Ill. Found.*, 402 U.S. 313 (1971).

⁸⁵ Lemley & Shapiro, *supra* note 67, at 88–90 (“Since invalidating a patent provides a public good, typically to the benefit of competitors and consumers, one can naturally consider policies to overcome this public-good problem.”).

⁸⁶ FED. TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY, Ch. 5 at 20 (2003), <http://www.ftc.gov/os/2003/10/innovationrpt.pdf> (“Because the costs of a challenge are borne by the challenger, but the benefits of invalidation spill over to other potential licensees and to consumers, the private

Second, a judicial decision invalidating a patent deprives the patent owner of its exclusive market position and, consequently, of its supracompetitive profits. Yet, since the technology becomes free for everyone, the challenging company will only be able to enjoy the lower competitive profits.⁸⁷ Because of the gap between the prospective loss to the patent owner and the prospective gain to the patent challenger, the parties have a strong incentive to settle, so that the patent remains valid and they can share the monopolistic profits.⁸⁸ Such settlements may take the form of a license. Alternatively, the patent owner may pay the competitor in order to prevent the patent from being challenged, or in order to request a court to vacate an already issued judicial holding of patent invalidity, thus making the patent valid again.⁸⁹ The practice of asking the court to vacate its own holding of invalidity has become rather common,⁹⁰ which is understandable given the mutual interest of the parties to settle and preserve market exclusivity. Courts grant vacatur motions in the vast majority of cases where they are asked to do so as part of a settlement agreement.⁹¹

Sums paid to competitors for not challenging the validity of its patent, or for asking the court to vacate its already issued decision of invalidity, are called “reverse payment settlements.”⁹² Such settlements are particularly common in the pharmaceutical field,⁹³ because the Hatch-Waxman Act grants the first challenger of a patent a 180-day period of market exclusivity.⁹⁴ The legitimacy of reverse payment

incentives to launch a challenge are less than would be warranted by the social return.”); see also Lemley & Shapiro, *supra* note 43, at 88–89; La Belle, *supra* note 31, at 65–66; Joseph Scott Miller, *Building a Better Bounty: Litigation-Stage Rewards for Defeating Patents*, 19 BERKELEY TECH. L.J. 667, 668 (2004).

⁸⁷ Mark A. Lemley, *Taking the Regulatory Nature of IP Seriously*, 92 TEX. L. REV. 107, 111 (2014) (“[T]he loss the patentee suffers from infringement is generally larger than the gain the infringer makes . . .”).

⁸⁸ Lemley & Shapiro, *supra* note 43, at 88–89.

⁸⁹ For further discussion, see Christopher M. Holman, *Do Reverse Payment Settlements Violate the Antitrust Laws?*, 23 SANTA CLARA HIGH TECH. L.J. 489 (2006); Herbert Hovenkamp, *Anticompetitive Patent Settlements and the Supreme Court’s Actavis Decision*, 15 MINN. J.L. SCI. & TECH. 3 (2014); Michael A. Carrier, *After Actavis: Seven Ways Forward*, 67 RUTGERS U. L. REV. 543 (2015).

⁹⁰ La Belle, *supra* note 51, at 424.

⁹¹ *Id.* at 425.

⁹² Lemley & Shapiro, *supra* note 43, at 92 (“[S]ettlements involving payments from incumbents to would-be generic suppliers [are] known as “reverse payments” because they flow from the patent holder to the challenger, in contrast to conventional licensing payments that challengers make to patent holders”).

⁹³ See, e.g., Schering-Plough Corp. v. F.T.C., 402 F.3d 1056 (11th Cir. 2005); *In re Tamoxifen Citrate Antitrust Litig.*, 466 F.3d 187 (2d Cir. 2006); *Arkansas Carpenters Health and Welfare Fund v. Bayer AG*, 604 F.3d 98 (2d Cir. 2010); *La. Wholesale Drug Co., Inc. v. Bayer AG*, 562 U.S. 1280 (2011); *F.T.C. v. Watson Pharm., Inc.*, 133 S. Ct. 787 (2012); *F.T.C. v. Actavis*, 133 S. Ct. 2223 (2013).

⁹⁴ Gregory Dolin, *Reverse Settlements as Patent Invalidity Signals*, 24 HARV. J.L. & TECH. 281, 283 (2011) (“The rise of reverse settlement agreements is a direct consequence of the incentives created by the Hatch-Waxman Act.”).

settlements has recently become questionable, as the Supreme Court recognized that they may violate antitrust laws.⁹⁵ More to the point of our discussion, such settlements illustrate that the gap between the competitor's expected profits and the monopolistic profits from a valid patent create a mutual interest of the parties to settle, even if the patent owner is the one to pay.⁹⁶

C. *The Risks Associated with Owning Weak Patents*

As the previous section has demonstrated, weak patents impose substantial risks on companies operating on the market, forcing them to settle with the weak patents' owners.⁹⁷ In order to gain a full perspective on the dynamics of weak patents, we should next inquire whether such patents impose any risks on their owners. In other words, we already know what one can gain from a weak patent, so now we need to ask what one can lose from such a patent.

If a court finds a patent invalid, the patent can obviously bring no further gains to its owner. Yet, the patent owner usually bears no additional losses. Particularly, patent licensees have no right to recoup royalties they have paid believing the patent to be valid.⁹⁸ Moreover, if a licensee ceased paying royalties before the patent was invalidated, the patent owner has a right to recover them.⁹⁹ Only an affirmative action to question patent validity releases the licensee from the duty to pay royalties if the patent is ultimately invalidated.¹⁰⁰ If a third party challenges the patent, the licensee must continue paying royalties until a court declares the patent invalid.¹⁰¹ The only exceptions to this rule are recognized in cases of particularly wrongful behavior on the part of the patent owner.¹⁰² Thus, a licensee is entitled to restitution for its royalty payments if the patent owner induced the licensee to enter the agreement by fraud.¹⁰³

⁹⁵ Actavis, 133 S. Ct. at 2234 (“[A reverse payment settlement] has the potential for genuine adverse effects on competition.”). For further discussion, see Michael A. Carrier, *A Response to Chief Justice Roberts: Why Antitrust Must Play a Role in the Analysis of Drug Patent Settlements*, 15 MINN. J. L. SCI. & TECH. 31, 36–37 (2014).

⁹⁶ Carrier, *supra* note 95, at 36 (“Because the brand makes more by keeping the generic out of the market than the two parties would receive by competing in the market, the parties have an incentive to cede the market to the brand firm and split the monopoly profits.”).

⁹⁷ See *supra* Section II.B.

⁹⁸ See, e.g., *Bristol Locknut Co. v. SPS Tech., Inc.*, 677 F.2d 1277 (9th Cir. 1982); *Hull v. Brunswick Corp.*, 704 F.2d 1195, 1203 (10th Cir. 1983); *Rite-Nail Packaging Corp. v. Berryfast, Inc.*, 706 F.2d 933, 936–37 (9th Cir. 1983).

⁹⁹ *Studiengesellschaft Kohle, M.B.H. v. Shell Oil Co.*, 112 F.3d 1561 (Fed. Cir. 1997).

¹⁰⁰ See *Bristol*, 677 F.2d at 1283.

¹⁰¹ *Hemstreet v. Spiegel, Inc.*, 851 F.2d 348, 350–51 (Fed. Cir. 1988) (holding that a settlement agreement may be enforced even after the patent was held invalid); *Studiengesellschaft*, 112 F.3d at 1680 (Fed. Cir. 1997) (“Enforcement of [the patent license] contract terms is not contingent upon validity of the patent which defines the subject matter of the license.”).

¹⁰² See *Transitron Elec. Corp. v. Hughes Aircraft Co.*, 649 F.2d 871 (1st Cir. 1981).

¹⁰³ *Transitron Elec. Corp.*, 649 F.2d at 874 (1st Cir. 1981).

Indeed, the licensee enjoys the protection of the patent and the accompanying exclusive market position regardless of patent validity. Under these circumstances, courts find it unjust to release the licensee from the duty to pay royalties for the rights it has enjoyed, should the patent be later invalidated.¹⁰⁴ While this argumentation might be logical, in practice this line of jurisprudence allows patent licensors and to reap the profits of invalid patents as long as these patents remain in force.

Similarly, if the patent owner and the alleged infringer reach a settlement prior to a judicial decision declaring patent invalidity, the patent owner will keep the settlement fee, however large it may be.¹⁰⁵ Further, the owner of an invalid patent does not have to compensate the competitor who stopped distributing a product because of a litigation threat, the consumers who paid premium prices because of its exclusive market position, or any other third parties who incurred losses because of its patent.

