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Abstract:
This Essay provides some perspective on the troll issue by pointing out a historical parallel that has received no attention. It turns out that these opportunistic licensors were also active in the nineteenth century. Called “patent sharks,” they bought dormant agricultural patents and then sued farmers who were unknowingly using protected technology. This brass knuckles tactic outraged rural activists and led to the same calls for sweeping patent reform that we hear now. At that time, the growth of sharks was blamed on excessive patent remedies, incompetent examiners, and the lack of compulsory licensing. Today, many of the same alleged defects are being blamed for the explosion in trolls. That comparison suggests the counterintuitive point that simple farm inventions from the past can shed light on our current troubles with high-tech patents.

Blackberries and Barnyards: Patent Trolls and the Perils of Innovation

Gerard N. Magliocca*

[A]mong a host of dormant patents, some will be found which contain some new principle . . . which the inventor, however, had failed to render of any use in his own invention. And some other inventor, ignorant that such a principle had been discovered . . . had the genius to render it of great practical value . . . when, lo! the patent-sharks among the legal profession, always on the watch for such cases, go to the first patentee and, for a song, procure an assignment of his useless patent, and at once proceed to levy black-mail upon the inventor of the valuable patent.[1]

Senator Issac Christiancy – 1878

Patent law almost never fires the imagination of the general public, but for the first time in over a century we are in the midst of a vigorous debate about the patent system. The man-on-the-street (at least the ones on high-tech streets) started paying more attention to patents once they learned that an infringement suit might deprive them of their precious Blackberry wireless service.[2] That action was

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1 45 CONG. REC. 307 (1878) (statement of Sen. Christiancy).

2 *See* NTP, Inc. v. Research in Motion, Ltd., 418 F.3d 1282, 1287 (Fed. Cir. 2005), *cert. denied*, 126 U.S. 1174 (2006) (holding the Blackberry manufacturer liable for infringement and upholding an injunctive remedy); Yuki Noguchi, *Government Enters Fray Over Blackberry Patents*, WASH. POST, Nov. 12, 2005, at D1 (stating that over 3 million Americans use Blackberries); Tim Wu, *Weapons of*

brought by a "patent troll," which is a derogatory term for firms that use their patents to extract settlements rather than license or manufacture technology.[3] Concern about these suits is now so acute that a coalition of high-tech companies recently urged the Supreme Court to respond by revisiting settled law on patent infringement remedies.[4] Though the Justices declined this invitation in *EBay, Inc. v.*

Business Destruction: How a Tiny Little "Patent Troll" got Blackberry in a Headlock (Feb. 6, 2006), *at* www.slate.com/id/2135559; *see also* Mark Heinzl & Amol Sharma, *RIM to Pay NTP $612.5 Million to Settle Blackberry Patent Suit*, WALL ST. J., March 4, 2006, at A1 (describing the settlement of the case).

[3] *See* Elizabeth D. Ferrill, *Patent Investment Trusts: Let's Build a Pit to Catch the Patent Trolls*, 6 N.C. J. L. & TECH. 367, 367 (2005) (stating that "patent troll" was coined at Intel). Some observers prefer to call these firms non-practicing-entities (NPEs). This Article uses the word troll because it is more colorful.

[4] *See, e.g.*, Brief of Amicus Curiae Computer & Communications Indus. Ass'n, eBay, Inc. v. Mercexchange, 126 S. Ct. 1837 (2006) (No. 05-130); Brief of Amici Curiae Time Warner, Inc. et. al., *Mercexchange* (No. 05-130); Brief of Amicus Curiae Yahoo!, Inc., *Mercexchange* (No. 05-130).

Mercexchange,[5] Congress is still considering legislation that would achieve the same goal through other means.[6]

Like most fresh legal questions, the debate on patent trolls is long on passion and short on proof. Critics claim that these firms are little more than blackmailers who put a crippling tax on productive enterprises.[7] Others assert that so-called trolls spur innovation by investing in undercapitalized projects and reducing transaction costs for small inventors who are routinely robbed by large corporations.[8]

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[5] 126 S. Ct. 1837 (2006) (reaffirming the traditional test for injunctive relief in patent infringement cases). *eBay* did reject the Federal Circuit's holding that injunctions should always issue for patent infringement, *see id.* at 1841, but this fell well short of what the anti-troll forces wanted.

[6] *See* Patents Depend on Quality Act of 2006, H.R. 5096, 109th Cong. (2006); Patent Reform Act of 2005, H.R. 2795, 109th Cong. (2005); *cf.* Michael J. Meurer, *Controlling Opportunistic and Anti-Competitive Intellectual Property Litigation*, 44 B.C. L. REV. 509, 525-44 (2003) (presenting various ideas to reduce frivolous intellectual property litigation).

[7] *See* David G. Barker, *Troll or No Troll? Policing Patent Usage With an Open Post-Grant Review*, 2005 DUKE L. & TECH. REV. 9 at ¶ 7 (quoting testimony of witnesses who called trolls "bottom feeders who buy improvidently-granted patents from distressed companies for the sole purpose of suing legitimate businesses"); Ferrill, *supra* note 3, at 376-77 (summarizing these attacks).

[8] *See* Brief of Amici Curiae Qualcomm Inc. and Tessera, Inc., EBay, Inc. v. Mercexchange, 126 S. Ct. 1837 (2006) (No. 05-130); Brief of Amici Curiae United Inventors Association and Technology Licensing Corp., *Mercexchange*, (No. 05-130); Brief of Amici Curiae Various Law & Economics Professors, *Mercexchange*,

The only thing that both sides might agree upon is that there is no real evidence about the impact that trolls are having on technology investment, which makes drawing policy conclusions hazardous.

This Essay provides some perspective on the troll issue by pointing out a historical parallel that has received no attention. It turns out that these opportunistic licensors were also active in the nineteenth century.[9] Called "patent sharks," they bought dormant agricultural patents and then sued farmers who were unknowingly using protected technology.[10] This brass knuckles tactic outraged rural activists and led to the same calls for sweeping patent reform

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(No. 05-130); *see also* Ronald J. Mann, *Do Patents Facilitate Financing in the Software Industry?*, 83 TEX. L. REV. 961, 1024 (2005) ("[T]rolls are serving a function as intermediaries that specialize in litigation to exploit the value of patents that cannot be exploited effectively by those that have originally obtained them. That is not in and of itself a bad thing.").

[9] *See* Ferrill, *supra* note 3, at 375-76 (describing patent trolls as opportunistic licensors). This term is apt because trolls seek a lump sum payment after a firm is already using the technology, which looks like a license made under duress.

[10] *See* Arguments Before the Committee on Patents, 45th Cong., 2d Sess., Sen. Misc. Doc. No. 50, at 123 (1878) (testimony of J.H. Raymond) (criticizing "those who are justly called patent sharks" and the "large number of patents that are good for nothing except as the bases for infringement suits"); *see generally* Earl W. Hayter, *The Patent System and Agrarian Discontent*, 34 MISS. VALLEY HIST. REV. 59 (1947) (describing this controversy in detail).

that we hear now.[11] At that time, the growth of sharks was blamed on excessive patent remedies, incompetent examiners, and the lack of compulsory licensing.[12] Today, many of the same alleged defects are being blamed for the explosion in trolls.[13] That comparison suggests

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[11] *See* 46 CONG. REC. 1973 (1881) (statement of Sen. Voorhees) (stating that "there is a system that cannot be described accurately by any milder term than blackmail going on upon the farmers of this country" and urging the creation of an innocent user defense to infringement); *id.* at 102 (statement of Sen. Butler) (introducing a petition from the Grange calling for patent reform); 45 CONG. REC. 303 (1878) (statement of Sen. Windom) (denouncing patent sharks' "blackmailing extortions" and supporting legislation to restrict the jurisdiction of the federal courts in patent cases).

[12] *See* 46 CONG. REC. 1973 (1881) (statement of Sen. Saulsbury) (stating that a patent owner "should make no recovery of any moment, whether as damages or costs, if the defendant established the fact that he was an innocent purchaser of the article in open market, and used it in the cultivation of his own farm"); *id.* at 307 (statement of Sen. Christiancy) (rattling off a series of dubious patents and arguing that "if there had been no Patent Office in existence and the discretion of Congress had been appealed to upon the merits of each case, not one of them would have been granted"); Hayter, *supra* note 10, at 77-78 (quoting the Grange's 1874 resolution calling for Congress to amend the patent laws "by providing that any party shall have a right to use them by payment of a reasonable royalty").

[13] *See* Amy L. Landers, *Let the Games Begin: Incentives to Innovation in the New Economy of Intellectual Property Law*, 46 SANTA CLARA L. REV. 307, 310-11 (2006) (claiming that flaws in how infringement royalties are calculated create trolls); Brief of Amicus Curiae Rembrandt IP Mgmt., L.L.C., *Mercexchange* (No. 05-130) at *14 ("[W]hat Yahoo and other amici are really demanding is that non-users be subject to a regime of compulsory licensing . . . ."); *infra* notes 79-81 and accompanying text (discussing the complaints about the Patent Office).

the counterintuitive point that simple farm inventions from the past can shed light on our current troubles with high-tech patents.

