THE TROUBLE WITH TROLLS: INNOVATION, RENT-SEEKING, AND PATENT LAW REFORM

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ABSTRACT

This Article analyzes the secondary market for patent rights. It defines a patent troll as a participant in this market that does not contribute to the social goal the patent system was meant to serve: technological innovation. The legitimate secondary market, in which patent rights are bought and sold in ways that compensate real innovators (and also often involve the transfer of information and/or technology, in addition to the legal right), is distinguished from the more questionable market for the settlement of lawsuits involving weak, outdated or irrelevant patents. The presence of willing buyers and willing sellers does not necessarily imply that social welfare is being served; at times, the legal system must shut down markets when the things being exchanged have no social value—as in the case of blackmail. The Article reviews the prospects for corrective policies to reign in some activities in the current patent system. Political economy considerations make Congress a long shot to fix the problem, which leaves the courts, and in particular the Federal Circuit. Recent caselaw on damages is presented as a case study of a desirable Federal Circuit course correction involving the secondary market for patents. Economically rational valuation techniques applied to the question of appropriate damages for patent infringement can help to undermine the incentives to litigate, and hence the market for, patents on minor features that can be used strategically to demand large damage awards under some readings of damages doctrine.

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I. INTRODUCTION

The growth of economic activity surrounding information-based assets has, as theory would predict, led to a strengthening of property rights over those assets.[1] But now, the strengthening of property rights over information assets has also led to a binge of rent-seeking that has put significant pressure on the innovative industries that were the intended beneficiaries of those rights.[2] These glaring problems with the current patent system show how

1. *See, e.g.*, Robert P. Merges, *One Hundred Years of Solicitude: Intellectual Property Law 1900-2000*, 88 CALIF. L. REV. 2187 (2000) (summarizing economic theory tracing a connection between asset value and property strength).

2. On the phenomenon of patent trolls, see Jessica Holzer, *Supreme Court Buries Patent Trolls*, FORBES, May 16, 2006, http://www.forbes.com/2006/05/15/ebay-scotus-patent-ruling-cx_jh_0516scotus.html. For critiques of the activities of trolls, see generally *Patent*

property rights institutions can lose traction with the underlying economic situation they govern. In response, property rights must be constantly and continuously updated, so as to maintain the underlying relationship between increased asset values and the appropriate specification of property rights they occasion. This updating, however, is not a straightforward process; it implicates complex details of political economy, including the optimal division of labor between legislatures and courts, and all of the messy particulars of legislative influence and Congressional action. Among these, one that is quite important is the question of what role courts should play when economic conditions indicate a need for adjustments in property rights specifications, but different industry groups have mutual and reciprocal veto power over legislative enactments. I argue that in the case of damages measures in recent patent reform legislation, we have reached just such an impasse. And I come down on the side of judicial action in the face of the current legislative stalemate.

To some extent, the patent system has already embarked in this direction. The most important indication of this is the Supreme Court's 2006 opinion in *eBay, Inc. v. MercExchange, L.L.C.*[3] That case, which I will refer to often, rejected the "automatic injunction" rule of the Federal Circuit (the unified federal appeals court for patent cases), and replaced it with a flexible test based squarely in the traditions of equitable remedies.[4] The concurrence by Justice Kennedy (joined by three other Justices) contains the crucial rationale for this move.[5] He explained that the threat of an injunction was being used by some plaintiffs in patent cases to extract disproportionate settlements from manufacturers of complex, multi-component products:

> An industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees. . . . For these firms, an 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. . . . When the patented invention is but a small component of the product the companies seek to produce and the threat of an injunction is employed simply

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Trolls: Fact or Fiction?: Hearing Before the Subcomm. on Courts, the Internet & Intellectual Property of the Comm. on the Judiciary H.R., 109th Cong. 2 (2006). For an argument that the troll phenomenon is good, not bad, see James F. McDonough III, *The Myth of the Patent Troll: An Alternative View of the Function of Patent Dealers in an Idea Economy*, 56 EMORY L.J. 189 (2006).

3. 547 U.S. 388 (2006).

4. *Id.*

5. *See id.* at 395–97 (Kennedy, J., concurring) (joined by Justices Stevens, Souter, and Breyer).

> for undue leverage in negotiations, legal damages may well be sufficient to compensate for the infringement and an injunction may not serve the public interest.[6]

This is precisely the sort of institutional adjustment I am arguing for in this Article. The Federal Circuit's injunction standard was part of a sweeping strengthening of patent protection which made sense given the increasing importance of intangible assets in overall economic activity. But rent-seeking ensued in the wake of this sweeping change. Micro-adjustments were therefore in order. I believe *eBay* provides an excellent prototype for adjustments of this type in the patent context. When adjustments are made, we see a demonstration of how real-world institutions can adapt property rights to shifting economic conditions. Of course, this is an ongoing process. In the Conclusion, I argue that an adjustment of this sort is now necessary for the doctrines related to damages, and specifically for the need to more rationally apportion damages in patent cases.

II. THE TROUBLE WITH TROLLS

A. DEFINING THE PROBLEM

For some, *eBay* raised a troubling question: Is there really such a thing as a patent troll? Listening to some commentators, one would believe that this label is highly misleading. Some believe the troll label is a meaningless epithet, applied only to a plaintiff in a patent lawsuit with whom one has a legal conflict. Other perfectly legitimate innovators have even argued that they should be classified as patent trolls, as a way of arguing against the troll category altogether.[7] This is a fundamentally misguided effort. I clarify the situation by comparing it to personal injury lawsuits in tort law, and by crafting a careful definition of a true patent troll.

In the early days of tort reform, and even today, trial lawyers often mocked the caricature of the greedy personal injury bar. To hear the trial bar tell it, all plaintiffs in personal injury suits are seeking the same basic remedy: to be made whole from a legitimate injury. For this group, the entire enterprise of "tort reform" is merely an effort to taint a respectable and indeed

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6. *Id.* at 396–97.

7. *See Patent Trolls: Fact or Fiction?: Hearing Before the Subcomm. on Courts, the Internet & Intellectual Property of the Comm. on the Judiciary H.R.*, 109th Cong. 11 (2006) (statement of Dean Kamen, President, DEKA Research & Development Corporation) ("I only recently found out after reading the definition of a troll that I am one."). He was wrong about this; any reasonable definition of a troll would exclude an innovator of his stature. He was misled by those who claimed that troll status is dependent solely on whether a patentee manufactures and sells his or her own inventions.

honorable area of the law. In the same way, those who attack the very idea of patent trolls argue that this label is employed exclusively by disgruntled defendants whose real objection is to the application of patent law in a particular case.