The worst-case scenario for a patent owner whose patent has been invalidated is a possible finding of antitrust liability. Patent protection generally provides immunity against antitrust claims related to market exclusivity over the patented product.¹⁰⁶ However, there are two exceptions to this rule. The first is sham litigation, which requires proof that the patent owner pursued an objectively baseless lawsuit, with the knowledge of patent invalidity and the intent to harm its competitor through the legal process rather than to succeed on merits.¹⁰⁷ The second is a *Walker Process* claim, which requires demonstrating that the patent was obtained by willful fraud on the PTO, and would not have been granted in the absence of such fraud.¹⁰⁸

Sham litigation and a *Walker Process* are the only real dangers an owner of a weak patent faces. Indeed, antitrust damages may reach very

¹⁰⁴ See *Studiengesellschaft*, 112 F.3d at 1680 (“Shell had the benefits of producing polypropylene insulated from unlicensed competition, insulated from investigations of infringement, and even insulated from royalties To these benefits, Shell now seeks to add the benefit of abrogating its agreement and avoiding its breach of the contract. . . . [T]his court must prevent the injustice of allowing Shell to exploit the protection of the contract and patent rights and then later to abandon conveniently its obligations under those same rights.”).

¹⁰⁵ *Ransburg Electro-Coating Corp. v. Spiller & Spiller, Inc.*, 489 F.2d 974, 977 (7th Cir. 1973).

¹⁰⁶ This rule has been established in two leading precedents: *E. R.R. Presidents Conference v. Noerr Motor Freight, Inc.*, 365 U.S. 127, 135 (1961) and *United Mine Workers v. Pennington*, 381 U.S. 657, 670 (1965). Accordingly, it is known as “the *Noerr-Pennington* doctrine.” For cases implementing this doctrine, see, e.g., *Applera Corp. v. MJ Research Inc.*, 303 F. Supp. 2d 130 (D. Conn. 2004) and *Cornucopia Prod., L.L.C. v. Dyson, Inc.*, 881 F. Supp. 2d 1086 (D. Ariz. 2012).

¹⁰⁷ The first case to recognize sham litigation is *Handgards, Inc. v. Ethicon, Inc.*, 601 F.2d 986, 996 (9th Cir. 1979). See also *Prof'l Real Estate Inv'r, Inc. v. Columbia Pictures Indus., Inc.*, 508 U.S. 49, 50, (1993); *Nobelpharma AB v. Implant Innovations, Inc.*, 141 F.3d 1059, 1071 (Fed. Cir. 1998).

¹⁰⁸ *Walker Process Equip., Inc. v. Food Mach. & Chem. Corp.*, 382 U.S. 172 (1965); see also *Am. Cyanamid Co.*, 72 F.T.C. 623, 684-85 (1967); *Argus Chem. Corp. v. Fibre Glass-Evercoat, Inc.*, 812 F.2d 1381, 1384-85 (Fed. Cir. 1987).

high levels,¹⁰⁹ and there is a possibility to ask the court to enlarge the real damages up to treble damages.¹¹⁰ Even so, these types of antitrust claims are irrelevant for most patents, since such claims can only arise when a patentee enforces its patent by filing infringement suits.¹¹¹ Meanwhile, most patents are respected by firms without litigation.¹¹²

In addition, antitrust liability arises only when the patentee acts with positive knowledge of its patent's invalidity.¹¹³ This is rarely the case; patent applicants are usually aware of their patent's weakness, but rarely have positive knowledge of invalidity. Just like the duty to disclose prior art,¹¹⁴ the risk of antitrust liability functions as a disincentive to investigate the patentability of one's invention.

Most importantly, an antitrust suit against a patent owner is extremely difficult to prove. Merely bringing an infringement suit based on a patent that turns out to be invalid is not enough to raise antitrust liability.¹¹⁵ While both sham litigation and a *Walker Process* require a showing of bad faith, the patent owner enjoys a presumption of good faith regardless of the validity of its patent.¹¹⁶ This presumption can be only rebutted by clear and convincing evidence,¹¹⁷ making the task of proving bad intentions even more difficult.¹¹⁸

Moreover, even if the plaintiff accomplishes the challenging task of proving sham litigation or a *Walker Process*, this is just the start. The plaintiff will have to go on to prove "a substantive antitrust violation," according to the Sherman Act.¹¹⁹ Specifically, the plaintiff will have to

¹⁰⁹ M. Sean Royall & Joshua Lipton, *The Complexities of Litigating Generic Drug Exclusion Claims in the Antitrust Class Action Context*, 24-SPG ANTITRUST 22, 22 (Spring 2010) ("The stakes in [patent antitrust] cases can be enormous, as plaintiffs routinely seek as compensatory damages a large portion of the branded manufacturer's revenues over a multiyear period. Damage claims often reach into the billions of dollars.").

¹¹⁰ *Id.*

¹¹¹ Leslie, *supra* note 10, at 112 ("Merely obtaining an invalid market-dominating patent--even when that patent was obtained by a monopolist--can not trigger antitrust liability in the absence of enforcement of the patent.").

¹¹² *Id.* at 113.

¹¹³ See *supra* notes 107–108.

¹¹⁴ See 37 C.F.R. § 1.56.

¹¹⁵ *Technicon Instruments Corp. v. Alpkem Corp.*, 866 F.2d 417 (Fed. Cir. 1989); see also EDWARD K. ESPING ET AL., *MONOPOLIES*, § 148 (2014) ("The mere bringing of a single infringement suit by the holder of a patent that is invalid for lack of enablement in and of itself cannot establish an antitrust violation.").

¹¹⁶ *Id.*

¹¹⁷ *Handgards, Inc. v. Ethicon, Inc.* 601 F.2d 986, 996 (9th Cir. 1979) ("[A] patent holder's infringement suit is presumptively in good faith and that this presumption can be rebutted only by clear and convincing evidence[.]").

¹¹⁸ David R. Steinman & Danielle S. Fitzpatrick, *Antitrust Counterclaims in Patent Infringement Cases: A Guide to Walker Process and Sham-Litigation Claims*, 10 TEX. INTELL. PROP. L.J. 95, 108 (2011) ("Walker Process and Handgards or sham litigation claims remain extremely difficult to plead and to prove.").

¹¹⁹ 15 U.S.C. §§ 1–7.

prove (1) a specific intent to control prices or destroy competition; (2) predatory or anticompetitive conduct to accomplish the monopolization; (3) a dangerous probability of success; and (4) antitrust injury to the plaintiff's business.¹²⁰ All these requirements make proving antitrust violation by invalid patent enforcement next to impossible. Unsurprisingly, such claims are very rarely successful.¹²¹ Therefore, notwithstanding its grave consequences, the minuscule probability of success prevents antitrust liability from becoming a serious threat for a weak patent's owner.

It is also noteworthy in this context that a competitor suing for antitrust violation may collect only a portion of the patent owner's profits.¹²² Specifically, it may only collect its own lost profits; that is, what it would have gained in a competitive environment.¹²³ This amount, even post-trebling, is usually much lower than the patent owner's monopolistic gains.¹²⁴ The patentee will thus be able to keep a significant portion of the profits made out of its invalid patent. Bottom line—even in this unlucky case for the patent owner, the invalid patent ultimately brings more profits than losses.

Things are different when the consumers are the antitrust plaintiffs. Since their damages consist of the higher prices they paid because of the patent monopoly, they may receive sums that amount to disgorgement of the plaintiff's profits.¹²⁵ In this case, the patentee will have to return all of its profits. Apart from litigation costs, even in this case the patentee does not lose more than it has benefitted from its invalid patent. In addition, courts are split on the question of whether consumers have standing to pursue a *Walker Process* claim,¹²⁶ and

¹²⁰ *Walker Process Equip., Inc. v. Food Mach. & Chem. Corp.*, 382 U.S. 172, 174 (1965) (“We have concluded that the enforcement of a patent procured by fraud on the Patent Office may be violative of § 2 of the Sherman Act provided the other elements necessary to a § 2 case are present.”); *Prof'l Real Estate Inv'r, Inc. v. Columbia Pictures Indus., Inc.*, 508 U.S. 49, 61 (1993) (“Of course, even a plaintiff who defeats the defendant's claim to *Noerr* immunity by demonstrating both the objective and the subjective components of a sham must still prove a substantive antitrust violation.”).

¹²¹ Christopher R. Leslie, *The Role of Consumers in Walker Process Litigation*, 13 SW. J. L. & TRADE AM. 281, 285 (2007) (“Competitors pursuing *Walker Process* claims have not fared well. Commentators have asserted that, in the past two decades, only three *Walker Process* claims have been successful.”).

¹²² See *infra* note 123 and accompanying text.

¹²³ Leslie, *supra* note 121, at 290 (“A successful competitor-plaintiff in *Walker Process* litigation can generally recover its lost profits and the litigation costs incurred in defending against the patentee's infringement suit. However, if only excluded competitors can bring *Walker Process* claims, the monopolist's ill-gotten gains will generally not be disgorged because these gains are not a function of the competitor's lost sales.”).