The chief lesson that emerges from this comparison is that certain types of patents are more vulnerable to trolls than others. Opportunistic licensers flourish when there is a large gap between the cost of getting a patent and the value that can be captured with an infringement action. This sort of arbitrage is likely to occur when: (1) those being sued cannot easily substitute away from the disputed technology; (2) the average scope of improvements in the industry is incremental, which makes the outcome of infringement litigation hard to gauge; and (3) the cost of acquiring and retaining patents is low.[14] Farm tools and modern tech patents share this set of traits,

[14] This last observation draws from Clarissa Long's work on the role of information costs in shaping intellectual property. *See* Clarissa Long, *Information Costs in Patent and Copyright*, 90 VA. L. REV. 465, 470 (2004) ("As the concepts and boundaries of protected goods become more subjective, observers will have a harder time understanding and obeying their propertarian duties if legal rules do not accommodate by lowering information costs along other margins.").

albeit for different reasons, and hence they suffer at the hands of trolls more than other types of patents.[15]

The other lesson that can be drawn from the Gilded Age experience is that the flood of opportunistic litigation cannot be stemmed through substantive changes in patent rights.[16] First, industries unaffected by trolls view these proposals as harmful to their rights and lobby hard against them. As a result, every effort to address the issue through a comprehensive solution has failed in Congress.[17] Second, since trolls and sharks succeed as long as they

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[15] Farm patents fit this description because there was an ill-fated attempt between the 1860s and 1880s to classify them as industrial design. *See* Gerard N. Magliocca, *Ornamental Design and Incremental Innovation*, 86 MARQ. L. REV. 845, 874-79 (2003). In that era, the Patent Office provided design patents for changes in form that were deemed "useful." *See Ex Parte* Crane, C.D. 7 (1869), *reprinted in* HECTOR T. FENTON, THE LAW OF PATENTS FOR DESIGNS 225 [hereinafter *Crane*]. This new and lower standard led to chaos as opportunistic licensers took out "design" patents on plows, shovels, and every other basic farm tool. *See infra* notes 45-56 and accompanying text.

[16] The patent system as a whole does need a shakeup, but the point is that this is unnecessary to address the troll issue. For some comprehensive proposals, see ADAM B. JAFFE & JOSH LERNER, INNOVATION AND ITS DISCONTENTS (2004); TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY (2003) [hereinafter Federal Trade Comm'n Report].

[17] None of the proposals to deal with patent sharks were ever passed by Congress, though some got through the House of Representatives. *See* 47 CONG.

reach settlements, a substantive solution will be ineffective because most of these cases never get to court. So long as there is some uncertain chance that an infringement suit will succeed, defendants will tend to settle. In the nineteenth century, Congress eliminated this risk by wiping out the patents that were fueling opportunistic litigation.[18] This suggests that abolition may be the only solution for modern trolls, at least with respect to patents for business methods

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REC. 3955 (1882) (noting the passage of a bill creating an innocent user defense in infringement suits); 46 CONG. REC. 768-69 (1880) (same). Supporters of the status-quo felt that weakening patent rights would only hurt small inventors and help trusts. *See* 47 CONG. REC. 3952 (1882) (statement of Rep. Robinson) (stating that many patentees "are confronted not by farmers, not by innocent purchasers, but by great corporations that attempt to fight down the inventor and rob him of all the benefits of his invention"). Today, the drug industry is the best example of patentees who are uninterested in broad reform. *See* Brief of Amicus Curiae Pharmaceutical Research and Manufacturing of America, *Mercexchange*, (No. 05-130) (contending that patent law does not need an overhaul); *see also* Robert E. Thomas, *Vanquishing Copyright Pirates and Patent Trolls: The Divergent Evolution of Copyright and Patent* Laws, 43 AM. BUS. L.J. 689, 692 (2006) ("Large biotechnology, medical, and pharmaceutical companies (biotech/pharma) do not face the same threat that their info-tech counterparts face. This lack of cohesiveness has likely delayed or prevented the passage of some of the proposed reforms.").

[18] See WILLIAM L. SYMONS, THE LAW OF PATENTS FOR DESIGNS 21 (1914) (describing a 1902 statute that raised the threshold for granting design patents); Magliocca, *supra* note 15, at 878-79 (explaining how this Act and rulings of the Patent Office ended the practice of mixing functional and esthetic elements).

and software.[19] If that medicine seems too strong, then the Patent Office should escalate the fees that firms must pay to maintain their patents, which would make speculation in dormant ones more costly.

Part I defines trolls and shows why patents are prone to surprise litigation that can be viewed as a holdup. Part II reviews the similar debate over patent sharks that occurred after the Civil that in each instance the patented items shared a distinctive bundle of traits that caused a surge in opportunistic suits. Part IV concludes by comparing each era's proposed remedies before suggesting that we curb opportunistic suits by repealing certain types of patents or by sharply increasing maintenance fees to discourage sandbagging.

PART ONE – OPPORTUNISTIC LICENSING IN PATENT

No area of the law is free from vexatious litigation, but in the patent field the subject is garnering special attention. The question of

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[19] *Compare* State Street Bank & Trust Co. v. Signature Fin. Group, Inc. 149 F.3d 1368, 1375-76 (Fed. Cir. 1998) (rejecting a business method exception for patentability of software), with Jay Dratler, Jr., *Does Lord Darcy Yet Live? The Case Against Software and Business-Method Patents*, 43 SANTA CLARA L. REV. 823, 834-40 (2003) (explaining why these inventions do not deserve patent protection); *see also* eBay, Inc. v. Mercexchange L.L.C, 126 S. Ct. 1837, 1842 (2006) (Kennedy, J., concurring) (noting that business method patents are especialy prone to trolls).

whether a given suit is a shakedown is in the eye of the beholder, but this Part strives nonetheless to explain what trolls are and why patents give them a ready home. Once that baseline is established, the discussion considers the sharply contrasting views about these firms and their effect on technology.

A. Some Nasty Surprises

In essence, trolls bring infringement suits based on a patent that was not enforced previously and is being used by others as if the know-how is in the public domain. The ensuing litigation comes as a surprise to a defendant, which is why these suits are analogized to mythical trolls that hid under bridges and leapt out to demand a ransom from travelers.[20] Defendants facing this sort of lawsuit are placed in a tough spot because the item in question is already being made and usually cannot be redesigned without incurring substantial

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[20] *See* Donald J. Chisum, *Reforming Patent Law Reform*, 4 J. MARSHALL REV. INTELL. PROP. L. 336, 340 (2005) ("[A] troll hides under bridges, metaphorically speaking, waiting for companies to produce, that is, to approach and cross the bridge. The ugly, evil troll then leaps up and demands a huge toll, that is, a licensing fee settling actual or threatened patent litigation, litigation that could result in an injunction halting the product line.").

costs. Moreover, plaintiffs are entitled to seek injunctive relief that could shut down production of an entire product line, which gives them powerful leverage in settlement negotiations.[21] Consequently, many firms settle even if the underlying claim is weak because the risk of going to trial is too great.

One reason that this scenario unfolds so often is that the existence of a patent is easy to overlook. Due to the complexity of their content, no simple search can ensure that a technology is not already patented.[22] Indeed, the best proxy for whether something is patented is whether a patent is being enforced. Thus, a firm that develops and then sells an item for an extended period of time has every reason to think that the coast is clear with respect to patent law.

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[21] *See* eBay, Inc. v. Mercexchange, 126 S. Ct. 1837, 1842 (2006) (Kennedy, J., concurring) ("[A]n injunction, and the potentially serious sanctions arising from its violation, can be employed as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the patent.").

[22] This does not mean it is impossible to conduct a patent search. If that was true, then the disclosure requirement for would be meaningless. The point is that people engaged in due diligence are more likely to miss relevant patents than something simple like a trademark, where a search can quickly identify any related words that are registered for a particular class of goods.

Unfortunately, that also means that they will sink huge sums into their product and be more vulnerable to a holdup.[23]

Moreover, the risk presented by these surprise suits is high because patent law holds a defendant liable for infringement even if it does not know that an item is patented.[24] While trademark law considers the intent of an alleged infringer and gives an innocent user the benefit of the doubt, patent law does not.[25] Likewise, the independent creator of a copyrighted work cannot be held liable for

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[23] That vulnerability is increased by the presumption that a patent is valid, *see* 35 U.S.C. § 282 (2000), and the requirement that alleged infringers must prove invalidity by "clear and convincing" evidence, *see* Oakley, Inc. v. Sunglass Hut Int'l, 316 F.3d 1331, 1339 (Fed. Cir. 2003).

[24] Reformers in the nineteenth century sought to create such a defense. *See infra* note 95 and accompanying text.

[25] *See, e.g.*, Polaroid Corp. v. Polarad Elecs. Corp., 287 F.2d 492, 495 (2d Cir. 1961) (stating the test for trademark infringement, which includes an inquiry into a junior user's intent). Patents, unlike copyrights, also have no fair use exception that allows courts to immunize uses from infringement liability on public policy reasons. *See generally* Maureen O'Rourke, *Toward a Doctrine of Fair Use in Patent Law*, 100 COLUM. L. REV. 1177 (2000) (arguing for a fair use defense in patent to address certain market and licensing failures).

infringement, but patent law rejects this exception.[26] Thus, the troll's advantage of surprise is not just tactical; patent law actually imposes strict liability as part of its general policy of providing the strongest possible intellectual property rights.

Though it is easy to see the negative consequences that flow from overlooking a dormant patent, a more perplexing question is why so many patents are not being enforced. One answer is that firms acquire an invention and then refuse to do anything until the technology becomes an industry standard.[27] This behavior is akin to setting a deliberate trap and is not permitted elsewhere in the law.[28] Moreover, this strategy is risky because it involves foregoing certain revenue for the uncertain prospect of greater rewards in the future.