1. Defining "Patent Troll"

The entire debate has been fed by a lack of clarity in defining the term "patent troll." Partly as a result of the arguments leading up to the Supreme Court's decision in *eBay*,[8] the patent troll label has become associated with the idea of a patentee that does not manufacture a consumer product. Many who attack the troll label make the perfectly plausible point that patent law does not and should not favor patentees who happen to be in the business of manufacturing.[9] In this they are entirely correct. Yet it is nonetheless true that the troll label signifies an important, negative trend in patent law. The true distinction of the troll label concerns the difference between patentees who make real contributions to innovation and those who do not.[10] As we will see below, the troll episode is hardly unique in the annals of patent law; there is a long history of using patents as pure instruments of rent-seeking.[11] The fact is that a number of legal games have emerged through which patents can be employed strictly for unproductive ends. Patentees in this position make little or no contribution to actual innovation. The details of their tactics need not be reviewed here. Suffice it to say that in many industries, the profusion of patent troll litigation threatens the very legitimacy of the entire patent enter-

8. *eBay*, 547 U.S. 388.

9. *See* Robert P. Merges, *Introductory Note to Brief Amicus Curiae in eBay v. MercExchange*, 21 BERKELEY TECH. L.J. 997 (2006) (describing a practical test to determine which patent-case plaintiffs ought not to receive an injunction; the test focuses on the patentee's contribution to research and innovation, and not simply manufacturing).

10. Famed Silicon Valley entrepreneur Judy Estrin, in her recent book, discusses trolls in these terms:

> The country's patent system was created to promote progress by protecting inventors' intellectual property, but nearly everyone now agrees that it is in need of reform. Beginning in the late 1990s, the money spent annually on patent litigation by publicly traded companies exceeded the profits they earned from the patents they have. Significant changes in the existing system will have to be made to mitigate the tensions between different industries, as well as a new breed of "patent trolls" that have made a business out of buying patents on spec, rather than using them to further innovation.

JUDY ESTRIN, CLOSING THE INNOVATION GAP: REIGNITING THE SPARK OF CREATIVITY IN A GLOBAL ECONOMY 170 (2008). Ms. Estrin has founded seven high-tech startups, and is former Chief Technology Officer at Cisco Systems, Inc. Author's Biographical Information available at http://www.theinnovationgap.com/judy-estrin-bio.

11. *See infra* Section II.B.

prise. There is no doubt among most actual innovators that the patent troll label is very real.

One attack on the troll label centers on the idea of market making.[12] The argument here is simple: "trolls" are just middlemen. Their form of arbitrage involves buying patents from those poorly positioned to exploit them, and licensing them to or asserting them against primarily large enterprises, which are in fact making use of the patented technology. There is something accurate here, but something misleading as well. The accurate part is that sometimes valuable technology and good ideas (i.e., innovations) are held by one entity, but could be of use to another such as a large enterprise. If the technology or information is covered by a patent, and if the market maker brings the innovation to the attention of the large enterprise, all is well. Commerce as usual and no complaints. Some who have been accused of "trollery" no doubt fit this classification and ought to be exonerated.

But there is also a problem with the argument that all trolls are just market makers and hence beneficial to economic activity. Not all arbitrage exchange is in fact efficient and socially desirable. For example, someone who engages in blackmail can be seen as an agent of arbitrage. The blackmailer acquires information and brings it to the attention of someone who values it highly (or, more accurately, highly values its nondisclosure). There follows a voluntary exchange after which the parties are, by some measure, both better off. Yet this is not a market making exercise that is efficient. Of course, for the analogy to work, it must be true that patent trolls are selling information with no social value, like the blackmailer. I believe that in some cases at least it is easy to defend this proposition. I defer for later a discussion and analysis of why it is legitimate to shut down a market that contributes nothing to social welfare.[13] At this point, again, my contention is merely taxonomic: There is such a thing as a patent troll—someone who engages in inefficient, socially wasteful patent transactions. I will discuss why that matters later, when I also make some suggestions about which troll-related activities need to be reigned in immediately and which may demonstrate some social value in the long run.[14]

2. Rents: Innovation vs. Litigation

My argument in this Article depends on the idea that the fundamental purpose of patent law is to encourage true innovation. It also depends on the idea that there is a difference between a reward for true innovation and a le-

12. *See infra* Section II.D.
13. *See infra* Section II.D.
14. *See infra* Part III.

gal instrument which permits rent-seeking activities. Only if there is a gap between what is truly innovative and what is permissibly patented and asserted is there space for the concept of a patent troll.

The first proposition—that patents are about innovation—is easy to establish. Recall that our Anglo-American tradition of patent law begins in many ways with the British statute of monopolies.[15] The well-known history behind this statute illustrates that policymakers have long recognized that only patents for true inventions are worthwhile from a social welfare perspective. It is important to remember that in Britain, patents are carved out as an exception to a blanket prohibition on monopolies. Only insofar as a patent represents a true innovation does it qualify for this exception. This history is well known, and forms part of the backdrop for our American system of patent law as well.[16] At the doctrinal level, this fundamental purpose of patent law is built into the fabric of all patent requirements. For example, the nonobviousness requirement is in place to prevent a trivial advance from receiving patent protection.[17] This may be stated in the converse: a patent for a trivial advance would confer illegitimate economic power on its holder, and so is disallowed.

Another example of an ex ante innovation-screening doctrine is the requirement of utility.[18] This has been described as a legal rule that tries to optimize the timing of a property rights award. Building on the seminal work of David Haddock,[19] students of the utility requirement have shown that it is designed to prevent rent-seeking on the part of those who would obtain a patent before a new technology has been adequately described or understood. The obvious rationale for this requirement is that it prevents the dissipation of legitimate rents by requiring those who obtain a patent to show real technological progress. The award of a patent at too early a stage in the innovation process would clearly lead to excessive expenditures of resources in an attempt to draft an early and broad patent instrument. The utility requirement in patent law prevents these wasteful expenditures by requiring that an innovator achieve actual technical milestones prior to receiving a patent. Investment and effort are therefore directed toward the socially useful goal of developing the technology, rather than simply racing to the patent office.

15. ROBERT P. MERGES & JANE C. GINSBURG, FOUNDATIONS OF INTELLECTUAL PROPERTY 13–15 (2004).

16. DOUGLASS C. NORTH & ROBERT PAUL THOMAS, THE RISE OF THE WESTERN WORLD: A NEW ECONOMIC HISTORY 146–48 (1973).

17. *See* 35 U.S.C. § 103 (2006).

18. *See* 35 U.S.C. § 101 (2006).

19. David D. Haddock, *First Possession Versus Optimal Timing: Limiting the Dissipation of Economic Value*, 64 WASH. U. L. Q. 775 (1986).