¹²⁴ *Id.* at 290–91 (“The patentee is gaining monopoly profits, but the excluded competitors are losing competitive profits. Even post-trebling, these lost profits can be less than the gains of illegal monopoly.”).

¹²⁵ *Id.* at 291–92.

¹²⁶ *Id.* at 286 (“Courts have split on whether consumers have standing to bring *Walker Process* litigation.”); Tokic, *supra* note 70, at 26 (“Courts and commentators are currently divided on the

hence the probability of this scenario is very low indeed. The very distant possibility that the firm might have to return the profits it gained by an invalid patent will hardly discourage it from acquiring and enforcing such a patent. All in all, the risk of antitrust liability may hardly have any significant chilling effect on the practice of accumulating weak patents and making profits out of them.

D. *The Social Costs of Weak Patents*

As we have seen in the previous sections, an issued patent has a very good chance of remaining in force, regardless of its objective validity.¹²⁷ Such a patent may bring many benefits to its owner, securing an exclusive market position, and allowing the owner to collect lucrative license and settlement fees. The risks associated with a weak patent are insignificant. Not surprisingly, this reality stimulates companies to register patents on every possible technology, however trivial.

Naturally, patent registration and enforcement entail costs. Yet, the prospect of obtaining licensing and settlement agreements apparently justifies these costs for many firms. Thus, in the fields of semiconductors and computer software, it is common for a company to build “patent portfolios” for the products they develop, so that different components of these products are patented separately.¹²⁸ This practice creates so-called “patent thickets:” a situation in which hundreds, or even thousands, of patents cover a single product, and it is virtually impossible to discover all of them.¹²⁹ Patent thickets drive up search costs and increase litigation risks for productive firms, thus hampering their business and sometimes deterring them from entering the market altogether.¹³⁰

A common strategy that enables a company to operate in a market

issue of whether and when consumers should have standing to raise *Walker Process* claims.”). Compare, e.g., *Molecular Diagnostic Labs. v. Hoffman-LaRoche*, 402 F. Supp. 2d 276 (D.D.C. 2005) (holding that consumers have unconditional standing to raise *Walker Process* claims), with *In re Remeron Antitrust Litig.*, 335 F. Supp. 2d 522 (D.N.J. 2004) (denying consumer standing to raise such claims).

¹²⁷ See discussion *supra* Parts II.A, II.B, II.C.

¹²⁸ Lemley & Shapiro, *supra* note 43, at 81 (“In a number of key industries, particularly semiconductors and computer software, companies file numerous patent applications on related components that are integrated into a single functional product.” (citations omitted)).

¹²⁹ *Id.* at 81–82 (“The result is a ‘patent thicket,’ in which hundreds of patents can apply to a single product.”).

¹³⁰ *Id.* at 82 (“[P]atent thickets can have deleterious effects on both competition and innovation.”); Chiang, *supra* note 66, at 3 (“In what has become known as the ‘patent thicket’ literature, . . . critics argue that producers face excessively high search costs because a commercial product is often covered by thousands of overlapping patents and finding every last patent is impossible.”); Fagundes & Masur, *supra* note 21, at 697 (“The search costs of combing through a technological field littered with patents can be prohibitively high for small firms.”). “The patents that comprise the ‘thicket’ . . . do little more than drive up transaction costs for firms that genuinely want to innovate and bring products to markets.” *Id.* at 698–99.

saturated with patents is to build patent portfolios of its own and enter into cross-licensing agreements with other patent holders.¹³¹ While such “defensive patenting” is a reasonable and virtually indispensable practice in certain fields of technology, it further increases the density of patents in these fields,¹³² creating “royalty stacking”—a situation in which a company wishing to develop a product has to acquire patent licenses from numerous firms.¹³³ Royalty stacking considerably complicates the development process for established companies and creates a significant barrier to entry for new ones.¹³⁴

In this market reality, acquiring patents is a necessity, not a choice. Patents are essential to enter certain fields of technology and to continue developing products in these fields. Companies that used to operate without extensive patenting realized that this strategy exposes them to lawsuits without the possibility of shielding themselves with counter-claims of infringement.¹³⁵ Accordingly, they learned that they too must build defensive patent portfolios. Yet, once a patent portfolio is on hand, it provides an opportunity, not only for defense, but also for attack.¹³⁶ Many companies that acquired patents to defend themselves from litigation later used them to threaten their competitors, forcing them to acquire licenses or exit the market.¹³⁷

The practice of asserting patent rights is very profitable, especially if the asserting company owns a large patent portfolio. The already discussed costs and risks associated with patent litigation multiply when a firm faces the prospect of being sued for infringing dozens, or even hundreds, of patents. The firm is thus put under heavy pressure to settle,¹³⁸ and the owner of a patent portfolio is able to collect royalties

¹³¹ Lemley & Shapiro, *supra* note 43, at 82 (“One way to cut through the patent thicket is for incumbents with extensive patent portfolios to enter into broad cross-licenses . . . to “clear” the thicket.”).

¹³² *Id.* (“Defensive patenting is a natural, even inevitable, strategy in industries with patent thickets, but defensive patenting itself can increase the density of the thicket.”).

¹³³ *Id.* (“[T]he result is inefficient ‘royalty stacking,’ in which a manufacturer without its own patent portfolio must pay royalties to a number of separate companies.”).

¹³⁴ *Id.*

¹³⁵ See, e.g., Lemley & Melamed, *supra* note 65, at 2135–36 (“Microsoft in the 1990s disliked software patents; it started acquiring them after it got sued by a competitor, Stac, and lost a substantial verdict.”).

¹³⁶ *Id.* (“At the time, Microsoft had no interest in suing anyone for patent infringement. But in recent years, it has increasingly turned to patent litigation to extract royalties from its competitors, particularly in the smartphone business. Similarly, Yahoo long viewed its patent portfolio as a defensive one, but as its fortunes in social media declined, it began suing younger companies like Facebook. Other examples abound.”).

¹³⁷ *Id.*

¹³⁸ Lemley & Shapiro, *supra* note 43, at 82 (“If the holder of a large patent portfolio asserts its patents against another company and claims that the other company is infringing dozens or even hundreds of its patents, the target company faces a very complex and costly undertaking if it chooses to fight all of those patent infringement claims in court, knowing that it has to win all or nearly all of the individual patent cases to avoid paying significant royalties or even being enjoined from selling its product.”).

without substantial effort.

In fact, the practice of enforcing patents is so profitable that it has evolved into a business in and of itself. Non-Practicing Entities (NPEs) are companies whose sole business is collecting money from patent fees and settlement agreements.¹³⁹ However, not all NPEs are the same. Individual inventors unable to produce themselves, as well as universities, also fall under the definition of an NPE.¹⁴⁰ However, the number of NPEs inventing nothing but aggressively asserting their patent rights is significant. These NPEs are more negatively referred to as “patent trolls.” Trolls either patent ideas that require little research or acquire patents from other companies.¹⁴¹ Since they are not involved in production in any way, trolls are not interested in cross-licensing, and the only way to settle with them is by paying money.¹⁴²

Today, NPEs are very active in enforcing their patents. Many of them own extensive patent portfolios, consisting of hundreds and even thousands of patents, which they are more likely to enforce than producing firms.¹⁴³ NPEs are responsible for more than two-thirds of infringement suits,¹⁴⁴ they own the majority of the most-litigated patents,¹⁴⁵ and often, they simultaneously sue many companies.¹⁴⁶ When litigated all the way to trial, suits initiated by NPEs fail in the vast

¹³⁹ Tokic, *supra* note 70, at 17 (“An industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees.”) (quoting *eBay, Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 396 (2006)) (Kennedy, J., concurring); Lemley & Shapiro, *supra* note 67, at 2009 (“Not surprisingly, the possibility of revenue from [patent] holdups has enticed a number of firms into the business, not of innovating, but of buying patents and suing to enforce them.”).

¹⁴⁰ David L. Schwartz & Jay P. Kesan, *Analyzing the Role of Non-Practicing Entities in the Patent System*, 99 CORNELL L. REV. 425, 426 (2014) (“[R]ecently, an increasing number of patent lawsuits have been initiated by entities who do not manufacture products themselves, including universities, individual inventors, failed businesses, and speculators who purchase patents from others. This heterogeneous group of patent holders has loosely been referred to as ‘non-practicing entities,’ or ‘NPEs.’”).

¹⁴¹ Malani & Masur, *supra* note 29, at 645 (“On the flip side, there are frequent complaints about ‘patent trolls’ or ‘non-practicing entities’ (NPEs) who either patent ideas that require little research or purchase patents based on others’ research, then do not make any risky investment to develop those patented ideas.”).

¹⁴² Tokic, *supra* note 70, at 4 (“[T]he business model of NPEs provides little incentive to cross-license[.]”).

¹⁴³ *Id.* at 3.