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[26] *See* Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 477-78 (1974); Long, *supra* note 14, at 529 ("[C]opyright imposes a rule of actual notice for liability (at least in theory) whereas patent law imposes a rule of constructive notice.").

[27] *See* Mann, *supra* note 8, at 1027 (discussing "the strategy of waiting after a patent has been issued while an industry advances using the covered technology and then suing widely for infringement only after the industry has become locked into the technology").

[28] For the classic condemnation of this activity, see Bird v. Holbrook, 130 Eng. Rep. 911 (C.P. 1828) (holding that spring guns and man traps on property were unreasonable).

Thus, most patent owners do not take this route.[29] While bad actors grab the lion's share of attention, the claim that most opportunistic patent suits are based on intentional traps is not persuasive.

A more realistic assessment of dormancy starts with the recognition that firms often acquire patents for reasons other than manufacturing and licensing. Recent scholarship indicates that many firms build a patent portfolio to "signal" potential partners that they have a powerful research and development arm.[30] Dormant patents send this signal as well as ones that are enforced. A strong portfolio also lets firms reduce their transaction costs by entering into cross-

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[29] Of course, this view rests on the assumption that the patent is valuable for something other than litigation. A troll might seek out patents that are vague or borderline invalid because they are ideal for lawsuits. *See* eBay v. Mercexchange, 126 S. Ct. 1837, 1842 (2006) (Kennedy, J., concurring) (noting that the "potential vagueness and suspect validity" of some business method patents creates special concerns when injunctive relief is available); Mann, *supra* note 8, at 1026 ("To the extent problems with patent quality make it hard to predict whether a particular patent is or is not valid, they increase the uncertainty and thus the threat value of trollish litigation."); *cf.* Brief of Amici Curiae Various Law and Economics Professors, *Mercexchange*, (No. 05-130), at *19 ("[T]he concern about 'trolls' might reflect anxiety about the uncertainty of the scope and validity of patents, as well as the high cost of patent litigation – both of which provide potential opportunities for 'trolls' to exploit even weak or low-value patents.").

[30] *See generally* Clarissa Long, *Patent Signals*, 69 U. CHI. L. REV. 625 (2002) (exploring this issue).

license swaps where each gets access to the other's patents.[31] In this scheme, patents serve as bargaining chips and will not be enforced unless the licensing partner tries to defect.[32] The threat of tit-for-tat retaliation among these repeat players reduces the risk of dormant patents springing to life.[33] But trolls are immune from this constraint because they are the quintessential one-shot players who are not interested in cooperative pooling arrangements.[34] Instead, these

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[31] *See* Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1504-05 (2001) (explaining how cross-licensing works).

[32] *See* Gideon Parchomovsky & R. Polk Wagner, *Patent Portfolios*, 154 U. PA. L. REV. 1, 26-27 (2005) ("[T]he defensive patenting theory holds that firms acquire patents to ward off possible lawsuits by using the patents as bargaining chips with potential plaintiffs."). Another possibility is that firms will acquire patents simply to prevent their competitors from having them. *See* Robert C. Merges, *One Hundred Years of Solicitude: Intellectual Property Law, 1900-2000*, 88 CAL. L. REV. 2187, 2222 (2000) (discussing this strategy).

[33] *See* Federal Trade Comm'n Report, *supra* note 16, at 3:35-38. The only drawback to this solution is that it forces firms to apply for worthless patents in order to have a sufficient stockpile to deter competitors. *See id.* at 3:30-31.

[34] *See* Mann, *supra* note 8, at 1023 (calling trolls "firms that have no interest in a licensing equilibrium because they produce no products of their own").

firms acquire portfolios designed for other purposes and start enforcing them strictly.[35]

The final category of dormant patents comes from distressed start-ups that either go bankrupt trying to bring their inventions to market or sell their portfolio for pennies on the dollar because they do not have any other assets. This also happens regularly, in part because many inventions do not work when reduced to practice. While there is uncertainty about how many copies a book will sell or whether a brand name will be appealing, there is zero risk that they will not function at all.[36] Even if an invention does work, a patent owner may lack the capital or expertise to turn technology into a profitable invention or license. Finally, a given patent's value might

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[35] Actually, the most effective self-help strategy would be to snatch up any undervalued dormant patents before trolls can get them. *See* Jeremiah Chan & Matthew Fawcett, *Footsteps of the Patent Troll*, 10 NO. 1 INTELL. PROP. L. BULL. 1, *2 (2005) (explaining how Novell did this when Commerce One, a software firm with a healthy patent portfolio, went bankrupt). Of course, this would impose what can be described as a wasteful expense since the entire object would be to ensure that the patents never get used.

[36] *See* Jay Dratler, Jr., *Does Lord Darcy Yet Live? The Case Against Software and Business-Method Patents*, 43 SANTA CLARA L. REV. 823, 845-46 (2003) (laying out the distinction between market risk and technological risk).

not be realized until it is paired with complements that do not exist until after the original inventor is out of business. All of this means that trolls, who are really just bargain hunters, will always have plenty of dormant patents to choose from.

Accordingly, patent law provides a nurturing environment for opportunistic licensing because: (1) it is easy to overlook a dormant patent; (2) there are many reasons why patents lay dormant; and (3) once dormant patents are acquired and used in an infringement suit defendants face a strict liability standard.

B. Different Perspectives on Trolls

While the broad factors that contribute to patent trolls are clear, assessing the impact of this litigation on innovation is tricky. There is no good empirical evidence on this question, and the debate seems to turn largely on a hunch about whether large firms or small ones drive technological development.[37] Those who worship at the altar of start-

[37] Troll supporters, of course, contend that the lack of evidence supports their view that no action should be taken. *See* Brief of Amici Curiae Qualcomm, Inc. & Tessera, Inc., *Mercexchange*, at *8 ("We submit that the absence of any actual examples exposes a fatal flaw in the eBay argument.").

ups see trolls as necessary intermediaries; those who swoon at the big behemoths view trolls as a nuisance. This section briefly lays out the competing perspectives without taking sides.

A positive story of opportunistic licensors would stress their role in leveling the playing field for creators with limited resources. It may be shocking to learn that trolls are not the only parties that engage in opportunistic behavior. Advocates for small inventors in garages argue that corporations see start-ups as easy fodder for a "scorched-earth" strategy of stealing their patents and fighting an infringement suit in the hope of exhausting a plaintiff's funds.[38] This approach is as deliberate and pernicious as a trap set by a troll and should also be condemned.[39] When large firms engage in that sort of

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[38] *See* Brief of Amicus Curiae Qualcomm Inc. & Tessera, Inc., *Mercexchange*, (No. 05-130), at *5 (making this point forcefully); Brief of Rembrandt IP Mgmt., *Mercexchange*, (No. 05-130), at *8 (stating that "[p]atent litigation is notoriously expensive," which "presents ample opportunities for well-funded corporations to run the clock with an endless stream of motions and discovery requests").

[39] One could well say that the user of the technology is the opportunistic licensor in this situation, but since the common understanding of trolls is that they are always plaintiffs this example is still useful.

conduct, opportunistic litigation is simply vindicating the rights of the little guy. Furthermore, these trolls can supply much-needed capital to small entities by buying their dormant patents.[40] From this perspective, trolls invest in undercapitalized firms and thereby make a significant contribution to research and development.[41]

These points spotlight a crucial problem in assessing the troll issue, which is determining how long a grace period patent owners should get before they are expected to enforce their rights. There is little doubt that the failure to use or license a patent for a significant period creates reliance problems for those who reasonably conclude that the technology is in the public domain. First, if the invention is widely available then there is no benefit to society from a suit by the original inventor or its successor. Second, such litigation imposes a

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[40] The question of whether this capital is, in fact, much needed depends on a policy judgment about how much innovation comes from small inventors. That just reinforces the point that the troll debate is wrapped up in a larger discussion about the industrial economics of technology.

[41] If the patents are purchased in a bankruptcy sale, then this argument does not work as well. One could say, though, that providing creditors with a better return facilitates investment in start-ups.

burden on research and development by increasing the risk involved with bringing out a new product. Finally, one might think that it is unjust enrichment for a dormant patent owner to collect from those who perfect the technology. The dilemma for policymakers is that most patentees need some time after the patent is granted to either bring the invention to market or decide that this is not feasible and sell the rights to someone who can.[42] If the incubation period is too short, that could hurt innovation by discouraging small firms from investing in research or forcing them to choose trade secret with all of its drawbacks.[43]

In sum, though the rival theories about trolls are clear, crafting a solution that reduces the harm they cause without damaging other

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[42] Realistically, a start-up is more likely to need this grace period because a small firm has less experience in bringing products to market or evaluating the tradeoffs involved in selling the technology. Thus, those who believe that large corporations are the engine of innovation will tend to want a shorter dormancy period and be less tolerant of trolls.

[43] The most notable limitation is that trade secret protection forces a firm to expend significant resources to keep the information confidential and deprives the public of the benefits yielded by patent disclosure. For a fine summary, see Robert G. Bone, *A New Look at Trade Secret Law: Doctrine in Search of Justification*, 86 CAL. L. REV. 241, 266-70 (1998).

legitimate interests is hard in the absence of concrete proof. Luckily, there is one fruitful source of information that has not been tapped.