This is a perfect example of a patent doctrine which prevents rent-seeking at the ex ante stage.

Doctrines directed at restricting the activities of patent trolls—such as the discretionary injunction rule of *eBay*—simply implement this logic at the ex post stage of the patenting process. Many of the tactics of patent trolls take advantage of the fact that a minor innovation which deserves patent protection ex ante may, through changed circumstances, devolve into a legal instrument with powerful rent-seeking potential in the ex post period. It is in these changed circumstances that patent trolls typically operate.

To clarify my point here, I need to say a few words about this ex ante-ex post distinction, and why an economically rational party could not protect himself against the ex post risk. In some ways, the distinction I am talking about is similar to a frequent topic in the economics of contract law. This literature emphasizes the important transition that occurs at the end of bargaining when a contract is signed. Oliver Williamson describes this as the "fundamental transformation."[20] The risk of opportunism accompanying this transition is something that rational contracting parties must always take account of. Williamson and others spend a good deal of effort describing legal and extralegal precautions that can be taken to protect against the ex post risk of opportunism occurring after this transformation.[21] In the same vein, scholars in the "new property rights" tradition write frequently about mechanisms to protect against this same kind of opportunism.[22] In this literature, contracting parties protect themselves by allocating property rights so as to create an effective fallback position for a party who is at risk of opportunism. In all these cases, rational contracting parties can take steps to protect themselves against the risk of ex post opportunism.[23]

Now consider the situation with patent trolls. Here, the ex ante time frame corresponds to the period before a company makes sunk cost investments in any given technology. The ex post time frame is the time after these investments have been made. The patent troll strategy is to take advantage of

20. Oliver E. Williamson, *The Logic of Economic Organization*, *in* THE NATURE OF THE FIRM: ORIGINS, EVOLUTION, AND DEVELOPMENT 90, 98–100 (Oliver E. Williamson & Sidney G. Winter eds., 1991).

21. *See, e.g.*, *id.*

22. *See, e.g.*, OLIVER HART, FIRMS, CONTRACTS, AND FINANCIAL STRUCTURE (1995).

23. For an application of these ideas to the IP context, see Ashish Arora & Robert P. Merges, *Specialized Supply Firms, Property Rights, and Firm Boundaries*, 13 INDUS. & CORP. CHANGE 451 (2004).

"lock-in" that occurs as a result of these investments.[24] Typically, the troll waits until a technology is fully entrenched before scouting around for patents to acquire or asserting the patents it holds. Again, there is nothing intrinsically wrong with this strategy unless the patents at issue do not represent a true innovation. This is, of course, much the same strategy as that pursued by an opportunistic contracting party.

There is no way for an economic actor to protect himself against this strategy in the patent troll context. The key difference between contracting and the patent situation is that in the latter case, information is not only highly asymmetric, but it is virtually impossible to effectively insure against the relevant risk. In particular, there is no way for an economic actor to effectively learn about or anticipate the vast majority of potential patent troll activity. This is so for several reasons. First, patents may be kept secret during the entirety of prosecution,[25] so a clever patentee can suppress the issuance of a patent until a technology matures. Under current law, a troll pursuing this strategy will forego foreign patent rights. This may still be an effective strategy because patent trolls are often willing to sacrifice some coverage in exchange for the advantage of surprise. In addition, while it may be difficult for a contracting party to fully estimate the risk of opportunism, the costs for an innovator facing a patent troll strategy are much, much higher. There are literally millions of patents in force at any time. In a complex field such as commercial software or semiconductors, there are potentially tens of thousands of relevant patents that might be interpreted so as to cover one or more components of a complex product. Because of uncertainty in the process of patent claim construction, it is essentially impossible to screen all the patents that one might infringe. As a consequence, it is much harder to protect against the ex post risk in the patent context. This is why special doctrines and rules to guard against patent troll activity are necessary; self-help is simply impossible in a broad number of cases.[26]

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24. For a description of a similar phenomenon in the standard-setting context, as well as a suggestion for preventing it, see Robert P. Merges & Jeffrey M. Kuhn, *An Estoppel Doctrine for Patented Standards*, 97 CALIF. L. REV. 1 (2009).

25. Patent applications that will also be filed overseas are published eighteen months after U.S. filing, but those that are only filed in the U.S. will remain unpublished unless the applicant elects otherwise. *See* 35 U.S.C. § 122 (2006).

26. One might argue that the "patent protection racket" industry that has emerged provides insurance against this risk. I would argue in response that this form of "insurance" is of questionable social value if the only risk insured against is rent-seeking litigation. *See infra* Part III. It should be noted, however, that this is true only when these "insurance" companies are simply selling freedom from lawsuits under questionable patents. To the extent that these companies help create an "exit option" for small inventors and companies that have tried and failed to introduce innovative products on the market, or use the proceeds

B. HISTORICAL EXAMPLES OF PATENT-BASED RENT-SEEKING

1. Early History

There is a long tradition of rent-seeking based on the acquisition of patents. Several episodes in the history of patent law are well documented in this respect. The first extensive episode of rent-seeking in the history of patent law came about after the 1793 patent act was passed. Rent-seeking was possible under this statute because patents were registered by the patent office, instead of being examined. This essentially threw all problems of patent validity into the courts. The cost of litigation was such that nuisance suits proliferated, as any economist would predict. The solution was to reinstitute patent examination as part of the Patent Act of 1836.[27] During the middle years of the nineteenth century, a controversy erupted over the misuse of the patent re-issuance procedure. As with the 1836 Patent Act, the solution here was also legislative: major reforms changed the standards for granting a patent re-issue, eliminating many opportunities for rent-seeking.[28]

At the same time, the U.S. Supreme Court was confronted with a growing number of patent cases, many arising out of the easily manipulated registration system of the 1793 Act. The Court had very few doctrinal tools for weeding out low-quality patents. Basically, only the two statutory elements of utility and novelty were required for a patent to be valid. Against this background, the Supreme Court decided *Hotchkiss v. Greenwood* in 1851, creating the "invention" test.[29] This was a wholly new standard that made it substantially more difficult for an inventor to obtain a patent. While the case did not specifically mention the flood of patents as a reason for stating the new requirement, it is widely acknowledged now that this was a factor in its thinking.[30]

Two other episodes from the nineteenth century are also worth mentioning. First, during the 1860s and 70s, a number of entrepreneurial business people acquired patents of dubious utility which covered widely used agricul-

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from their activities to fund productive activities such as future-oriented R&D, things may be a bit more complex. *See infra* Part IV.