¹⁴⁴ *Id.* at 1 (“[A]most two-thirds of these most-litigated patents are owned by NPEs.”); Lemley & Melamed, *supra* note 65, at 2123 (“[C]ases involving the most-litigated patents are... overwhelmingly filed by patent trolls[.]”); James E. Bessen & Brian J. Love, *Make the Patent “Polluters” Pay: Using Pigovian Fees to Curb Patent Abuse*, 4 CAL. L. REV. CIR. 84 (2013) (“In fact, companies that own patents purely for the sake of enforcement are responsible for more than two-thirds of suits, and for more than four-fifths of all individual infringement claims.”).

¹⁴⁵ Tokic, *supra* note 70, at 1 (“[A]most two-thirds of [the] most-litigated patents are owned by NPEs.”).

¹⁴⁶ *Id.* at 5 (“[T]he NPEs can spread their costs by suing as many defendants as possible, and exacting a settlement from even a relatively small number of defendants can be very lucrative. In fact, there have been cases where NPEs sued over 20 defendants.”).

majority of cases.¹⁴⁷ The already mentioned *eBay* decision of 2006 made it more difficult for NPEs than for practicing entities to obtain injunctions.¹⁴⁸ Thus, the risk of losing an infringement case to an NPE is not high, and the risk of an injunction is even lower. Yet, because these risks are still substantial, there is much to lose, and litigation costs are so high, nine out of ten NPE suits settle outside of court.¹⁴⁹ Even if the asserted patent is clearly invalid, a rational firm will be willing to settle for at least the expected litigation expenses, which in many cases is a sum high enough to satisfy the NPE.¹⁵⁰

Therefore, NPEs do not really care about the fact that most of their patents turn out to be invalid in court.¹⁵¹ The business model of aggregating many weak patents and reaching multiple lucrative settlements proves to be very profitable.¹⁵² In fact, the NPE business is so lucrative that large producing companies increasingly take on NPE attributes, and some switch to the NPE model altogether.¹⁵³

NPEs raise significant concerns among legal scholars, the government, the legislature, and the press.¹⁵⁴ They have come under

¹⁴⁷ *Id.* at 1 (“NPEs, even those that own heavily litigated patents, very rarely prevail in trial on the merits[.]”); Lemley & Melamed, *supra* note 65, at 2123 (“[C]ases involving the most-litigated patents are (1) overwhelmingly filed by patent trolls and (2) overwhelmingly unsuccessful when litigated to judgment.”).

¹⁴⁸ *eBay, Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006). For discussions of its impact, see Chien & Lemley *supra* note 63, at 2, 9–10; Lim & Craven *supra* note 63, at 798; Karen E. Sandrik, *Reframing Patent Remedies*, 67 U. MIAMI L. REV. 95, 110–11 (2012) (explaining that one of the post-*eBay* effects is that “NPEs are hard-pressed to get an injunction”).

¹⁴⁹ Tokic, *supra* note 70, at 5.

¹⁵⁰ Lemley & Melamed, *supra* note 65, at 2125 (“[A] growing number of trolls are interested in quick, low-value settlements for a variety of patents [T]hey rely on the high cost of patent litigation . . . to induce the parties they sue to settle for small amounts of money rather than pay millions to their lawyers.”).

¹⁵¹ *Id.* at 2124 (“Despite evidence of failure in court, the troll business model seems to be not only surviving, but thriving.”); Sichelman, *supra* note 67, at 537–38 (“Despite the seemingly questionable nature of [NPEs’] patents . . . many of [their] suits have led to relatively large nuisance-value settlements given the high costs and risks of litigation for defendants.”).

¹⁵² Lemley & Melamed, *supra* note 65, at 2126 (“While no individual patent suit in this model makes a lot of money, the model can be lucrative because patent holders can sue lots of defendants on the same patent, forcing multiple settlements, and because there are lots of patents to be had for very little money as long as quality is unimportant.”); Tokic, *supra* note 70, at 10 (“The risks and the costs for alleged infringers are simply too high to take any chances, so even companies with excellent defenses have a strong incentive to settle. Therefore, due to their business model, the NPEs are well positioned to extort very high settlements from alleged infringers.”).

¹⁵³ Lemley & Melamed, *supra* note 65, at 2120–21 (“[P]racticing entities are increasingly engaging in “patent privateering,” in which product-producing companies take on many of the attributes of trolls.”); Bessen & Love, *supra* note 144, at 84 (“Like trolls, many [producing companies] assert high-tech patents acquired specifically for use in litigation against competitors. Worse still, others are slowly transforming into trolls themselves.”).

¹⁵⁴ Lemley & Melamed, *supra* note 65, at 2118–19 (“Patent trolls . . . are on everyone’s mind. NPR has run feature stories on the problems with trolls. The New York Times and the Wall Street Journal have run front-page articles about them. The Federal Trade Commission has issued reports recommending action against trolls. Congress passed patent reform legislation that was designed in part to deal with the problem of trolls and is currently considering new legislation that

heavy fire for producing nothing themselves, but merely enforcing their questionable patents against genuinely innovative and productive companies.¹⁵⁵ NPEs do not take the risk of developing commercial products and introducing them into the market. Instead, they wait until other firms endeavor to commercialize a product and then threaten those firms with legal suits.¹⁵⁶ In this way, NPEs are able to participate in the profits of productive firms without sharing in their risks.¹⁵⁷ Scholars argue that NPEs impose a “hidden tax” on productive firms, inhibiting innovation, preventing a large number of products from entering the market, and ultimately undermining the incentives to innovate,¹⁵⁸ which is all contrary to the very *raison d’être* of patent law. Worse still, NPEs do not significantly reward the inventors from whom they acquire their patents.¹⁵⁹ Functioning like intermediaries, NPEs usually keep almost all the money gained from patent assertion activities for themselves.¹⁶⁰

All in all, weak patents create very real barriers to entry, obstruct innovation, and impose significant costs on productive firms. These are ultimately social costs: society is disadvantaged by impeded innovation, market concentration, and increased consumer prices. Since weak

is intended to apply specifically to patent trolls. Companies, engineers, lawyers, and scholars have spent enormous amounts of time complaining about trolls. . . . President Obama went out of his way to condemn them in a public address.”).

¹⁵⁵ See, e.g., Michael Risch, *Patent Troll Myths*, 42 SETON HALL L. REV. 457, 459 (2012); Erik N. Hovenkamp, *Predatory Patent Litigation 3* (Aug. 5, 2013) (unpublished manuscript), <http://papers.ssrn.com/abstract=2308115>.

¹⁵⁶ Walter O. Alomar-Jiménez, *Harmonizing Ebay*, 1 U. P.R. BUS. L.J. 17, 24 (2010); Christopher A. Harkins, *Fending Off Paper Patents and Patent Trolls: A Novel “Cold Fusion” Defense Because Changing Times Demand It*, 17 ALB. L.J. SCI. & TECH. 407, 407 (2007).

¹⁵⁷ Malani & Masur, *supra* note 29, at 645 (“[P]atent trolls’ or ‘non-practicing entities’ (NPEs) . . . either patent ideas that require little research or purchase patents based on others’ research, then do not make any risky investment to develop those patented ideas.”).

¹⁵⁸ Catherine Tucker, *Patent Trolls and Technology Diffusion*, (TILEC Discussion Paper No. 2012-030, 2013), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2136955 (demonstrating empirically that trolls’ litigation inhibits innovation in the medical imaging technology market); Elizabeth D. Ferrill, *Patent Investment Trusts: Let’s Build a PIT to Catch the Patent Trolls*, 6 N.C. J.L. & TECH. 367, 377 (2005) (“[T]he patent troll problem amount[s] to a hidden tax on technology products, hampering innovation and preventing a large number of products from entering the market because the manufacturer could not afford the risk of patent litigation.”); James Bessen & Michael J. Meurer, *The Direct Costs from NPE Disputes*, 99 CORNELL L. REV. 387, 411 (2014) (“NPE patent assertions hinder innovation by hurting small inventors[.]”); Blair Silver, *Controlling Patent Trolling With Civil RICO*, 11 YALE J.L. & TECH. 70, 73 (2009) (“Patent trolling . . . raises the cost of manufacturing due to the cost of litigation, settlement, and extreme licensing fees. Raising such costs . . . may be a disincentive to innovate.”); Victoria E. Luxardo, *Towards a Solution to the Problem of Illegitimate Patent Enforcement Practices in the United States: An Equitable Affirmative Defense of “Fair Use” in Patent*, 20 EMORY INT’L L. REV. 791, 796-98 (2006).

¹⁵⁹ Lemley & Melamed, *supra* note 65, at 2125 (“[T]here is little evidence that trolls significantly increase rewards to inventors.”); Schwartz & Kesan, *supra* note 140, at 429 (“[W]orst of all, NPEs do not materially help the original inventors of the patents. They are not returning any significant money to the inventors; instead, as intermediaries, the NPEs and their lawyers pocket almost all of the revenues.”).