PART TWO – SHARKS ON THE FARM

History may seem like a poor tool for analyzing intellectual property due to the swift pace of technological change, but this Part argues that the debates of the nineteenth century contain a treasure trove of information on patent trolls. During that era, there were complaints about patent sharks that engaged in similar behavior with respect to farm tools. Moreover, the arguments made about those activities echo the ones being made by their modern counterparts.

A. A Rich Harvest of Agricultural Patents

Since opportunistic licensors need lots of dormant patents to prosper, the surge of patents granted in the 1870s and 1880s is a good place to start looking for historical clues. In 1876, the Patent Commissioner told Congress that "[d]uring the past seven years a larger number of applications for patents were filed and patents

granted than during the entire seventy-eight years preceding . . . ."[44] Some of this growth can be attributed to the restoration of peace following the Civil War and Reconstruction, but another factor that gets less attention was a change in the patentability standard that ended up having a strong impact on agricultural inventions.

During the late 1860s, the Patent Office basically decided to create a new design patent that encouraged incremental innovation by making it easier to acquire protection.[45] In *Ex Parte Crane*,[46] the Commissioner held that applicants could receive a design patent for most functional improvements.[47] While conceding that the item at

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[44] 46 CONG. REC. 307 (1878) (statement of Sen. Christiancy) (quoting the Commissioner).

[45] A more complete account is presented in Magliocca, *supra* note 15, at 874-79. There was a dispute over whether this test was new or just codified existing practice. *Compare Ex Parte* Crane, C.D. 7 (1869) *reprinted in* FENTON, *supra* note 15, at 225 ("The construction which has been given to that act by the office ever since its passage in 1842, is that it relates to designs for ornament only . . . ."), *with Ex Parte* Bartholomew, C.D. 103 (1869), *reprinted in* FENTON, *supra* note 15, at 234 (contending that "no such 'uniform practice' has existed").

[46] C.D. 7 (1869), *reprinted in* FENTON, *supra* note 15, at 225-26.

[47] *See id.* at 226.

issue – a box for women's furs – could not meet the test for a utility patent, the Commissioner was "unable to perceive why designs for utility are not fairly and properly embraced within the [design] statute . . . ."[48] This conclusion was driven by his desire to expand the subject matter of patent, which he deemed inadequate:

> There is a large class of improvements in manufactured articles that are not regarded as inventions, or as coming within the scope of general patent laws. . . . They promote the best interests of the country, as well as the creations of inventive talent. It seems to me to have been the intent of Congress to extend to all such cases a limited protection and encouragement.[49]

Congress appeared to affirm the Commissioner's position when, in an 1870 revision of the design patent law, they changed the subject

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[48] *Id.*

[49] *Id.* at 225. This liberal interpretation of the design patent statute was not unprecedented. Prior to 1870, the Patent Office used that law to protect many trademarks even though that type of subject matter was not expressly covered. *See Ex Parte* King, C.D. 109 (1870), *reprinted in* FENTON, *supra* note 15, at 246-47 (noting this practice and holding that the new trademark statute superceded the custom); SYMONS, *supra* note 18, at 35 ("[S]ome two hundred design patents were issued for 'designs for trademarks.'").

matter in the text from any "new and original design" to any "new, useful, and original design."[50]

The new standard was criticized for introducing uncertainty into the patent examination process.[51] Stated simply, the problem was that almost any farm tool could be classified as a design. *Crane* noted that "[b]y some it is said that any form or design that is most useful is also most pleasing. It would be impossible, in the view of such persons, to make any improvement in utility that did not at the same time add to the ornamental and artistic . . . ."[52] In essence, the

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[50] Act of July 8, 1870, ch. 230, § 71, 16 Stat. 198; see *Ex Parte* Fenno, C.D. 52 (1871), *reprinted in* FENTON, *supra* note 15, at 252. The legislative history sheds no light on why Congress made this change.

[51] *See Ex Parte* Parkinson, C.D. 251 (1871), *reprinted in* FENTON, *supra* note 15, at 259 ("The practice of the office in granting design patents has been not only liberal but lax."); *id.* (stating that the recent precedents "opened the door to design patents far too widely").

[52] *See Crane*, *supra* note 45, at 226; *see also Fenno*, *supra* note 50, at 252 (holding that a purely functional improvement could get a design patent even though it could not get a utility patent).

Patent Office was lowering the bar for patents on functional changes by allowing their esthetic qualities to count towards that inquiry.[53]

Putting aside the merits of this approach, its main consequence was that the Patent Office was swamped with new applications. A subsequent Commissioner watched this gold rush with mounting alarm, arguing that "[t]he idea of stretching the section in question to cover slight changes in the form of crowbars, spades, plows, scrapers, &c., is simply ridiculous, and tends to bring the whole system into disrepute."[54] He focused his ire on "imposters" that "desire a design patent merely to obtain the right to put the word 'patented' upon their manufacture, and thereby deceive the public and wrong real

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[53] *See* Parkinson, *supra* note 51, at 258 ("The Legislature never intended . . . to let down the standard for patents. It was never contemplated to grant a design patent for every possible change of form that might be given to a machine or article of manufacture.").

[54] *Id.* at 259; *see* 45 CONG. REC. 398 (1878) (statement of Sen. Christiancy) (attacking the patents granted "in many trifling improvements in farming implements, in gates, gate-hinges and latches, and a thousand other things of like trivial nature"); Patent Testimony, *supra* note 10, at 111 ("I should like to notice, because I think the time has come when it should be noticed, and noticed very severely, the issue of patents out of the Patent Office for the most insignificant things in the world . . . .").

inventors, for they well know that not one person in ten thousand will ever learn the fact that the patent only covers the design."[55] Although reformers attempted to address this criticism, during the next two decades the Patent Office issued conflicting rulings that probably just made the problem worse.[56]

B. Royalty Agents and Nuisance Suits

By the mid-1870s, these patent imposters started commanding public attention. The only secondary source that discusses this issue is an article by Earl W. Hayter, an agrarian historian writing in the 1940s.[57] That scholarship, which was understandably overlooked by

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[55] *Parkinson*, *supra* note 51, at 259; *see* Hayter, *supra* note 10, at 65 (noting that these "moonshiners" also "deceived the purchasers by using false trademarks and license tags on their products").

[56] *Compare Ex Parte* Shoeninger, 15 O.G. 384 (1879), *reprinted in* FENTON, *supra* note 15, at 301-03 (reaffirming *Crane*), *with Ex Parte* Schulze-Berge, 42 O.G. 293 (1888), *reprinted in* FENTON, *supra* note 15, at 324-33 (overruling *Shoeninger*). I say probably because it is difficult to assess the informal practices of the Patent Office in that era. Nevertheless, it seems likely that the instability in the formal standard created more confusion for the examiners.

[57] *See* Hayter, *supra* note 10, at 59 (describing "the basis of this study" as "what farmers referred to as the 'outrages of the patent right system'"). Hayter later reprinted this piece in full as a chapter of a book on agrarian discontent. *See* EARL W. HAYTER, THE TROUBLED FARMER 211-27 (1968).

legal scholars, is backed by a fresh look at the primary materials that Hayter relied upon as well as others that he did not discuss.

These records reveal that opportunistic licensors were actively extracting favorable settlements from farmers. In their acquisition of dormant patents, the *modus operandi* of patent sharks was similar to the one employed by modern trolls, as Hayter described in language that should not be paraphrased:

> Beginning with the seventies and eighties a large number of articles for farm use were patented by inventors throughout the country, but these were often insignificant and would have to be sold so cheaply that inventors found it impossible to realize any money on them; in such cases they would generally allow the patents to lie dormant. Manufacturers frequently infringed these inactive patents and put them on the market in large numbers. The patentees, seeing their inventions in general use among the farmers, would suddenly come to life and insist upon their legal rights.[58]

This passage encapsulates what makes dormant patents a problem, which is that: (1) they are not enforced for a long period of time; (2) subsequent manufacturers use the patented technology and make it profitable without being aware of its protected status; and (3) once

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[58] Hayter, *supra* note 10, at 61 (internal citations omitted).

they become established the patent owner launches a surprise suit.[59] The original inventors brought some of these infringement actions, but most came from third parties that specialized in litigation and bought up the dormant patents.[60]

The leading difference between nineteenth-century sharks and contemporary trolls is that the former sued consumers of infringing articles rather than their manufacturers.[61] Royalty agents fanned out

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[59] *See* 46 CONG. REC. 1973 (1881) (statement of Sen. Voorhees) ("Patentees of articles stand by and see other persons manufacture the same article and sell it until it is spread all over a vast extent of country and is general use. Then their agents commence visiting those who have purchased these articles and have them in use."); *cf.* Arguments Before the Committee on Patents, 45th Cong., 2d Sess., Sen. Misc. Doc. No. 50, at 123 (1878) (testimony of J.H. Raymond) (stating that sharks used "practically useless patents [that] come into value only at a very late stage in their history, after the line of inventions has proceeded to a practical result").

[60] *See* Hayter, *supra* note 10, at 62 ("Old claims, or 'bottom' patents as they were called, that had become inoperative and unremunerative to the inventor were often bought up at a small fee by a patent 'ring'"); *see also* 45 CONG. REC. 1871 (1879) (statement of Rep. Deering) ("It is not the meritorious inventor that reaps the reward or realizes the profit of his industry and skill, but the greedy speculator, who lurks at the door of his workshop and makes necessity his opportunity.").