27. *See generally* EDWARD C. WALTERSCHEID, TO PROMOTE THE PROGRESS OF USEFUL ARTS: AMERICAN PATENT LAW AND ADMINISTRATION, 1787–1836 (1998) (describing lead-up to 1836 Patent Act).

28. Steven Lubar, *The Transformation of Antebellum Patent Law*, 32 TECH. & CULTURE 932, 944 (1991).

29. 52 U.S. 248, 267 (1851). The "invention" test was the historical precursor of today's "nonobviousness" requirement.

30. *See, e.g.*, Edmund W. Kitch, *Graham v. John Deere Co.: New Standards for Patents*, 1966 SUP. CT. REV. 293 (1966) (describing general trends leading up to the Supreme Court's decision in *Hotchkiss*, 52 U.S. 248).

tural techniques. These economic actors—who came to be known as "patent sharks"—created an enormous upheaval in the agricultural sector, leading to a populist outcry against the entire patent system.[31]

According to a recent account of the patent shark episode, when the Patent Office decided to permit patents on minor ornamental design features in the late nineteenth century, patent applications spiked sharply upward. The volume of applications, together with the lowering of standards for patents on designs, made it easy for patentees to acquire design patents on modest new designs for familiar farm tools, including "crowbars, spades, plows, scrapers," and others.[32] This spate of poor quality patents on farm implements created a business opportunity, which entrepreneurs quickly seized on. As with today's trolls, most of the resulting litigation "came [not from inventors or their companies, but from] third parties that specialized in litigation and bought up the dormant patents."[33] Importantly, there is no evidence that the creation of a secondary market for simple agricultural implement patents led to significantly greater innovation in that field, which had already undergone rapid modernization and which was characterized by a wave of large-scale mechanization that far exceeded the scope of these simple design patents.

Second, a similar episode took place in the railroad industry in the late nineteenth century.[34] At the time, this industry was characterized primarily by internal research and development teams. Formal research and development, and use of the patent system, was relatively unknown in the early years of the railroad industry.[35] Outside inventors often developed and submitted new technologies to large incumbent railroad lines. In some cases, these technologies were in fact innovative and patents facilitated new entry into the industry. The Westinghouse Company, which developed the innovative triple

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31. *See* Gerard N. Magliocca, *Blackberries and Barnyards: Patent Trolls and the Perils of Innovation*, 82 NOTRE DAME L. REV. 1809, 1811 (2007) (describing the rise of patent sharks).

32. *Id.* at 1821 (quoting HECTOR T. FENTON, THE LAW OF PATENTS FOR DESIGNS 224, 259 (1889)). *See also* Gerard N. Magliocca, *Ornamental Design and Incremental Innovation*, 86 MARQ. L. REV. 845, 874–79 (2003) (describing the ill-fated attempt between the 1860s and 1880s to classify farm implements as items of industrial design, and hence qualified to receive utility patents from the Patent Office).

33. Magliocca, *supra* note 31, at 1823.

34. Robert P. Merges, *The Uninvited Guest: Patents on Wall Street*, 88 FED. RES. BANK ATLANTA ECON. REV. 1, 7–8 (2003) (describing the disruptive effect of patents in the nineteenth century on the railroad industry).

35. STEVEN W. USSELMAN, REGULATING RAILROAD INNOVATION: BUSINESS, TECHNOLOGY, AND POLITICS IN AMERICA, 1840–1920, at 117 (2002) (accounting of the patent battles that assailed the railroad industry in the late nineteenth century, and the two-pronged response—legislative and judicial—that ultimately succeeded).

valve air brake under the direction of George Westinghouse, is perhaps the most famous example.[36] However, in many other cases, patents were developed and acquired that made essentially no contribution to the technological development of the industry. The railroad industry responded to this development with a dual track approach: legislation was introduced to prevent the most egregious practices, and many cases were pursued through the courts and ultimately to the Supreme Court. In the end, a significant Supreme Court case ended one of the most destructive practices of the railroad industry patentees.[37] In this case the Court rejected a theory of patent damages—based on a controversial measure of "cost savings" that juries often used to jack damages up far beyond any reasonable measure—that had proven quite lucrative to the outside patentees.[38]

The number of patents awarded for various aspects of railway technology grew steadily throughout the nineteenth century.[39] A modest number of "outside inventions" were adopted by the railroads during this period. But the patent system really burst into prominence when courts began awarding huge damage awards to the holders of patents who had sued the railroads.[40] In the wake of several much-discussed infringement suits, patent matters rose to the highest levels of discussion within the railroad companies. According to the leading historian of this era,

> The mounting array of patents constituted an expanding minefield of potential lawsuits and financial liabilities.
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> During the decade following the Civil War, railroads [which had traditionally exchanged information freely] and the patent system raced forward on a collision course. . . . With the number of patents proliferating . . . railroads [were] exposed to new liabilities of unprecedented scale.[41]

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36. *Id.* at 130–31.

37. Ry. Co. v. Sayles, 97 U.S. 554 (1878).

38. *Id.* at 555–56.

39. JACOB SCHMOOKLER, PATENTS, INVENTION, AND ECONOMIC CHANGE 140–155 (Zvi Griliches & Leonid Hurwicz eds, 1972).

40. *See generally Sayles*, 97 U.S. at 555–56 (1878) (summarizing district court proceedings from 1865 through 1875); *In re* Cawood Patent, 94 U.S. 695 (1877) (concerning patent for "swedge-block" used to repair and straighten worn railway rails).

41. USSELMAN, *supra* note 35 at 101. This led one industry member to write that "Patents . . . will be the death of me!" *Id.* at 117 (quoting D.L. Harris, President, Connecticut River Railroad, Dec. 23, 1868). *See generally* Steven W. Usselman, *Patents Purloined: Railroads, Inventors, and the Diffusion of Innovation in 19th-Century America*, 32 TECH. & CULTURE 1047 (1991) (describing the coming of patents to the railroad industry).