¹⁶⁰ *Id.*

patents frequently cover obvious or already known technologies that contribute little or nothing to society, their high social costs are unjustified and constitute a pure social loss. In other words, in some fields of technology, the patent system is functioning very differently from its anticipated goal.¹⁶¹ Instead of serving the public interest, it is abused in a way that puts a heavy and unnecessary burden on the society, thereby producing the sort of “cobra effect” described at the beginning of this Article.

E. *Attempts and Proposals to Solve the Problem*

Courts have demonstrated awareness of the problematic situation in the field of patents. In the last decade, they have introduced several significant reforms to patent doctrines designed to alleviate the burden that excessive patenting currently imposes on society. One of them was the aforementioned Supreme Court’s *eBay* decision, which made it more difficult for patent holders, especially NPEs, to obtain injunctive relief.¹⁶² Another turning point was the *Seagate* case, in which the United States Court of Appeals for the Federal Circuit raised the standard of proving willful patent infringement, which is a prerequisite for obtaining treble damages.¹⁶³ An additional important change in patent law occurred in *KSR v. Teleflex*, where the Supreme Court suggested that courts should not apply too rigid and formalistic standards while examining patent invalidity claims.¹⁶⁴ This decision made it significantly easier to invalidate patents.¹⁶⁵ Moreover, in a later series of decisions, the Supreme Court restricted the notion of patentable subject matter,¹⁶⁶ *inter alia* in the field of software.¹⁶⁷

¹⁶¹ For a thorough discussion, see ADAM B. JAFFE & JOSH LERNER, INNOVATION AND ITS DISCONTENTS: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION AND PROGRESS, AND WHAT TO DO ABOUT IT (2004).

¹⁶² *eBay, Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006). For discussions of the decision’s impact, see Chien & Lemley *supra* note 63, at 2, 9–10; Lim & Craven *supra* note 63, at 798; Sandrik *supra* note 148, at 110–111.

¹⁶³ *In re Seagate Tech. L.L.C.*, 497 F.3d 1360 (Fed. Cir. 2007). The actual impact of this decision is not significant though. See Sandrik, *supra* note 148, at 106–7 (“Many patent scholars and commentators opined that the standard set in *Seagate*—defining willfulness as requiring objectively reckless conduct instead of merely negligent conduct—would result in fewer findings of willful infringement and, therefore, fewer awards of enhanced damages. Yet, in a recent empirical study, it is reported that willfulness findings have only decreased by about ten percent (a change that was not statistically significant).”).

¹⁶⁴ *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007).

¹⁶⁵ Tokic, *supra* note 70, at 35–36 (“Before . . . [the *KSR* decision] . . . the Federal Circuit only affirmed obviousness findings 66.7% of time, while reversing to non-obvious on little more than 11% of occasions. After *KSR*, obviousness findings of lower courts were affirmed at 84.6% and vacated and remanded in 15.4% of the times . . . In sum, the *KSR* decision makes it much easier to invalidate patents based on obviousness, which impacts all patent holders, including the NPEs.”).

¹⁶⁶ *Ass’n for Molecular Pathology v. Myriad Genetics Inc.*, 133 S. Ct. 2107 (2013); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289 (2012).

¹⁶⁷ *Alice Corp. v. CLS Bank Int’l*, 134 S. Ct. 2347 (2014).

Finally, in its *Highmark*¹⁶⁸ and *Octane*¹⁶⁹ decisions, the Supreme Court broadened the potential for patent litigants—particularly defendants—to receive an award of attorney fees.¹⁷⁰

Members of Congress have shown deep concern with the current functioning of the patent system as well. They have introduced numerous bills proposing a variety of reforms designed to cure its ills.¹⁷¹ These bills aim at improving the quality of patent examination,¹⁷² reducing the phenomenon of patent abuse,¹⁷³ and introducing mechanisms of fee shifting.¹⁷⁴

The most significant success of these efforts so far has been the Leahy-Smith America Invents Act of 2011 (AIA).¹⁷⁵ Most notably, the AIA replaced the existing administrative procedure for patent reexamination—*inter partes* reexamination—with a new one, the *inter partes* review (IPR), so as to make this avenue an inexpensive and efficient alternative to patent litigation.¹⁷⁶ A study of early statistics revealed that the new procedure is both quicker and more likely to result in patent invalidation than the old one.¹⁷⁷ Yet, carrying out an IPR has turned out to be almost as expensive as handling a patent suit, which probably explains the relatively minor usage of the procedure by technology purchasers and by small- and medium-sized enterprises.¹⁷⁸

In addition to IPR, the AIA also rendered suits against two or more disparate companies in one complaint impossible, with the aim of

¹⁶⁸ *Highmark Inc. v. Allcare Health Mgmt. Sys., Inc.*, 134 S. Ct. 1744 (2014).

¹⁶⁹ *Octane Fitness, L.L.C. v. ICON Health & Fitness, Inc.*, 134 S. Ct. 1749 (2014).

¹⁷⁰ *Highmark Inc. v. Allcare Health Mgmt. Sys., Inc.*, 134 S. Ct. 1744 (2014); *Octane Fitness, L.L.C. v. ICON Health & Fitness, Inc.*, 134 S. Ct. 1749 (2014).

¹⁷¹ Bessen & Love, *supra* note 144, at 84 (“Patent reform bills, it seems, are suddenly falling like rain.”); La Belle, *supra* note 51, at 403.

¹⁷² Patent Quality Improvement Act, S. 866, 113th Cong. (1st Sess. 2013); Patent Transparency and Improvements Act, S. 1720, 113th Cong. (1st Sess. 2013).

¹⁷³ Patent Abuse Reduction Act, S. 1013, 113th Cong. (1st Sess. 2013); STOP Act, H.R. 2766, 113th Cong. (1st Sess. 2013); Patent Litigation and Innovation Act, H.R. 2639, 113th Cong. (1st Sess. 2013); Innovation Act, H.R. 3309, 113th Cong. (1st Sess. 2013).

¹⁷⁴ SHIELD Act, H.R. 845, 113th Cong. (1st Sess. 2013); Patent Litigation Integrity Act, S. 1612, 113th Cong. (1st Sess. 2013).

¹⁷⁵ Leahy-Smith America Invents Act of 2011, Pub. L. No. 112-29, 125 Stat. 284 (2011); Gideon Mark & T. Leigh Anenson, *Inequitable Conduct and Walker Process Claims after Therasense and the America Invents Act*, 16 U. PA. J. BUS. L. 361, 404 (2014) (“The AIA, signed into law on September 16, 2011 and fully in effect in March 2013, is the most significant revision to the U.S. patent regime since the 1952 enactment of the Patent Act, which recodified the entirety of U.S. patent law. The AIA may be the most significant change to U.S. patent laws since the 1836 Patent Act, which established the modern American system of patent examination.”).

¹⁷⁶ For discussion, see Jonathan Tamimi, *Breaking Bad Patents: The Formula for Quick, Inexpensive Resolution of Patent Validity*, 29 BERKELEY TECH. L.J. 587 (2014).

¹⁷⁷ Brian J. Love & Shawn Ambwani, *Inter Partes Review: An Early Look at the Numbers*, 81 U. CHI. L. REV. DIALOGUE 93, 101–02 (2014).

¹⁷⁸ Gaia Bernstein, *The Rise of the End User in Patent Litigation*, 55 B.C. L. REV. 1443 (2014); Brian J. Love, *Inter Partes Review as a Shield for Technology Purchasers: A Response to Gaia Bernstein’s The Rise of the End-User in Patent Litigation*, 56 B.C. L. REV. 1075, 1093 (2015).

discouraging the practice of extensive patent assertion.¹⁷⁹ However, this move has apparently only resulted in a sharp rise of patent infringement filings.¹⁸⁰

To sum up, notwithstanding some positive changes, the massive abuse of the patent system persists.¹⁸¹ A large body of legal scholarship suggests further amendments to patent law. These suggestions include various ways of improving the accuracy of the PTO examination for all or a selected group of patents,¹⁸² making patent registration or maintenance costly,¹⁸³ shifting the burden to prove patent validity to the applicant,¹⁸⁴ and raising the standard of patentability.¹⁸⁵ Additional suggestions include imposing various limitations on the remedies available for patent infringement,¹⁸⁶ introducing an automatic fee-shifting regime,¹⁸⁷ establishing a right to remedies for patent abuse,¹⁸⁸ and spreading patent invalidity to related patents.¹⁸⁹ Another notable suggestion involves “raising the stakes” in patent cases: obliging a patentee to pay penalties to a successful challenger on the one hand, while extending the patent term or paying a monetary reward to the patent holder who prevails in trial on the other.¹⁹⁰

Patent law thus seems to be at an interesting historical point, with many scholars and policymakers conceding that it is not functioning as expected. Reforms have already begun to emerge, and sufficient pressure is being exerted for further improvements. Yet, the proposed and the already accepted reforms are inaccurate in terms of their potential effect on the patentee’s behavior. It is thus not clear what degree of PTO examination accuracy will put an end to the practice of obtaining weak patents, and how difficult and costly patent registration

¹⁷⁹ 35 U.S.C. § 299 (“Joinder of Parties”).