[61] Another distinction is that opportunistic licensors formed a cartel called the "patent ring" and obtained extensions in the term of protection and in the scope of their patents by "manipulating" (*i.e.*, bribing) Congress and the Patent Office. *See* Hayter, *supra* note 10, at 62 & n.11 (stating that firms sometimes persuaded examiners to reissue a patent that covered subsequent improvements

across the country and approached farmers with the claim that their tools were patented.[62] These agents would threaten to sue unless they received a settlement of between $10 and $100.[63] Since the average farmer knew little about patent law and had no way of determining whether the threat was credible, he almost always settled.[64] Even if someone did want to fight, the costs of seeking

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or obtained a seven-year extension from Congress upon a showing that they did not receive adequate compensation). There are no allegations that modern trolls abuse the system in a similar fashion.

[62] *See* 45 CONG. REC. 271 (1878) (statement of Sen. Windom) ("I believe it is true that there is not a farmer in this country to-day who is not liable to a score of suits or more for the infringement of patents on his farming implements. There is something about his plow, his harrow, his thrasher, or his reaper, some little insignificant thing that nobody ever ought to have had a patent for, and never would upon a properly administered patent system."); *cf.* 45 CONG. REC. 1871 (1879) (statement of Rep. Deering) (explaining that patent sharks "do not scruple to palm off any of the ten or fifty thousand of utterly worthless patents, or to extort sums of money on unjust allegations of infringement).

[63] *See* 46 CONG. REC. 1973 (1881) (statement of Sen. Voorhees) ("A farmer when notified that he has in use an article the manufacturer of which it is claimed has infringed some patent right, with the alternative of paying the man who visits him from fifty to one hundred dollars or being dragged to a United States court . . . ."); 45 CONG. REC. 303 (1878) (statement of Sen. Windom) ("There are today, as I am informed, five hundred [patent] suits for $10 each pending in the United States district court at Saint Paul.").

[64] *See, e.g.*, 46 CONG. REC. 1973 (1881) (statement of Sen. Voorhees) ("The manufacturing company will stand on its legal rights and go into litigation quite as cheerfully as the other side, while the plain people of the country shrink from

counsel or defending the suit would exhaust the resources of all but the richest farmers. The value of each claim was small, but the sum of these opportunistic licenses was considerable.[65]

This was the Blackberry case of its day, as public outrage over the intrusion of patent law into the lives of average people triggered unprecedented scrutiny. Congressmen from rural states attacked "the useless and dormant patents which have been granted, and to the evils which result from their resuscitation by the Cossacks who follow the army of inventors."[66] The Framers of the Constitution, one representative said, "never contemplated a system that would authorize or permit an army of swindlers to prey upon communities

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law, and justly so, as they would from contagion, small-pox, or any other great calamity.").

[65] *See* Hayter, *supra* note 10, at 67 (providing contemporary estimates on the scale of the problem); *cf.* Patent Testimony, *supra* note 10, at 109 (explaining how royalty agents operated and stating that "this kind of blackmailing under the law amounts to millions of dollars annually").

[66] 45 CONG. REC. 398 (1878) (statement of Sen. Christiancy); *see* Hayter, *supra* note 10, at 73 ("The abuses of the patent system, as related to infringements and the collection of royalty fees, became so acute, and the individual farmer so helpless to cope with them, that organized efforts were made to voice his discontent.").

and plunder the unwary and unsuspecting."[67] These opportunistic licensors were part of that "class who prefer the game of chance to any regular business; who are anxious to realize large profits from slender means and efforts; men who always contrive to get on in the world without hard work."[68] One Senator summed up the problem by asking if it was "necessary to the success of invention that the great body of our people shall be exposed to exactions of this kind and find it cheaper to pay than to defend themselves."[69]

Farmers' organizations, led by the National Grange, tried to address the problem but met relentless opposition.[70] Advocates for

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[67] 46 CONG. REC. 1871 (1881) (statement of Rep. Deering).

[68] *Id.*; *see* 47 CONG. REC. 3954 (1882) (statement of Rep. Burrows) (calling sharks "insatiate vampires"); *id.* (listing a series of specific settlements in one congressional district as "samples of the persecutions to which the farmers are subjected").

[69] 46 CONG. REC. 270 (1881) (statement of Sen. Kirkwood).

[70] *See* Hayter, *supra* note 10, at 77-78 (describing the activities of the Grange and noting that the number of petitions on this subject "ran a close second to those pertaining to Civil War pensions"); *see also* 45 CONG. REC. 2837 (1879) (noting the joint resolutions passed by western legislatures requesting relief "from the oppression of patent-right monopolies"). The specific proposals advanced by these parties are discussed in Part IV.

the industrial and creative lobbies countered that no reforms were necessary and that any change would cripple innovation.[71] Hannibal Hamlin, Abraham Lincoln's first vice-president, told the Senate that "[t]here are hard cases; there are cases of extreme hardship . . . but that hardship is hardly a sufficient justification, in my judgment, for abolishing that system of patents which has accomplished so much in this country."[72] The most famous supporter of the status quo was none other than Thomas Edison, who said that the revisions would "not only act oppressively upon many inventors, but will strongly tend to discourage and prevent the perfection of useful inventions by those most fitted for that purpose, and most likely to accomplish it . .

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[71] *See* Hayter, *supra* note 10, at 81 ("[P]rominent senators as Roscoe Conkling, Orville H. Platt, George F. Hoar, and others saw only danger in these attempts to revise the system; they ridiculed and minimized its alleged evils, pointing out the immense value of many patents to farmers under the existing laws.").

[72] 45 CONG. REC. 272 (1878) (statement of Sen. Hamlin); *see* DAVID HERBERT DONALD, LINCOLN 262-63 (1995) (describing Hamlin's role as Lincoln's running mate in 1860). For a criticism of Hamlin's view, see 45 CONG. REC. 270 (1878) (statement of Sen. Windom) (stating that if this "means that patents bought up by speculators for a mere nominal sum may be used to plunder and oppress innocent people, who without notice of the existence of such patent have purchased articles in open market . . . I say let the system be abolished").

. . It would be very burdensome to me."[73] At this point, the debate on patent sharks had reached the stage where we now find ourselves – roughly speaking – with respect to patent trolls.

In sum, the nineteenth century saw a burst of opportunistic licensing that is comparable to the current state of affairs. The next question worth exploring is why opportunistic licensors appeared in force at these particular (and widely separated) times.

PART THREE – PATENTS THAT ATTRACT TROLLS

The previous discussion provided two examples, modern technology and farming tools, where opportunistic licensing was a big concern.[74] Tellingly, these are also the only two times when this

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[73] Hayter, *supra* note 10, at 81 (quoting a letter from Edison to Senator Benjamin Butler). Edison was acutely aware of the importance of third-parties for small inventors, since he could not have continued his own research without that sort of backing. *See* PAUL ISRAEL, EDISON: A LIFE OF INVENTION 41-42 (1998) ("Like most young inventors . . . [Edison] had technical know-how but lacked financial resources for experiments and patent expenses.").

[74] There is a related problem with "submarine patents," but that is mainly about manipulating the application process to extend the term of protection. *See* John F. Duffy, *Rethinking the Prospect Theory of Patents*, 71 U. CHI. L. REV. 439, 491 (2004) (describing these submarine patents); *see also* Symbol Technologies, Inc. v. Lemelson Medical, 277 F.3d 1361 (Fed. Cir. 2002) (relying on laches to reject an applicant's effort to double the length of protection by using dilatory tactics at

happened.[75] Though mindful of the hazards that come with drawing conclusions from such a limited data set, this Part contends that only certain types of patents breed trolls. Opportunistic behavior is more likely to occur when there is a large gap between the cost of getting a patent and the value of infringement suits.

A. Stop Blaming the Patent Office

The traditional scapegoat for opportunistic litigation is the incompetence of patent examiners. One activist during the 1880s said that "[a] goodly portion of the patent wrongs have grown out of the reckless methods of the patent office. It has been accustomed to grant most of the applicants and let the questions of infringement be fought out in the courts."[76] While saving most of their anger for the sharks

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the Patent Office). Since applications are confidential, someone could set a trap by stalling during that process to conceal a patent for years until it is granted and then "surfaces" to surprise a defendant. This tactic works because once a patent is granted the protection starts from the point when the application was filed.

[75] Just to be clear, I am not saying that opportunistic licensors are absent outside of the farming and technology examples discussed in the text. The only point is that for most patents the incidence of trolls is relatively minor and can be tolerated as a cost of doing business.

[76] Hayter, *supra* note 10, at 64.

themselves, rural senators often lambasted the examiners for granting patents on too many trivial or obvious items.[77] One even listed some of these dubious patents, adding a quip about one issued for a "bow and arrow (very essential in the present stage of human progress)."[78]

Today, anti-troll forces are also claiming that the Patent Office issues far too many low-quality patents.[79] Instead of attacking the examiners directly, the modern critique puts the blame on inadequate

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[77] *See, e.g.*, 45 CONG. REC. 396 (1878) (statement of Sen. Christiancy) ("[M]uch time and labor, I insist, have of late years been spent in the investigation of applications for patents for these trifling matters, which ought to have been promptly rejected, as not, upon the whole, sufficiently useful and important to justify the issuing of patents"); *id.* at 289 ("I think I am safe in saying that there are a hundred thousand patents to-day in the Patent Office of the United States for little insignificant inventions . . . ."); Hayter, *supra* note 10, at 64 ("[T]he great number of patents resulted from laxity in administering the law; that sufficient care was not taken at the Patent Office to ascertain whether the inventions were really novel; and that patents were granted on trifling modifications which required no genius to originate and were therefore not entitled to protection.").