The Supreme Court caught wind of this discontent, and corrected course in the late nineteenth century. Though not drawn from the railroad industry, an 1883 Supreme Court case condemned patent-based rent-seeking in no uncertain terms, and captured the spirit of Court-led patent reform during this era:

> The design of the patent laws is to reward those who make some substantial discovery or invention, which adds to our knowledge and makes a step in advance in the useful arts. Such inventors are worthy of all favor. It was never the object of those laws to grant a monopoly for every trifling device, every shadow of a shade of an idea, which would naturally and spontaneously occur to any skilled mechanic or operator in the ordinary progress of manufactures. Such an indiscriminate creation of exclusive privileges tends rather to obstruct than to stimulate invention. It creates a class of speculative schemers who make it their business to watch the advancing wave of improvement, and gather its foam in the form of patented monopolies, which enable them to lay a heavy tax upon the industry of the country, without contributing anything to the real advancement of the art. It embarrasses the honest pursuit of business with fears and apprehensions of concealed liens and unknown liabilities to lawsuits and vexatious accountings for profits made in good faith.[42]

Despite these nineteenth century reforms, the early turn of the century automobile industry also suffered its period of patent extortion. It took the form of a patent issued to patent lawyer George Selden.[43] The Selden patent on an automobile design had as its key claim the use of a light, gasoline powered internal combustion engine. The claim was quite general, failing to specify many important details about the engine. The Patent Office allowed that claim, and district courts upheld it twice, despite arguments that the broad idea was obvious, and that the engine referred to in the claim was of a particular kind not encompassing all the engines that were claimed to infringe. Eventually, the Second Circuit drastically narrowed the claim, stating that it covered only the particular kind of gasoline engine used by Selden.[44]

Many in the industry—in particular, Henry Ford—hated the Selden patent and all that it stood for.[45] Although the Selden patent was eventually nar-

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42. Atl. Works v. Brady, 107 U.S. 192, 200 (1883).

43. Road Engine, U.S. Patent No. 549,160 (filed May 8, 1879) (issued Nov. 5, 1895).

44. For the relevant history, see generally Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 889–90 (1990).

45. JAMES J. FLINK, AMERICA ADOPTS THE AUTOMOBILE, 1895–1910, at 323–25 (1970).

rowed,[46] and thus made irrelevant,[47] this did not occur until late in the patent's life. For many years automobile manufacturers paid royalties begrudgingly. But did the presence of the Selden patent actually hinder technological progress in the industry? That is perhaps a bit more speculative. Law suits based on it surely did absorb considerable time and attention of people like Henry Ford, whose production methods revolutionized the industry. Perhaps more importantly, smaller firms may have been put off by the threat of suit. At this early stage in the history of the technology, those firms that left the industry or chose not to enter may well have taken valuable improvements with them. In any event, the Selden episode has often been held up as a prime example of rent-seeking through patent assertion.

2. Recent History: "Patent-Oriented" Strategies in the Early Biotech Industry

In the 1980s, the name of the game in the biotechnology industry was to isolate and sequence important naturally-occurring genes that produced useful proteins. Erythropoetin (Epo) was one such protein. A then-small biotechnology company called Amgen was the first to isolate the Epo gene, clone it, and express Epo in clinically effective quantities.[48]

A small rival named Genetics Institute (GI), though behind in the race to sequence the Epo gene, conceived of a strategy to overtake Amgen. GI filed a patent on "isolated and purified" Epo, derived by non-genetic engineering techniques.[49] When the patent issued, GI sued Amgen. Amgen counterclaimed on the strength of its own patent to the gene sequence and associated protein.[50]

GI actually had a tenable claim, based on conventional patent law. Technically speaking, the fact that the isolated protein was derived without genetic engineering techniques was irrelevant; the only relevant question was whether the Amgen protein fell within the specified purity ranges claimed by GI, and it appeared that it did.

However, the courts—like most observers—understood full well that Amgen was the scientific pioneer, not GI. There was a general perception

46. Columbia Motor Car Co. v. C.A. Duerr & Co., 184 F. 893, 908–09 (2d Cir. 1911).

47. *See* Merges & Nelson, *supra* note 44 (describing lawsuit late in the life of the patent that substantially narrowed the patent and thus permitted competitors to operate without a license).

48. Michael Rosen, *The Birthplace of Biotech: San Francisco, Boston, Geneva, or Chicago?*, WTN NEWS, Aug. 25, 2004, http://wistechnology.com/articles/1118/ (explaining the early history of the biotech industry).

49. Amgen, Inc. v. Chugai Pharm. Co., 927 F.2d 1200, 1203–04 (Fed. Cir. 1991).

50. *Id.* at 1204.

that GI was attempting to use a clever legal strategy to jump ahead of Amgen.

The Court of Appeals for the Federal Circuit found in favor of Amgen by invalidating the GI patent on the ground that GI had not enabled the wide purity range it had claimed.[51] While the ruling was technical in nature, it seems implausible that it was not influenced by the underlying facts and broad equities of the case. Ultimately, the clever patent strategy lost out to the true scientific innovation. Amgen profited mightily, as Epo grew into a $2.5 billion per year pharmaceutical product.[52]

A similar episode involved claims to short gene sequences or "ESTs." A clever patent strategy emerged in which firms filed patents on short snippets of genes whose function and relevance were as yet unknown. The idea was simple: obtain enough patents like this, and some were sure to cover portions of genes that turn out later to have important medical uses. When those genes were identified and cloned, and therapies based on them were developed, the owners of these patents would profit handsomely.

The objection to this strategy was that these patents would give their owners a reward highly disproportional to their actual intrinsic value. Patents such as this would only become lucrative when later researchers revealed the full gene of which they are a part, and discovered the medical significance of the gene. These EST patents were valuable only as holdup rights. This led several commentators to argue that EST patents ought to fail the utility requirement in patent law[53]—an argument that the Federal Circuit later accepted.[54]

C. TECHNOLOGY MARKETS AND RENT-SEEKING

Because many industry players defend today's patent trolls on the grounds that they are merely (beneficial) "market makers," it is a good idea to pause here for a moment to see what can be learned from the story of the "patent sharks." In pioneering work on the nineteenth century "market for technology," Naomi Lamoreaux and Kenneth Sokoloff discovered a dense network of independent inventors, patent lawyers, and corporate buyers that

51. *Id.* at 1217.

52. *See* FundingUniverse.com, Amgen Inc. Company History, http://www.fundinguniverse.com/company-histories/Amgen-Inc-Company-History.html (last visited, Oct. 18, 2009) (tracking growth of Amgen's EPO sales, sold under its trade name Neupogen, from $53 million before the GI lawsuit to over $1 billion per year by the mid 1990s).

53. Rebecca S. Eisenberg & Robert P. Merges, OPINION LETTER AS TO THE PATENTABILITY OF CERTAIN INVENTIONS ASSOCIATED WITH THE IDENTIFICATION OF PARTIAL CDNA SEQUENCES, 23 AIPLA Q.J. 1 (1995).

54. *In re* Fisher, 421 F.3d 1365 (Fed. Cir. 2005).

helped create an active market for technology in the era before large, vertically integrated corporate research and development (R&D) establishments.[55] It is tempting to fit what came to be known as "sharks" into this framework, dismiss the inflamed rhetoric of the time as excessive and short-lived, and conclude that the system for the most part worked just fine.