¹⁸⁰ Ronald L. Grudzicki, *Rapidly Changing Patent Law Landscape Requires Careful Attention from Attorneys*, in RECENT TRENDS IN PATENT INFRINGEMENT LAWSUITS 3 (2015 ed. May 2015), 2015 WL 3764843.

¹⁸¹ See, e.g., Nicholas Wells & Eric Chemi, *Can’t Kill Off the Patent Trolls Yet* (2015), <http://www.cnn.com/2015/05/19/cant-kill-off-the-patent-trolls-yet.html> (last visited Dec. 16, 2016); Joseph Allen, *It’s Time to Whack ‘IPR Trolls’* (2015), <http://www.ipwatchdog.com/2015/06/22/its-time-to-whack-ipr-trolls/id=58902/> (last visited Dec. 16, 2016); Robert M. Isackson & James Maune, *Congress Continues to Promote Patent Reform Efforts*, ORRICK (June 11, 2015), https://www.orrick.com/Insights/2015/06/Congress-Continues-to-Promote-Patent-Reform-Efforts?utm_source=Mondaq&utm_medium=syndication&utm_campaign=View-Original (last visited Dec. 1, 2016).

¹⁸² Lemley & Shapiro, *supra* note 43, at 84; Merges, *supra* note 33.

¹⁸³ Bessen & Love, *supra* note 144; Brett Frischmann & Mark Lemley, *Spillovers*, 107 COLUM. L. REV. 257 (2007).

¹⁸⁴ Seymore, *supra* note 33.

¹⁸⁵ Lemley & Melamed, *supra* note 65, at 2152–3.

¹⁸⁶ *Id.* at 2174–5; Lemley & Shapiro, *supra* note 67, at 2044–5; Sandrik, *supra* note 148.

¹⁸⁷ Bernstein, *supra* note 178; Lemley, *supra* note 82, at 1530.

¹⁸⁸ Lemley & Melamed, *supra* note 65, at 2178.

¹⁸⁹ R. Polk Wagner, *Understanding Patent-Quality Mechanisms*, 157 U. PA. L. REV. 2135, 2171–72 (2009).

¹⁹⁰ Malani & Masur, *supra* note 29.

and maintenance should be to keep patent abusers, but not genuine innovators, away from patents. While establishing penalties for an invalid patent would obviously cool off patenting, it is not clear how high these penalties would have to be to establish an appropriate incentive for efficient patenting behavior. Lastly, automatic fee shifting creates risks for patent plaintiffs and patent defendants alike. Given the great uncertainty surrounding patent law, these risks are hard to estimate. Thus, fee shifting will simply add a similar factor to both sides of the already existing equation of risk allocation in patent cases. This move is unlikely to significantly influence the dynamics in this field.

The proposed and the already accepted reforms aim at ameliorating the symptoms without treating the illness of the patent system. While these reforms may lessen the amount of opportunistic patent behavior, as long as an incentive to obtain and enforce invalid patents remains, we will continue to witness such practices, even if this incentive is somewhat relaxed.

III. THE CORE PROBLEM: ASYMMETRICAL RISK ALLOCATION

The main problem with the patent system lies in its incentive structure. People act inefficiently when their behavior creates substantial externalities, that is, has significant effects on others.¹⁹¹ Many types of human behavior create externalities, and this is not a problem in and of itself.¹⁹² Yet, externalities may cause inefficiently when acting according to one's private interest harms others, or does not benefit them, and this harm or lack of benefit is greater than the benefit (or cost-saving) that the behavior in question brings to the actor. For instance, a factory may behave inefficiently, creating more harm to the surrounding neighborhood, through pollution, than private benefits, through profits. This happens because it internalizes only the profits, but externalizes the pollution.¹⁹³ A concern of this kind stands behind patent protection: the inventive activity benefits the society. Because these externalities do not necessarily bring significant profit to the inventor, she might have insufficient incentive to act in a socially desirable way.

The straightforward solution to problems caused by large externalities is to internalize the external costs or benefits.¹⁹⁴ If the factory has to compensate for the damages caused by pollution, it will

¹⁹¹ See ARTHUR C. PIGOU, *THE ECONOMICS OF WELFARE* 89 (4th ed. 1932); ANDREAS A. PAPANDEOU, *EXTERNALITY AND INSTITUTIONS* 13–68 (1994); Harold Demsetz, *Toward a Theory of Property Rights*, 57 *AM. ECON. REV.* 347, 348 (1967).

¹⁹² Frischmann & Lemley, *supra* note 183, at 258-61; David D. Haddock, *Irrelevant Internalities, Irrelevant Externalities, and Irrelevant Anxieties* 4, *NW. U. SCH. OF L., Law & Econ. Research Paper Series*, Paper No. 03-16, 4 (2003), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=437221 (“Externalities are everywhere but usually economically meaningless.”).

¹⁹³ See *supra* note 191.

¹⁹⁴ *Id.*

choose to produce only if its production is economically efficient overall; that is, only if its profits exceed the damages of pollution. Patent law has chosen a similar solution, allowing the inventor to obtain profit from the demand for her invention; that is, to internalize some of the positive externalities of her activity.¹⁹⁵ Internalization is thus a tool that makes private decisions better reflect public interests, ultimately resulting in welfare-maximizing private behavior.¹⁹⁶

The various types of patent abuse described above are also instances of inefficiency caused by large externalities, like polluting production. Acquiring and asserting invalid patents is privately profitable, but it has a high social cost. Therefore, the solution could be similar as well: patent law should make the owners of invalid patents internalize the social harms they create. Just as patent law lets the inventor internalize some of the positive externalities of her creative activity in order to encourage this activity, it should make patent abusers internalize the negative externalities they create in order to discourage such conduct.

The key problem of patent law lies in the asymmetrical allocation of risk between patent owners and potential infringers. A holder of a valid patent whose rights have been violated is entitled to the highest level of protection, which may include injunctive relief, massive amount of damages, and sometimes even treble damages. On the other hand, the only real danger a holder of an invalid patent faces is the possibility of losing patent rights, and therefore the ability to continue making profits from the patent. A risk that the patent owner will have to pay any type of compensation arises only if it has been involved in particularly wrongful behavior. Even in such instances, the risk of legal liability is exceptionally low. The outcome of this highly improbable scenario is usually damages that amount only to a portion of the profits extracted from the invalid patent, so that the invalid patent ultimately pays off. It is only in exceptional cases that the patent owner will have to return all of its ill-gotten gains.

Patent law is thus construed asymmetrically. If A is a patent holder and B is an alleged infringer, B carries a much greater burden of legal uncertainty than A. While both parties may be causing damage, only B may be held accountable for the damage it caused. The damage caused by A will be borne by B and other market participants, such as producers, distributors, and consumers. It should come as no surprise that this highly asymmetrical risk allocation invites opportunistic behavior of acquiring and enforcing patents of questionable validity.

¹⁹⁵ David W. Barnes, *Trademark Externalities*, 10 YALE J. L. & TECH. 1, 3 (2007) (“Externalities theory has recently emerged as a normative explanation for the structure of copyright and patent law.”).

¹⁹⁶ See *supra* note 191.

Patent law currently enables the making of significant profits from valid and invalid patents, and rightly and wrongly enforced patents. This lucrative business does not entail substantial risks, so it is no wonder that it is thriving. In other words, the current system allows internalizing the profits invalid patents bring to their owners and externalizing the damages they cause to third parties.

The only way to change this reality is by modifying the incentive structure of patent law so that it better aligns with the public interest. Patent law should not only encourage the socially desirable inventive activity, but also discourage the socially harmful business of acquiring and enforcing weak patents.

IV. THE PROPOSED SOLUTION

The proposal of this Article is straightforward: we must recognize the right to compensation for damages caused by an invalid patent. The idea behind this basic solution is incentivizing economically efficient behavior by making patentees internalize the damages their behavior causes. Just like a patent owner is allowed to recover damages when a court finds the patent valid and infringed upon, parties affected by the patentee's behavior should be able to recover damages when the patent is found invalid.

The proposed rule will create an appropriate incentive structure for (prospective) patent owners; while deciding to register or enforce a patent, they will weigh the potential private benefits against the social damages of such behavior. They will thoroughly investigate the patentability of their invention and choose to register or enforce a patent only when the probability that the invention is patentable is high.