[78] 45 CONG. REC. 307 (1878) (statement of Sen. Christiancy).

[79] *See* Brief of Amicus Curiae Computer & Comm'n Ind. Ass'n, eBay, Inc. v. Mercexchange, 126 S. Ct. 1837 (2006) (No. 05-130) at *14-*15; *see also* Federal Trade Comm'n Report at 4:40 (quoting a witness who testified that "the lack of effective mechanisms to challenge questionable patents, the presumption of validity, and 'a patent office that is generous to patent applicants' also facilitate the use of hold-up strategies . . . .").

funding and a perfunctory review process.[80] These institutional flaws might explain patents like the one recently granted for "an antigravity space vehicle," which sits at the opposite pole of absurdity from a bow and arrow.[81] Thus, many of the reform proposals currently being shopped around seek to dampen troll activity by beefing up the Patent Office's staff or creating a post-grant opposition procedure.[82]

There is certainly merit in these critical assessments of the Patent Office. Low-quality patents contribute to trolls in two ways. First, if a patent is erroneously granted on something already in the

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[80] *See* Chan & Fawcett, *supra* note 34, at *3-*4 (stating that "[t]he current environment is a perfect breeding ground" for trolls since an underfunded and understaffed Patent Office leads to the result "that thousands of ambiguous and dubious patents are issued every year . . . ."); Wu, *supra* note 2, at --- (stating that "[t]he examiners' union calls the PTO a 'sweatshop,' and no wonder").

[81] Wu, *supra* note 2, at --- (quoting Patent No. 6,960,975, which states that "the spacetime curvature imbalance provides for the space vehicle's propulsion")

[82] *See* Barker, *supra* note 7, at ¶¶ 20, 30-36 (describing how this process might work and noting that the FTC has endorsed the idea); Federal Trade Comm'n Report at 5:55 ("Several panelists argued that if the PTO had more examiners, made a greater effort to keep experienced examiners, and gave patent examiners more time to spend on their initial examination, the PTO would issue fewer questionable patents.").

public domain (*e.g.*, the wheel) then the effective dormancy period will be exceptionally long. This in turn means that the sunk costs of other users will be high when the troll brings its case.[83] Second, if examiners let especially vague patents issue then the uncertainty surrounding what is protected will make it easier for opportunistic licensors to wreak havoc. Understanding the scope of an ordinary patent is hard enough. A defendant in an infringement suit based on an unclear patent, though, faces even more risk of defeat.

Nevertheless, responsibility for patent trolls cannot be placed entirely on crumby patent examiners. This theory does not explain why opportunistic licensors proliferated only twice in our history. If inadequate staff and flawed internal procedures were the problem, then we should be swamped with these meddlesome suits most of the time. Furthermore, even during periods when this litigation was prevalent the sharks (or trolls) only targeted certain patents. It is

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[83] This is just another way of saying that the novelty requirement in 35 U.S.C. §§ 102 (a) & (b) is a safeguard against patents that are worthless except as troll weapons.

hard to explain why the examiners at a particular time would mess up so badly with respect to farm inventions or high-tech patents but perform well otherwise. Thus, a logical hypothesis is that something else must be partly responsible for the problem.[84]

B. The Conditions for Arbitrage

If the types of inventions being patented are related to the growth of opportunistic suits, then there must be some substantive link between complex information technology and basic farm tools. While these types of inventions may seem like night and day, upon closer examination common points do emerge about the risks that these dormant patents present to defendants as compared to the plaintiffs' acquisition costs.

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[84] Of course, there were some faulty post-examination procedures that Gilded Age sharks used to their advantage. *See supra* note 61. Furthermore, there were a few complaints about opportunistic suits that do not fit the model described in the text, most notably barbed wire. *See* Washburn & Moen Mfg. Co. v. Beat 'Em All Barbed-Wire Co., 143 U.S. 275 (1892) (upholding the Glidden patent); Hayter, *supra* note 10, at 74-75 (describing the criticisms about patent royalty suits for barbed wire).

In thinking about why certain patents might be more exposed to trolls, the first question worth exploring is why the defendants in these suits are so eager to settle. Two answers come to mind. First, the cost of losing (damages or paying to escape an injunction) could be high. Put another way, how hard is it for a firm to substitute from the disputed technology and use something else? The harder the substitution is, the greater the leverage is for the troll. Second, the likelihood of losing could be high (or highly uncertain), which enhances a troll's ability to coerce a settlement. Not surprisingly, patents susceptible to opportunistic licensors present both of these hazards in spades.

1. Substitution Effect

On the substitution point, let us begin by examining the high-tech patents (*e.g.*, software and hardware) that are at the core of the present troll problem. One notable point about these types of inventions is they are usually embedded in products that contain scores of other patents. When that integration occurs and the item is

being made, the manufacturer cannot remove a given patent from this bundle without redesigning the entire device – it is like pulling a thread from a tapestry. Thus, a troll need not hold the rights to a particularly important or valuable patent to get a hefty settlement. Opportunistic licensors can "capture not only the value of their inventions, but the value of complementary assets and irreversible investments made by defendants as well."[85] In other words, the complex and interdependent nature of these patents makes it hard to substitute away from one of them when a troll comes calling.

When the inquiry turns to farm implements, substitution was just as hard for the opposite reason – the patented items were basic necessities. Farmers cannot do without plows, shovels, fences, and other simple tools. Patent sharks, therefore, had these folks over a barrel when the royalty agent appeared. Of course, the object of a

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[85] Mark A. Lemley, *Patenting Nanotechnology*, 58 STAN. L. REV. 601, 630 (2005); *see* Brief of Amicus Curiae Computer & Comm'n Ind. Ass'n, eBay Inc. v. Mercexchange, 126 S. Ct. 1837 (2006) (No. 05-130), at *2-*3 (stating that the law lets "the patentee to extract settlements that approach the costs of shutting down an entire product line, far in excess of what a reasonable royalty is likely to be").

threatened suit could avoid liability by purchasing a non-infringing version of the same tool. Yet that substitution was problematic because most farmers were poor. So long as the money demanded by the shark was less than the cost of buying a "clean" replacement, an opportunistic licensor could profit from the difficulty involved in substituting because of a resource constraint.[86] As a result, we can expect trolls to sprout at both ends of the spectrum – very complex and very simple – where the substitution effect is weak and the relative value that trolls can extract is high.

2. Marginal Improvements

The inability of defendants to escape a troll is also reflected in the likelihood (or uncertainty) that an infringement suit will succeed. After all, those sued by opportunistic licensors may conclude that, although the cost of losing is high, a settlement should be rejected because the probability of a troll wining is clearly low. One reason

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[86] This problem was compounded by the activity of peddlers who sold farmers "non-infringing" tools backed by phony certificates guaranteeing their reliability. See Hayter, *supra* note 10, at 65.

why farmers were so willing to settle in the nineteenth century was that many could not even afford lawyers to assess the merits of a claim by a patent shark. Moreover, a common complaint about the design patents granted following the Civil War was that it was "exceedingly difficult to separate the form and configuration of a body from its function."[87] As noted earlier, a vague patent makes it harder for defendants to determine the scope of its protection and hence unwilling to take the risk of going to trial.[88]

More important, assessing the probability of success for an infringement suit is terribly challenging when the average advance made by a patent is relatively small. In that case, a defendant will have a difficult time distinguishing their technology from one owned by a troll. Even if there is no literal infringement of a patent, under

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[87] *Ex Parte* Schulze-Berge, 42 O.G. 293 (1888), *reprinted in* FENTON, *supra* note 15, at 332; *see* Ralph S. Brown, *Design Protection: An Overview*, 34 UCLA L. REV. 1341, 1398 (1987) ("The dominant concern of the law protecting designs of useful articles has been to keep design and utility separated.").

[88] *See supra* notes 83-84 and accompanying text. Though certain information technology patents are also opaque (*e.g.*, business methods and software), not all patents under attack by modern trolls share that trait. Computer hardware, for example, does not seem especially unclear.

the "doctrine of equivalents" an infringement occurs when an item is functionally similar to a patent.[89] This does not mean that all modest improvements are infringing. The point is that defendants facing a suit under these circumstances face more uncertainty (and are thus more likely to settle) than they would be if the average innovation represented a big leap from the prior art.[90]

Information patents and farm tool designs are both characterized by incremental change, though again for different reasons. For computer hardware or software, marginal advances are the norm because these inventions yield greater benefits when they are linked together into a network or use a common industry

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[89] *See* Graver Tank & Mfg. Co. v. Linde Air Prods., 339 U.S. 605 (1950) ; *cf.* Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 CAL. L. REV. 1, 41 (2001) ("The pattern of cumulative, sequential innovation and reuse that prevails in the software industry creates the risk that software patents will cast large shadows in infringement litigation. Specifically . . . the temptation for the trier of fact to find equivalence in improvements will be correspondingly greater.")

[90] *See* Cohen & Lemley, *supra* note 89, at 3-4 (calling for the doctrine of equivalents to be applied narrowly for computer software).

standard (*e.g.*, Microsoft Windows).[91] The need for interoperability in information technology means that innovations must conform to whatever standard is used and get channeled into a narrow range. This is another consequence of the integrated nature of technology that makes the costs of losing infringement suits so high. Thus, the patents used by trolls are vulnerable because they work with each other and are likely to share significant traits.