I think this would be a mistake. It ignores the real dislocation felt by an entire class of economic actors—small farmers—and the resulting damage to the image and integrity of the patent system. It would also direct our attention past an important issue: the precise mechanism by which this rent-seeking threat was pushed back. After all, as things developed, it was important that the patent system did not succumb to a populist movement that would have weakened or eliminated it. Otherwise it would not have been in place to stimulate and participate in the revolutionary technological developments at the turn of the twentieth century.

Gerard Magliocca is correct that the change in standards for design patents led to the rent-seeking episode of the "patent sharks." But he is wrong about two related issues.[56] First, as my research on the nineteenth century railroad industry shows,[57] the agricultural-industry "patent sharks" were not, as he claims, the only nineteenth century analogue to today's patent trolls. Other rent seekers were operating at the same time as the agricultural sharks. And second, the elimination of an entire category of patents is not the only effective way to end a rent-seeking episode. The "surgical" intervention of the Supreme Court in railroad industry patent litigation during this same era shows that less drastic legal changes can be effective.[58] This is crucial to remember. As Magliocca himself recognizes, there are potentially significant costs to his preferred policy fix: negative impacts on an entire segment of industry when its incentive for R&D is reduced by the elimination of patents over an entire category of technology.

D. BUT WHY WOULD WE INTERFERE WITH THE "MARKET FOR PATENT RIGHTS"?

One obstacle to confronting the troll problem is that trolls and their defenders have constructed a superficial defense for their activities. The de-

55. Naomi R. Lamoreaux & Kenneth L. Sokoloff, *Long-Term Change in the Organization of Inventive Activity*, 93 PROC. NAT'L ACAD. SCI. U.S. AM. 12686, 12686–92 (1996); Naomi R. Lamoreaux & Kenneth L. Sokoloff, *Inventors, Firms, and the Market for Technology: U.S. Manufacturing in the Late Nineteenth and Early Twentieth Centuries*, *in* LEARNING BY DOING IN FIRMS, ORGANIZATIONS, AND NATIONS 19 (Naomi Lamoreaux et al. eds., 1998).

56. *See* Magliocca, *supra* note 32.

57. *See supra* Section II.B.

58. *Id.*

fense is based on the idea that trolls are performing a valuable market-making function. In their telling, they identify undervalued patents and invest time and effort marketing those patents to other firms. It sounds appealing, a simple case of arbitrage.[59] In this story, the enemies of the trolls are firms that have simply missed the boat on this valuable new market. Now those enemies are taking aim at a viable, functioning market for undervalued patents. Ultimately, the trolls argue, their enemies cannot be in the right, because the enemies' solutions to the troll problem all hinge on shutting down this emergent, well-functioning market.[60] The basic logic is that, now that trolls have pioneered a market for a new class of assets, these enemies want to obliterate it, and return to the days when ideas could be obtained for free.

The basic premise behind this defense is surely correct. There is no reason at all not to encourage and support a well-functioning market for patentable inventions. And, given the well-known advantages that accrue from specialization, there is no legitimate reason to discriminate legally between a firm that embeds its innovation in manufactured products, and one that sells its innovations in disembodied form—a pure idea shop.[61]

But this conventional account of the advantages of specialization may not account for at least part of the contemporary patent troll industry. Many patent assertion companies do not perform research and development as those terms are commonly understood. They do not participate in the growth of knowledge and technology. True trolls do not really innovate at all. They are opportunistic litigation mills, not research firms. They cloak themselves in the legitimacy of patents, exploiting the widespread perception that where there is a patent there must be innovation. Sadly, this is not always true.[62]

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59. *See, e.g.*, James F. McDonough III, *The Myth of the Patent Troll: An Alternative View of the Function of Patent Dealers in an Idea Economy*, 56 EMORY L.J. 189 (2006) (defending trolls as efficient market-makers).

60. *Id.* at 190.

> [McDonough's] Comment argues that, contrary to popular belief, patent trolls actually benefit society. These trolls act as a market intermediary in the patent market. Patent trolls provide liquidity, market clearing, and increased efficiency to the patent markets—the same benefits securities dealers supply capital markets. Ultimately, . . . the emergence of patent trolls is simply a stage in the natural evolution of the patent market.

Id.

61. Indeed, I have provided a spirited theoretical defense for just such firms, highlighting the role that patents can play in making them economically viable as standalone firms. *See* Arora & Merges, *supra* note 23; Robert P. Merges, *A Transactional View of Property Rights*, 20 BERKELEY TECH. L.J. 1477 (2005).

62. *See, e.g.*, John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185, 205 (1998) (noting in a study of 300 litigated patents, 46% were found invalid).

And this stark fact explains succinctly why the market for true troll activity is not worth defending. It is a market for a product that has no social value at all. In this, the trolls are reminiscent of another famous agent of "arbitrage," the rent-seeking personal injury lawyer.[63] The market for concocted, unfounded litigation is not one that society ought to encourage and the ongoing tort reform movement is directed specifically at shutting it down.[64]

The analogy to spurious personal injury settlements or nuisance suits brings home the key point: The market for patents unconnected to innovation is not a market that the legal system ought to encourage or even tolerate. In this sense, tort litigation is an excellent analogy.[65] But to address the broader point—that solving the troll problem will involve shutting down a functioning market—it might help to look to another, equally apt example: the case of blackmail.[66]

As a legal matter, blackmail has fascinated scholars for a long time. It raises some famously knotty problems of individual versus social harm. But for an economist, the puzzling aspect of blackmail is that it involves a voluntary and seemingly Pareto-satisfying exchange. The blackmailer has information the blackmailee wants; they agree to a price; and the deal is done. From the point of view of libertarian theory, if not pure market exchange, what's not to like?

After some discussion of these issues, the answer came clear enough to Ronald Coase when he wrote about blackmail in 1984.[67] He emphasized the social wastefulness of blackmail transactions: "Blackmail involves the expenditure of resources in the collection of information which, on payment of blackmail, will be suppressed. It would be better if this information were not collected and the resources were used to produce something of value."[68]

Even if no resources were expended to acquire the information—if it dropped fortuitously into the blackmailer's hands, for instance—Coase em-

63. See the discussion regarding personal injury lawyers and tort reform, *supra* Section II.A.

64. Again, this assumes that the original inventor receives either nothing from the troll or very little, and hence that payments to the troll do little or nothing to stimulate or reward real invention and innovation. When a substantial portion of troll income does pass to real innovators, the story changes, and trolls may be more defensible. *See infra* Part III.B.2.

65. For a sophisticated proposal based on the troll-tort suit analogy, see Ranganath Sudarshan, *Nuisance-Value Patent Suits: An Economic Model and Proposal*, 25 SANTA CLARA COMPUTER & HIGH TECH. L.J. 159 (2009).