To be more precise, if a firm has an invention that has P probability of being found patentable in a court, PI probability of withstanding the PTO examination is expected to bring B benefits to the firm, impose C registration and enforcement costs on the firm, and $CPub$ costs on third parties, then, under the current legal regime, the firm will try to register and enforce a patent if:

$$PI*B > C$$

The public interest has no impact whatsoever on the firm's decision. But, if a firm is forced to internalize $CPub$, it will try to register and enforce a patent if:

$$PI*B - C > (1-P)*CPub$$

Deciding whether or not to enforce a patent according to the latter formula constitutes desirable behavior from the social point of view. Indeed, the basic assumption of patent law is that only granting protection to inventions that withstand the patentability criteria serves

public interest. Accordingly, the public has a strong interest that only patents whose validity is probable are enforced. Since the patent owner is in the best position to investigate the patentability of its invention, putting this burden on its shoulders is efficient. This is exactly what the proposed rule does; it makes the owner of an invalid patent liable for damages regardless of its awareness of the facts that undermine the patent's validity. In contrast to the current legal situation, this rule incentivizes firms to undertake significant efforts to investigate the patentability of their invention before asserting their patent rights.

For instance, under the proposed regime, a firm is likely to exert appropriate caution before sending a cease-and-desist letter that might cause the recipient to stop distributing a product. The firm will take into account the probability that it might later be found liable for the damage the termination of production will cause to the recipient and the consuming public. Similarly, while considering threatening an entity that wishes to use the patented invention for further research, the patentee will weigh the significant loss to society that might be caused by terminating the research against the gains it is likely to bring to the patentee. In short, the patentee is likely to act with proper caution while asserting its rights. In this way, private and public interests will essentially align.

In reality, where a patent right means not only a chance of a substantial profit, but also a risk of a no less substantial loss, weak patents will no longer provide their owners with significant bargaining power. Firms accused of patent infringement may threaten the patent owner with a counter-claim for damages. Both the patent owner and the alleged infringer will know that a court will ultimately focus on the question of patent validity when resolving the dispute. Of course, the proposed solution cannot solve the problem of legal uncertainty. However, under the proposed regulation, this uncertainty will affect both sides equally rather than giving advantage only to the patent owner. Assuming that judicial decisions possess a certain amount of predictability, the bargaining power in this situation will reside with the party that has better chances of proving its claim. This situation is desirable; the patent owner will only be able to extract license and settlement fees if its patent has a good chance of being found valid in litigation.

In addition, although litigation costs will likely remain high, this will no longer allow patent owners to reach settlement agreements reflecting these costs. Since each party will be in a position to sue the other, that is, to impose litigation costs on the other party, these costs will cease to be a weapon that enables the patent owner to extract licensing and settlement fees. The practice of accumulating patents of questionable validity will naturally lose its appeal. Hence, the associated

phenomena of extensive patent portfolios, patent thickets, royalty stacking, defensive patenting, and patent trolls are likely to vanish.

If accepted, the current proposal would naturally diminish the incentive to apply for patent protection in the first place. Yet, I believe that this will not have a significant chilling effect on the incentive to invent. Today, the incentive to patent is far greater than necessary. A large number of applications are filed in relation to technologies that should never be patented and have little to do with genuine inventive activity. It is true that the current proposal is likely to dramatically reduce the number of patent applications, but this radical change is indispensable to make the mechanism of patent law function appropriately.

A certain difficulty in the current proposal lies in the fact that there is no objective way to conclusively determine patentability. Courts often find patents issued by the PTO to be invalid,¹⁹⁷ but at times they also overturn the PTO's rejections of patent applications.¹⁹⁸ A substantial number of judicial decisions are reversed on appeal,¹⁹⁹ but many do not reach this stage.²⁰⁰ One can never tell with certainty whether a final judicial decision accurately reflects the real state of affairs, and one may even doubt whether objective legal reality exists. Yet, for the suggested rule to function appropriately, it is enough to assume that judicial decisions correctly reflect the legal state of affairs most of the time.

The proposed rule also presupposes that judicial decisions are, on average, more accurate than the PTO decisions, and, therefore, that patents invalidated in courts do not withstand patentability criteria most of the time. This assumption seems realistic given the factors that make the PTO prone to issuing invalid patents and the lack of many of these factors in the judicial process. Finally, the suggested rule is based on the presumption that judicial decisions are predictable to a significant extent, and hence encouraging firms to direct their behavior according to their expected outcome will promote socially desirable results.

Admittedly, only a tiny fraction of patent cases reach the courts, and an even smaller number reach a final ruling on the merits.²⁰¹ Thus, unless the suggested reform dramatically increases patent litigation, most patent cases will continue to settle outside of court. Nevertheless, the change will affect parties to patent-related interactions, who will act

¹⁹⁷ Allison et al., *supra* note 34 at 1782.

¹⁹⁸ See, e.g., *In re Giannelli*, 739 F.3d 1375 (Fed. Cir. 2014).

¹⁹⁹ See *U.S. Court of Appeals for the Federal Circuit—Appeals Filed, Terminated, and Pending During the Twelve-Month Period Ended September 30, 2015*, United States Court of Appeals for the Federal Circuit, http://www.cafc.uscourts.gov/sites/default/files/the-court/statistics/appeals_filed_terminated_and_pending.pdf (last visited Dec. 16, 2016).

²⁰⁰ Allison et al., *supra* note 34, at 1779.

²⁰¹ *Id.* at 1777–8.

in cognizance of the risks and opportunities the legal system creates.²⁰²

V. FUTURE RESEARCH

This Article suggests reconsidering the core of the incentive structure that patent law provides. Pointing out the asymmetrical risk allocation in patent law, it proposes imposing liability on patentees whose patents turn out to be invalid. This basic proposal naturally needs further elaboration. More specifically, the following issues require further research.

First, future research should inquire whether the rule suggested here should apply in additional contexts of patent law. Sometimes, owners of valid patents enforce their rights beyond their scope, demanding non-infringing firms to stop product distribution or pay fees. Such behavior may cause similar social damages as those caused by invalid patents, although possibly on a smaller scale. Hence, establishing a similar liability rule might be appropriate in such cases.

Second, one should consider the role of the PTO examination. Today, an issued patent actually shields its owner against possible damage claims.²⁰³ The proposal to impose liability for enforcing erroneously granted patents essentially targets this shield. This raises the question of what role the PTO examination might play under the proposed regime. The question of whether the current examination system should persist or be replaced by a registration system²⁰⁴ needs further investigation.

Third, future research should determine which regime would better suit the current proposal—property or tort liability. While tort liability might seem a plausible basis for establishing liability for invalid patents, one must keep in mind that patents are conceptualized as property rights. The U.S. legal system tends to ascribe great weight to the concept of property and to extensively protect property rights.²⁰⁵ A system that would treat patent infringement as a violation of property, but perceive a wrongful appropriation of public domain information as a tort, might again result in a misbalanced allocation of risk.

One option could be to conceptualize the public domain as

²⁰² Robert Cooter et al., *Bargaining in the Shadow of the Law*, 11 J. LEGAL STUD. 225 (1982).

²⁰³ This has been explicitly recognized in the field of antitrust. See E. R.R. Presidents Conference v. Noerr Motor Freight, Inc., 365 U.S. 127, 135 (1961) and United Mine Workers v. Pennington, 381 U.S. 657, 670 (1965); Applera Corp. v. MJ Research Inc., 303 F. Supp. 2d 130 (D. Conn. 2004); Cornucopia Prods., L.L.C. v. Dyson, Inc., 881 F. Supp. 2d 1086 (D. Ariz. 2012).

²⁰⁴ Kieff has suggested shifting to a registration system. See F. Scott Kieff, *The Case for Registering Patents and the Law and Economics of Present Patent-Obtaining Rules*, 45 B.C. L. REV. 55 (2003).

²⁰⁵ Felix Cohen, *Transcendental Nonsense and the Functional Approach*, 35 COLUM. L. REV. 809, 814–15 (1935); Katya Assaf, *Capitalism against Freedom*, 38 N.Y.U. REV. L. & SOC. CHANGE 201, 224 (2014).

mutually owned property, as suggested by several scholars, most notably David Fagundes.²⁰⁶ Under this approach, an invalid or too broadly enforced patent would be regarded as a property violation that naturally triggers liability for damages. The advantage of this approach lies in the power of the property rhetoric to elucidate the materiality of such damages and the need for protection.²⁰⁷

Another option would be to conceptualize both patent infringement and wrongful appropriation of public domain technologies as torts. The idea of treating intellectual property as torts has been suggested in the literature.²⁰⁸ Taking the property rhetoric out of intellectual property, and specifically patent law, would presumably stop the current judicial tendency of expanding the scope of protection ever further.²⁰⁹ In addition, placing patent conflicts into the framework of tort law would allow greater flexibility in establishing liability rules. This approach would however require a more extensive change in the current legal regulation of patents.

Fourth, it will be necessary to consider which damages caused by an invalid patent should be compensable. An invalid patent may inflict extensive damages. These damages may greatly exceed the profits such a patent brings to its owner. Subjecting the patentee to liability for all such damages may thus dampen the incentive to acquire and enforce patents. Since owners of valid patents do not internalize the entire social value of their inventions,²¹⁰ the liability for the social damage caused by invalid patents should be limited as well.