As for farm implements, incremental improvements are typical because of simplicity rather than interdependence. Though it sounds a little glib, there are only so many ways to design a shovel. In other words, industrial designers rarely achieve outstanding leaps because they have a limited set of elements to work with.[92] Indeed, almost

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[91] *See* A. Douglas Melamed, *Network Industries and Antitrust*, 23 HARV. J.L. & PUB. POL'Y 147, 148 (1999) ("[T[he defining characteristic ... of network industries is that they involve products that are more valuable to purchasers or consumers to the extent that those products are widely used.'); *see also* Cohen & Lemley, *supra* note 90, at 41 ("Software innovation is by nature largely incremental. It is rare for programs to be rewritten entirely from scratch . . . .").

[92] *See* Jay Dratler, Jr., *Trademark Protection for Industrial Designs*, 1988 U. ILL. L. REV. 887, 892 ("The designer's art focuses on the creation of new and nonobvious techniques . . . but on the use of old ones in well-known ways to develop useful products."). This explains why designers are not satisfied with the application of

every new design just involves rearranging basic elements (colors, shapes, and materials) into a new pattern. As a result, almost every innovation in industrial design is only slightly different from what came before.[93] And when sharks appeared holding design patents in basic tools, farmers were hard-pressed to show that their shovel or plow was not substantially similar to the patented version. Just as the simplicity of farm tools made them hard to avoid using, the same quality made it harder to claim that they non-infringing.

3. Cheap Technology

The final condition that opportunistic licensors need to prosper is low-cost patents. Arbitrage opportunities, after all, are curtailed as transaction costs increase. If acquiring or retaining a patent were

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the "nonobviousness" standard for designs patents, which excludes most esthetic improvements. *See* David S. Welkowitz, *Trade Dress and Patent – The Dilemma of Confusion*, 30 RUTGERS L. J. 289, 293 (1999) ("[D]esigners believe that design patent protection is inadequate for the task and desire more protection than the law currently affords.")

[93] Another problem is that it is nearly impossible to judge something as subjective as an artistic breakthrough. *See* Note, *Protection for the Artistic Aspects of Utility*, 72 HARV. L. REV. 1520, 1522 (1959) ("Whereas it may often be possible to recognize a technological innovation as an 'advance' because of its efficiency in promoting economies or in achieving previously unattainable utilitarian ends, there exist no comparable criteria of 'advance' for artistic creations.").

expensive, then trolls would face more risk. For the examples of information technology and farm tools, however, no such risk was present. Since high-tech devices are often highly integrated, a troll only needs a single and cheap patent to force a large settlement. As for patent sharks, the costs of acquisition were sharply reduced by the decision to lower the patentability standard for designs.[94] By removing the obstacles to opportunistic litigation, the Patent Office made it possible for sharks to flourish.

In sum, the factors that fuel opportunistic licensors are (1) a lack of substitutability by the defendant; (2) a technology typified by incremental improvements; and (3) low acquisition costs. Farm tools and information technology meet these criteria and demonstrate that trolls are likely to cluster at each end of the range – very complex and simple – but not in the vast middle. And just as history helped identify the leading causes of trolls, that tool can also offer guidance on the remedies for this problem.

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[94] *See supra* notes 45-56 and accompanying text.

PART FOUR – TROLLS REMEDIES AND TAXES

This Part compares the proposals made in the nineteenth and twenty-first centuries in response to opportunistic licensing. In both eras, attempts to address the issue through a recalibration of patent rights failed because of opposition from firms that were not plagued by trolls. During the Gilded Age, that insight was ultimately applied by abolishing the design patents used by sharks. A similar solution could work for technology patents, but there are other answers that can make it too costly for trolls to operate.

A. Past as Prologue – Anti-Shark Measures and Political Choice

Just as agrarian activists denounced opportunistic licensors in terms that match contemporary parlance, they also offered a set of reforms that echo many ideas now being floated to deal with patent trolls. The most popular idea at this time was to create an innocent user defense so defendants could not be held liable for infringement

unless they knew that an item was patented.[95] Indeed, the National Grange petitioned Congress to "amend the patent laws . . . to make the manufacturer or vendor alone responsible for infringement in the sale of patented articles."[96] A related thought was that the exclusive federal jurisdiction in patent infringement cases should be modified by establishing a statutory minimum for claims, which would have effectively ended suits against most individual farmers.[97] And there

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[95] *See* 46 CONG. REC. 1871 (1881) (statement of Rep. Deering) ("The patent law should be changed as to hold the manufacturer or vendor, or both, alone responsible to the patentee for infringement of his rights."); *id.* at 1973 (statement of Sen. Saulsbury) ("I would, if I had the power to do it, put in the bill a clause providing that he should make no recovery of any amount . . . if the defendant established the fact that he was an innocent purchaser of the article in open market . . . .").

[96] *Id.* at 102 (statement of Sen. Butler) (introducing the petition).

[97] *See* 45 CONG. REC. 396 (1878) ("[I]f the plaintiff shall not recover the sum of $50 or over, the court shall adjudge him to pay his own costs, unless it shall also appear that the defendant at the time of such purchase, manufacture, or practical application, had knowledge or actual notice of the existence of such patent . . . ."); *id.* at 303 (statement of Sen. Windom) (stating that a similar amendment would "withhold from the use of patent-owners the circuit and district courts of the United States for the collection of mere frivolous claims unless the claimants pay their own costs").

was a third plan that involved using compulsory licensing.[98] All of these reforms sought to curb sharks by making it easier for end users to find "safe havens" from which they would not have to substitute from the patented technology.[99] Of course, they also all weakened patent protection across the board.

None of these bills were ever enacted, which should come as no surprise since the interests unaffected by patent sharks saw no value in them. A critic who typified conservative opinion explained that "compelling the patentee to prove that the infringer had notice of the

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[98] *See* 45 CONG. REC. 398 (1878) (statement of Sen. Christiancy) ("There is still another class of cases in which, for patents hereafter to be issued, to prevent extortion, some rate of compensation should be fixed by the statute . . . when the infringement consists in using the thing patented."); Hayter, *supra* note 10, at 77 ("[A] number of state granges proposed that, when patents were issued or renewed, a definite royalty fee be set and paid to the patentee; in return for this payment could construct and sell such improved machines and thus bring them into immediate use."). Twenty-first century commentators have also suggested compulsory licensing. *See supra* note 13 & *infra* note 104 and accompanying text; *cf.* Mann, *supra* note 8, at 1023 (rejecting this but noting that "[a] natural response . . . is to limit the right of trolls to enforce their patents in some way. An obvious possibility is compulsory licensing, in which a third party sets a 'reasonable' rate at which the patent must be licensed").

[99] In the case of compulsory licensing, the substitution cost would be fixed at a rate far lower than would be set if the troll held an injunction over a defendant. As for an innocent user defense (either in substance or through jurisdiction), the cost of substitution would be zero because there would be no need to substitute.

patent, entirely abolishes and repeals his rights."[100] Senator George Hoar of Massachusetts added that an innocent user defense was too broad because sharks brought only a fraction of all patent infringement suits.[101] He also noted that such a defense would also apply to railroads that stole a small inventor's idea and then claimed they were unaware of a patent.[102] Modern defenders of trolls say that hampering them would hurt start-ups and help large firms, and sympathetic legislators in the nineteenth century also wondered if by trying to help farmers they would end up aiding greedy trusts.[103]

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100 45 CONG. REC. 289 (1878) (statement of Sen. Wadleigh).

101 *See id.* at 269 (statement of Sen. Hoar) (stating that suits against farmers were usually "not the case to which the patent laws of this country apply").

102 *See id.* at 270 (statement of Sen. Hoar) ("I understand that it is proposed to enact that the inventor of the air-brake cannot stop a railroad company in this country from its perpetual use unless he can show that the company had knowledge or actual notice of his patent before they purchase the article from a man that manufactured it.").

103 *See id.* (statement of Sen. Kirkwood) ("I have no desire to interfere in any contest going on between railroad companies and patentees. Railroad companies are able to take care of themselves."); *supra* notes 37-41 and accompanying text.

This take on the issue suggests that any proposal affecting substantive rights is a non-starter because most patentees are not susceptible to holdups. Whether this is just a fact of interest-group politics or a principled stance that remedies should be tailored to fit harms, the point flows directly from the observation that only some types of patents are exposed to opportunistic licensors. In the *eBay* case discussed earlier, the effort to convince the Court to restrict injunctive relief (a form of compulsory licensing) was met with a stack of hostile amicus briefs from groups like the pharmaceutical industry that do not fear trolls.[104] Similarly, the bills that are languishing in Congress seek to stop opportunistic licensing by overhauling standards on willful infringement and injunctive relief while altering the examination process by allowing third parties to challenge patents in an administrative proceeding.[105] These may be

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[104] *See supra* note 17 & notes 4-8 and accompanying text. This is tantamount to compulsory licensing because, once injunctive remedies are unavailable, the only alternative is damages determined by a court or jury.

[105] *See* Chan, *supra* note 34, at *7-*11 (describing H.R. 2795, 109th Cong. (2005)). One distinction between the nineteenth century and today is that past

good ideas, but as anti-troll measures they sweep too far and are likely to motivate intense resistance from many patentees.

One way out of this political morass would be to target any reforms at the opportunistic licensors themselves, but here there are major definitional problems. Finding a test that separates trolls, who are presumably identified by their bad faith, from firms with genuine interests or grievances is challenging to say the least.[106] Any troll can seek to avoid that pernicious label by taking on some valid licensing or research work to confuse the issue.[107] More important, firms that

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efforts to address opportunistic licensing focused entirely on substantive change, whereas the current emphasis is on a mix of institutional or remedial reforms.