66. See discussion of blackmail, *supra* Section II.A.1.

67. Ronald H. Coase, *The 1987 McCorckle Lecture: Blackmail*, 74 VA. L. REV. 655 (1988).

68. *Id.* at 674.

phasizes that the transaction would still be wasteful.[69] In fact, he goes further than that. In a statement that is strong medicine indeed for a dyed-in-the-wool economist, he condemns blackmail as something more than inefficient. He says it is wrong.[70] And for Coase, this justifies the classification of blackmail as not only a private offense, but a crime.

Blackmail is part of a broader pattern in which the legal system sorts out which voluntary transactions ought to be enforced. Where the underlying purpose of the exchange is legitimate or productive, there is no question that enforcement of bilateral exchange relations ought to be a matter of course. But where there is no social welfare gain possible from the exchange, and especially where enforcement encourages wasteful expenditures (again from the perspective of social welfare), there is good reason not to promote voluntary exchange.

Judge Richard Posner has at times echoed this same concern. In discussing the criminal law, for example, he has talked about why the law does not encourage sterile, purely redistributive "exchange."[71] In a similar vein, in a case on trade secret law, Judge Posner addressed the requirement that a trade secret owner take "reasonable precautions" to prevent a given piece of information from becoming widely known. He explained this element of a trade secret cause of action in terms of two related but distinct theories of trade secret law—both of which reflected an understanding of the importance of segregating out productive from unproductive interactions:

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69. *Id.* ("While it is true that in such a case no resources were used to collect the information, resources would certainly be employed in the blackmailing transaction.").

70. *Id.* at 675–76. Coase explains that

> [t]he blackmailer's actions generate fear and anxiety—blackmailing involves more than the employment of resources which leave the value of production unchanged—it causes real harm which reduces the value of production . . . . The victim, once he succumbs to the blackmailer, remains in his grip for an indefinite period. It is moral murder. . . . [I]t is only certain threats in certain situations which cause harm on balance and in which the harm is sufficiently great as to make it desirable that those making them should be prosecuted and punished. I think it is clear what is wrong with blackmail. The problem is to know how to deal with it.

Id.

71. *See, e.g.*, Posting of Richard Posner to The Becker-Posner Blog, Crime and Corruption—Posner's Comment, http://www.becker-posner-blog.com/archives/2007/05/ (May 6, 2007 19:55).

> The basic economic objection to crime is that a crime is a costly but sterile transaction. It redistributes wealth, which doesn't increase the size of the social pie; and therefore the costs involved in crime—the time and other inputs of the criminal, and the defensive measures taken by potential victims—are a deadweight loss to society.

Id.

> It should be apparent that the two different conceptions of trade secret protection are better described as different emphases. The first emphasizes the desirability of deterring efforts that have as their sole purpose and effect the redistribution of wealth from one firm to another. The second emphasizes the desirability of encouraging inventive activity by protecting its fruits from efforts at appropriation that are, indeed, sterile wealth-redistributive—not productive—activities. The approaches differ, if at all, only in that the second does not limit the class of improper means to those that fit a preexisting pigeonhole in the law of tort or contract or fiduciary duty—and it is by no means clear that the first approach assumes a closed class of wrongful acts, either.[72]

This emphasis on the importance of sorting out productive from unproductive transactions goes back far beyond Coase and Posner, though in former times the language of efficiency was more thoroughly intertwined with concepts of virtue and morality. It is a consistent theme in the writings of Adam Smith, for example. He always tempered his belief in the importance of self-interest with discussion of ethical virtues, such as justice and prudence. As the economist Deirdre McCloskey has noted, these features of Smith's thought actually form a crucial underpinning for well-functioning capitalist economies.[73] This aspect of Smith's thought is perhaps best captured in a little ditty he included in The Theory of Moral Sentiments: "So Vice is beneficial found/when it's by Justice lopt and bound."[74] Others have noted the same theme, emphasizing the importance to Smith of institutional—including legal—rules and frameworks that channel self-interest and promote collectively beneficial exchange and commerce. The philosopher William Campbell wrote,

> Smith never glorifies selfishness, greed, and an unbridled pursuit of personal gain, either in the Moral Sentiments or in the Wealth of Nations. It is the purpose of Smith's moral, legal and economic thought to devise the appropriate institutional framework within

72. Rockwell Graphic Sys., Inc. v. DEV Indus., Inc., 925 F.2d 174, 178 (7th Cir. 1991).

73. DEIRDRE N. MCCLOSKEY, THE BOURGEOIS VIRTUES: ETHICS FOR AN AGE OF COMMERCE 407–15 (2006).

74. ADAM SMITH, THE THEORY OF MORAL SENTIMENTS 357 (1759). This theme is also apparent in WILLIAM J. BAUMOL, ROBERT E. LITAN & CARL J. SCHRAMM, GOOD CAPITALISM, BAD CAPITALISM AND THE ECONOMICS OF GROWTH AND PROSPERITY 252 (2007) (discussing ways to "reduce the incentives for enterprising class action[] [lawsuits] that, in effect, blackmail defendants with deep pockets").

> which self-interest can be expressed without inflicting harm on other individuals.[75]

From this traditional perspective in the history of economic thought, it is quite apparent that we should not be blinded by fears of shutting down or regulating an existing market. The market for patents unrelated to innovation adds nothing to overall social welfare. Rent seekers who employ patents are often said to engage in a form of extortion.[76] When a charge like this is true, conventional wisdom suggests only one efficient (and proper) course of action: shutting the socially wasteful market down.

E. SUMMARY: HISTORY LESSONS

In all these cases, rent-seeking is made possible by the nature of patent law and its relationship to technological inventions. It is an inherently difficult and complex task to divide up a stream of technological innovation into discrete property bundles. It is difficult to describe particular increments of technological advance in clear and precise language. As a result, the costs of establishing and enforcing property rights in this area are inherently high. Patent examiners, administrative law judges within the patent system, and federal judges generally are of course not experts in any particular technology. This reality, coupled with the inherent complexity of the enterprise, means that there are numerous opportunities to creatively define and apply patent claims. In practice, clever lawyering can often produce a patent claim that covers more technological ground than is truly warranted by the underlying invention.

Of course, numerous patent doctrines exist to police this activity. But the history of patent law shows that these doctrines do not always do an adequate job of preventing rent-seeking. At certain times, and for various reasons, the patent system is overwhelmed with rent-seeking activities. During these times, the normally effective doctrines of patent law do not serve their appointed function. This leads to extensive rent-seeking episodes such as the ones I have just described. In my opinion, the current wave of patent trolls shows that we may very well be undergoing another of these episodes right now.