Fifth, one should inquire which *mens rea* requisite is appropriate for imposing liability. Patent infringement is currently a strict liability tort,²¹¹ and willful patent infringement may subject the infringer to treble damages.²¹² The idea of building a balanced system of risk allocation suggests that similar rules should apply to damages caused by

²⁰⁶ David Fagundes, *Property Rhetoric and the Public Domain*, 94 MINN. L. REV. 652, 691–700 (2010); see also Wendy J. Gordon, *A Property Right in Self-Expression: Equality and Individualism in the Natural Law of Intellectual Property*, 102 YALE L.J. 1533, 1559–60 (1993) (“The public’s liberty to use the common is a species of property”); Henry E. Smith, *Intellectual Property as Property: Delineating Entitlements in Information*, 116 YALE L.J. 1742, 1767–68 (2007) (“I treat the public as having rights, not mere privileges, in information and opportunities to discover information lying in the public domain.”); Haochen Sun, *Fair Use as a Collective User Right*, 90 N.C. L. REV. 125 (2011).

²⁰⁷ Fagundes, *supra* note 206, at 691–700.

²⁰⁸ Wendy J. Gordon, *Copyright as Tort Law’s Mirror Image: “Harms,” and “Benefits,” and the Uses and Limits of Analogy*, 34 MCGEORGE L. REV. 533 (2003).

²⁰⁹ Fagundes, *supra* note 206, at 692–93.

²¹⁰ For a thorough discussion of this topic, see Lemley, *supra* note 87; see also Frischmann & Lemley, *supra* note 183, at 292–93 (“Patent owners should not always be entitled to capture the full social benefit of their invention.”).

²¹¹ For discussion, see Roger D. Blair & Thomas F. Cotter, *Strict Liability and Its Alternatives in Patent Law*, 17 BERKELEY TECH. L.J. 799 (2002).

²¹² 35 U.S.C. § 284 (2012).

invalid patents. A more thorough economic analysis may offer further insights here. For instance, switching to a regime of negligence or giving up the institution of treble damages for both types of damages might result in a more efficient incentive structure.

Sixth, it is necessary to consider how the damages caused by an invalid patent should be claimed. This question is crucial because if damages are impossible or impractical to claim the legal regime cannot create appropriate (dis)incentives. Further research is needed to figure out how damages should be claimed when there are many dispersed injured parties, each of whom suffers only a small injury, or when the affected parties are difficult or impossible to identify. For instance, this might be the case when a large and not easily identifiable group of consumers paid premium prices for a product covered by a patent that later turned out to be invalid. One possible solution would be to construct a class action provision that would enable one member to represent the whole class. Other options may be to introduce a “citizen suit provision”²¹³ that grants any person standing to sue, or to allow specific third parties (*e.g.* the Public Patent Foundation²¹⁴) to sue.

Another point in this context is how to incentivize private parties to sue when they do not receive the claimed damages—such as in the case of a competitor suing for consumer damages—or when they only receive a small fraction of the suit—such as in the case of a class action. A possible solution is introducing a mechanism of bounties that would provide such an incentive.²¹⁵ The bounty should be sufficient, but not too large, so as to avoid creating another institution prone to abuse.

Seventh, a possible contribution by the owner of an invalid patent to the social welfare should be taken into account. Several scholars point out that patent law encourages not only innovation, but also commercialization of the invention, that is, developing a product and making it accessible to the consuming public.²¹⁶ In some fields, most notably pharmacology, distribution costs are the main expenses associated with a product. One has to invest much effort and money to turn a pharmaceutical invention into a marketable drug.²¹⁷ Many

²¹³ A citizen suit is “[a]n action under a statute giving citizens the right to sue violators of the law...and to seek injunctive relief and penalties.” *Citizen Suit*, BLACK’S LAW DICTIONARY (9th ed. 2009); Citizen suits are often seen in the context of the Clean Water Act and the Clean Air Act. *See* 42 U.S.C. § 7604.

²¹⁴ Public Patent Foundation is a “not-for-profit legal services organization whose mission is to protect freedom in the patent system.” PUBLIC PATENT FOUNDATION, <http://www.pubpat.org/About.htm> (last visited Dec. 16, 2016).

²¹⁵ For similar proposals, *see* Miller, *supra* note 86; John R. Thomas, *Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties*, 2001 U. ILL. L. REV. 305 (2001).

²¹⁶ Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 275–76, 284 (1977); Kieff, *supra* note 18. Ted Sichelman, *Commercializing Patents*, 62 STAN. L. REV. 341, 358–62 (2010).

²¹⁷ Mark A. Lemley & Dan L. Burk, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1581–82

inventions would stay out of the market without a significant effort to introduce them to the consuming public.²¹⁸ Hence, some inventions might not ever be marketed absent a patent right that makes the investment in commercializing them profitable.²¹⁹

An owner of an invalid patent who puts significant efforts into the commercialization of the invention is similar to a *bona fide* occupant, who makes permanent improvements on another's land. According to a well-established rule of common law, such an occupant is entitled to offset the value of these improvements against the damages demanded by the true owner for the wrongful land occupation.²²⁰ Similarly, an owner of an invalid patent might be able to offset the social value of commercializing the invention against the social costs of maintaining exclusivity over it.

Finally, one should consider the licensor-licensee relationship in the context of the proposal made in this Article. Specifically, it is important to inquire whether, under certain circumstances, the licensee should be held liable, partly or entirely, for the damages of an invalid or too broadly enforced patent. Similar concerns may arise in a situation where the patent owner and an alleged infringer reach a settlement that leaves a weak patent "alive" and enables them to share the monopolistic profits.²²¹

CONCLUSION

This Article has offered a novel solution for the much-discussed problem of patents on trivial technologies overcrowding certain technological fields. The proposed solution is straightforward: patent law should not only reward socially desirable behavior, but also penalize socially harmful conduct. Going back to the example of cobras in colonial India, imagine that the bounty is paid for every cobra, but afterwards an expert could examine the cobra and tell with a rather high

(2003) ("In the pharmaceutical industry, for example, the R&D, drug design, and testing of a new drug can take a decade or more and cost, on average, hundreds of millions of dollars.").

²¹⁸ *Id.* at 1616 ("[I]nventing a new drug is only the beginning of the process, not the end. The Food and Drug Administration ("FDA") requires a lengthy and rigorous set of tests before companies can release drugs to the market.").

²¹⁹ *Id.* at 1616–17 ("In the pharmaceutical industry, . . . strong patent rights are necessary to encourage drug companies to expend large sums of money on research years before the product can be released to the market.").

²²⁰ C. R. McCorkle, *Compensation for Improvements Made or Placed on Premises of Another By Mistake*, 57 A.L.R. 2d 263 ("A rule of long standing, in most if not in all jurisdictions, is that a claim for improvements mistakenly made on the premises of another may be asserted and allowed as a setoff against the amount recoverable by the owner for rents, profits, or damages for detention.").

²²¹ For discussion of this phenomenon, see La Belle, *supra* note 51; Tokic, *supra* note 70; Carrier, *supra* note 89; Holman, *supra* note 89; Hovenkamp, *supra* note 89; Herbert Hovenkamp et al., *Anticompetitive Settlement of Intellectual Property Disputes*, 87 MINN. L. REV. 1719 (2003).

certainty whether the cobra was wild or bred. This would be analogous to a patent that may bring profits regardless of its validity, but can later be examined in a court. Imagine also that those who bring killed cobras are usually not their killers—this would reflect the uncertainty surrounding the questions of patentability.

Now, imagine that if the killed cobra turned out to be a wild one, the person who brought it might keep the bounty. That would be analogous to letting the patentee, whose patent has been found valid, keep all of the profits. But if the cobra was found to be a bred one, the person who brought it had to return the bounty, and pay a fine. This is roughly analogous to my proposal to subject an owner of an invalid patent to liability for damages. Such damages will usually exceed the profits made due to the exclusive market position allowed by the invalid patent, making the business of acquiring and enforcing such patents unprofitable.

The hypothetical policy with cobras would have created the appropriate incentives, encouraging people to kill wild cobras, but discouraging the business of cobra breeding. It would also encourage people to investigate the source of the cobras they bring to the government—a task that locals could accomplish much better than the British government. Similarly, the proposal of this Article would encourage firms to patent new and non-obvious inventions, while discouraging them from patenting trivial, already known, or anticipated technologies. It would also incentivize firms to thoroughly investigate the patentability of their inventions—a task that patent applicants can accomplish much better than the PTO.

Patent law is a legal construct aimed at creating incentives for socially desirable behavior. Therefore, when the patent system is used differently than expected, we should first ask how the existing incentive structure may support such a use. When firms acquire and enforce invalid patents, we must ask how patent law unintendedly incentivizes such behavior. And that's where we should look for the cure.