[106] *See* Mann, *supra* note 8, at 1023 ("Although the suits of trolls frustrate many in the industry, any effort to design a suitable definition of the term 'troll' is likely to lend credence to the view that the status of a troll is in the eye of the beholder."); Brief of Amici Curiae Qualcomm Inc. & Tessera, Inc., eBay, Inc. v. Mercexchange, 126 S. Ct. 1837 (2006) (No. 05-130) at * 19 ("There is simply no way to subdivide NPEs [Non-Practicing Entities] into 'good NPEs' and 'bad NPEs.' There is no judicially-manageable bright line between supposed 'patent trolls' and inventors who cannot practice their inventions because of resource limitations or managerial considerations.").

[107] *See* Brief of Amici Curiae Various Law & Economics Professors, eBay, Inc. v. Mercexchange, 126 S. Ct. 1837 (2006) (No. 05-130) at *20 ("[O]nce a definition is put into effect, then the formerly-passive 'trolls' will have an incentive to engage in modest, arguably inefficient, licensing efforts to preserve their blocking position . . . .").

are really trying to bring their patents to market but have not done so are difficult to distinguish from bad actors.[108] This highlights a flaw in making opportunistic licensors a disfavored class of plaintiffs – that determination is itself ambiguous. Confronted by a suit from a troll, it is unlikely that defendants will risk going to trial based on the uncertain prospect that the plaintiff might be penalized for bad faith. Accordingly, the arduous task of defining opportunistic licensors will probably not even pay off.[109]

B. Eliminating the Underlying Patents

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[108] This relates back to the point made before about the need for a grace period after a patent is granted. *See supra* note 41-43 and accompanying text. Since it is unrealistic to expect that patentees will bring their invention to market right away, there will always be some doubt about whether an action based on a previously unenforced patent is being filed in bad faith.

[109] Attacking the problem by enhancing equitable defenses or the remedial discretion of the federal courts will not work for the same reason. Each approach makes it more likely that a troll will lose at trial, but neither will diminish the uncertainty about the outcome at the settlement stage.

Instead of modifying substantive rights across all patents, Congress could repeal the specific types of patents that sustain opportunistic licensors. This more limited approach would avoid much of the political infighting that is endemic to a comprehensive solution by leaving the patent rights of unaffected industries alone. Moreover, a repeal would remove all doubt about whether a troll could maintain a suit and thus would be far more effective than any enhancement of equitable remedies. Most important of all, abolition was the solution for patent sharks in the nineteenth century. After a long internal debate, the Patent Office reversed field in the late 1880s and held that design patents should only be granted for significant ornamental improvements and ended protection for trivial changes in "propeller-blades, plow-shares, and other like instrumentalities."[110] Congress then revised the design patent statute and formally raised the standard back to where it was before the Patent Office started its

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[110] *Ex parte* Schulze-Berge, 42 O.G. 293 (1888), *reprinted in* FENTON, *supra* note 15, at 332; *see* Magliocca, *supra* note 15, at 878-79 (describing this opinion).

disastrous experiment in the 1860s.[111] Following these actions, the complaints about patent sharks disappeared and did not return.[112]

If the historical parallel between sharks and trolls rings true, then the obvious implication is that repeal is the only real answer to the troll problem. This is does not mean that we should wipe out all technology patents. A more discriminating approach would focus on the most problematic of these patents, which deal with software and business methods.[113] Critics of the recent expansion of patent subject matter into these areas might describe this "experiment" as a disaster on a par with the design patent fiasco of the 1860s. Indeed, Justice

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[111] *See* 35 U.S.C. §73 (1902) (replacing the word "useful" with "ornamental"); SYMONS, *supra* note 18, at 21 (explaining this change).

[112] One could plausibly contend that the cure was really the expiration of the low-quality patents taken out in the 1860s and 1870s, but without a change in the substantive test there is every reason to think that more nuisance patents would have been granted and enforced.

[113] Advocating a repeal of these patents does not mean that software and business methods must be excluded from intellectual property protection. *See* Cohen & Lemley, *supra* note 89, at 4-7 (proposing changes in software patents that would move them to a *sui generis* system of protection).

Kennedy singled out business method patents for criticism in the troll context due to their "potential vagueness and suspect validity."[114]

Though there is little doubt that ending these patents would reduce opportunistic licensing, the more difficult question is whether abolition is too draconian given the potential benefits of software and business method patents.[115] With respect to the design patents granted in the past on incremental improvements, there was no real evidence that they helped anyone.[116] The only concrete result was a school of rabid sharks. By contrast, it is hard to say that patents for software or business methods do not spur creativity in a meaningful way. Abolishing these patents may well cause more harm than trolls do. Without more evidence on the effect opportunistic licensing has on high-tech investment, this analysis cannot rule out the possibility

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[114] eBay, Inc. v. Mercexchange, L.L.C., 126 S. Ct. 1837, 1842 (2006) (Kennedy, J., concurring).

[115] One could also say that the reliance interests (or political clout) of these industries are too great to put any stock in a repeal. *See* Cohen & Lemley, *supra* note 89, at 4 ("[S]oftware patentability is a matter for the history books.")

[116] *See* Magliocca, *supra* note 15, at 879-81 (making this point and then exploring the wisdom of property protection for designs).

that there is a justification for these technology patents that breaks the parallel with the design patents that were abolished during the nineteenth century. In other words, I am on agnostic on this issue, but abolition is an option that must be taken seriously.

C. A Dormancy Tax

If eliminating of an entire patent class is too hard to stomach, then the focus should turn to administration solutions. Improving patent quality by reforming the Patent Office's examination process would help for the reasons stated earlier, but the application process is not the only point where trolls are vulnerable.[117] If there are too many dormant patents that can be used to snare the unwary, then one way that can be resolved is by taxing patents at a higher rate to increase the costs of engaging in opportunistic behavior.

Raising the maintenance fees for patents builds on the existing system. To retain ownership over a patent, the rights holder must

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[117] *See supra* text accompanying notes 75-84.

pay a $900 maintenance fee in the fourth year.[118] In the eighth year, the fee goes to $2,300, while in the twelfth year it jumps to $3,800.[119] Now imagine a scheme in which these fees are sharply increased and assessed more often. Under such a scheme, the cost of acquiring and holding dormant patents would skyrocket. As a result, firms would have a strong incentive to either use their dormant patents or allow them to lapse and enter the public domain. This would starve trolls of their sustenance. Furthermore, opportunistic licensers that obtain patents with the intent of holding them back until others start using the same technology will pay dearly for their sandbagging.[120] A tax on patents would not eliminate opportunistic litigation, but it might go a long way toward bringing the problem under control.

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[118] *See* 37 C.F.R. §§ 1.20(e)-(g) (2004); *see* Kimberly A. Moore, *Worthless Patents*, 20 BERKELEY TECH. L.J. 1521, 1525 (2005).

[119] *See* Moore, *supra* note 118, at 1525.

[120] A tax is also more effective because it ties the cost of acquisition to the reliance costs associated with a technology. Trolls that acquire a dormant patent that is ten years old will pay much more than if the patent is one year old, which reflects the fact that the longer a patent goes unenforced the more likely it is that others will rely on the invention as if it were in the public domain.

A significant objection to this proposal, of course, is that hiking the maintenance fees on patents raises the costs of innovation. This is true, even though the cost of a patent application would not go up.[121] One response is that trolls are already imposing a tax on innovation, but one is unpredictable and concentrated on a handful of unlucky victims. Changing the fee structure, by contrast, would spread this burden more evenly and rationally. Moreover, while a fee increase is not going to please the industries unaffected by trolls, they may be more likely to accept a reform that does not affect their patent rights and remedies as the current proposals do. In the end, this may be a case where we need a "second-best" solution because it can actually be implemented. Reforming the fee assessment in lieu of abolishing certain patents fits this description, and therefore this administrative measure should also be on the table.

In sum, the failure of many thoughtful reforms during the nineteenth-century debate on patent sharks shows that a solution

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[121] By keeping application fee unchanged, the proposal strives for neutrality between start-ups and large firms. Nobody can deny that small inventors suffer disproportionately from a maintenance fee increase, but it is worth pointing out that large firms are more likely to engage in cross-licensing or other activities that are aided by stockpiles of dormant patents. *See supra* text accompanying notes 30-35.

focused on altering substantive rights or remedies cannot succeed. Policymakers should instead direct their efforts at an outright repeal or at administrative solutions that reduce the number of dormant patents and their ability to disrupt settled expectations.

CONCLUSION

The cry of "too many frivolous lawsuits" is heard all too often. Whenever society gives citizens the ability to vindicate their rights in court, some will seek an advantage that they do not deserve. Most of the time, this is a necessary cost of providing a remedy, but there are cases where the costs of this litigation become troublesome. The problem is that there is usually no context to guide the line-drawing exercise -- lawyers have to go by instinct.

In assessing what to do about patent trolls, this Essay went beyond instinct and pointed to empirical evidence as developed by decades of experience with an analogous issue during the nineteenth century. From that history, policymakers can take away important lessons about the causes of opportunistic licensing in patent and the

limitations inherent in any attempt at a solution. By considering this background information before any decisions are made about trolls, we can avoid some pitfalls and develop a more sensible policy.