From the perspective of property rights theory, this can be explained quite simply. These episodes show that measurement costs at times increase

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75. William F. Campbell, *Adam Smith's Theory of Justice, Prudence, and Beneficence*, 57 AM. ECON. REV. 571, 572 (1967).

76. *See, e.g.*, USSELMAN, *supra* note 35, at 111 (Owners of patents on train brakes "extort money from railroad companies under the pretense of a patent which they know must be invalid" (quoting Expert Report of John Cochrane, Baltimore & Ohio Railroad, 1860)).

so as to put pressure on the overall functioning of the property rights system.[77] That is, holding the value of underlying assets constant, an increase in the cost of measuring and enforcing property rights (which is one way to characterize the combination of new technologies and pressures on the patent system which accompany these rent-seeking episodes) can be expected to lead to a change in the specification of property rights. But here we encounter a practical problem with the theory. Property rights regimes are not so fine grained that they can self-adjust to micro-level changes such as this. Indeed, there is ample theory to demonstrate that we would not want them to. So for example, while it might be optimal to eliminate patents for certain technologies when the measurement costs associated with them have undergone a rapid increase, it is practically impossible to do so. For example, there would be all kinds of difficulties in carving out railroad technology from other industrial technology. In addition, problems like this are often short lived. Once the patent system adjusts to the new technology, it might make sense to reinstitute property rights. But again, property institutions cannot be calibrated so finally or changed so frequently. Stability of expectations is important too.

What this means practically is that internal adjustments must often be made that carry out, as far as possible, the optimal recalibrations suggested by the theory. In the historical examples described earlier, there is good evidence that just such recalibrations in fact took place.[78] And I argue in this Article that, as we find ourselves in a similar situation today with patent trolls, we need to look for ways to effect similar recalibrations.

III. WHAT ABOUT PRIVATE SECTOR COURSE CORRECTION?

One might accept that the specification of property rights has deviated in some way from the optimal, yet still refrain from advocating any self-conscious course correction or affirmative policy response. Perhaps the property rights system will self-correct. Firms and individuals may have some techniques for mitigating the effects of inefficient property rights specifications. If so, there may be no need for a public policy response.

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77. *See, e.g.*, OLIVER E. WILLIAMSON, THE ECONOMIC INSTITUTIONS OF CAPITALISM 29 (1985) (discussing the "measurement branch" of transaction cost economics); Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. (PAPERS & PROC.) 347 (1967) (discussing the importance of measurement costs).

78. For further discussion of recalibration in IP law, see Merges, *supra* note 1; Robert P. Merges, *Intellectual Property Rights and the New Institutional Economics*, 53 VAND. L. REV. 1857 (2000).

A. FIRST NORMS, THEN RIGHTS

I have described a version of private self-correction in my account of "private intellectual property systems" that emulate the functioning of a full-bore, publicly specified property regime.[79] For example, Hollywood writers who submit scripts to movie studios developed a "script registry" under the auspices of the Writer's Guild that acted much like a private "copyright office" for uncopyrightable script ideas. A more recent example is described in a paper by Dotan Oliar and Christopher Sprigman that documents widely understood norms prohibiting "joke stealing" by comedians operating at the higher levels of the standup comedy industry.[80] These norms protect investment in creation of comedy material, despite the absence of formal IP rights.[81] In some cases, norms like these may eventually find their way into formal legal rules. In the meantime, they are good examples of a purely private (i.e., non-governmental) response to a deficiency in the formal specification of property rights. Indeed, from a purely functional standpoint, norms like this constitute a new property rights specification; the distinction between formal and informal makes little difference.[82]

How about the opposite case? Is there any evidence of systemic self-correction when there is "too much" formal, legally-specified IP? The answer is once again yes, though this is a more recent phenomenon and the theory surrounding it is thus necessarily more speculative.

The earliest literature on private action to mitigate excess property entitlements centered on institutions to lower transaction costs.[83] Here the em-

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79. *See* Robert P. Merges, *Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CALIF. L. REV. 1293, 1361–62 (1996) (describing five examples of the phenomenon); Robert P. Merges, *From Medieval Guilds to Open Source Software: Informal Norms, Appropriability Institutions, and Innovation* (Nov. 13, 2004) (unpublished essay presented at Conference on the Legal History of Intellectual Property, on file with University of Wisconsin Law School) (describing how informal norms of nondisclosure to the guild interacted with the sharing of some information among guild members).

80. Dotan Oliar & Christopher Sprigman, *There's No Free Laugh (Anymore): The Emergence of Intellectual Property Norms and the Transformation of Stand-up Comedy*, 94 VA. L. REV. 1787 (2009).

81. *Id.* at 1802–03 (noting that copyright law protects only "expression" and not "ideas," making it easy to take the gist of a joke or routine without copying the precise way it is expressed).

82. It may be desirable, even so, for emergent norms to be enacted into formal law. This can both cement them into place and make them more widespread and durable. *See, e.g.*, Robert P. Merges, *A New Dynamism in the Public Domain*, 71 U. CHI. L. REV. 183 (2004) (proposing to codify into copyright and patent law a robust waiver or "dedication to the public" mechanism along the lines of the contractual Creative Commons licenses now popular in the online setting).

83. Merges, *Contracting into Liability Rules*, *supra* note 79.

phasis was on the ability of private actors to create institutions that smoothed the way for high volume IP exchange. The point of the theory was to show that property rights sometimes induce investments in transactional mechanisms and, therefore, that explicit policy interventions were not always necessary to lower transaction costs.

Later, the theme of self-correction through private action was made more explicit. Private investments to prevent rivals from obtaining property rights were observed, and it was proposed that these investments could be expected to increase as the value of property rights (and hence the economic leverage in the hands of rivals who hold them) increased.[84]

A more sophisticated approach to self-correction was described in a recent paper by Jonathan Barnett.[85] Barnett is interested in studying private sector responses to existing property regimes.[86] He describes industries in which some, typically large, firms have a steady demand for "outside" inventions. He proposes that these industries can effectively respond to the threat of overly strong property specifications—but only if coordination costs among firms are low. Under these circumstances, firms can develop mutual nonenforcement norms, collective transactional mechanisms, lobbying efforts, and outright dedication of some inventions to the public domain, all as a way to offset the inefficiently strong property rights they are confronted with.[87] But he theorizes that private responses will not be effective where coordination costs among firms are high. In this case, Barnett says firms will find themselves in what he calls a "property trap," where innovators (large and

84. Merges, *supra* note 82 (arguing that private investments to offset competitors' (arguably excessive) property rights help to mitigate the "overpropertization" trend).

85. Jonathan M. Barnett, *Property as Process: How Innovation Markets Select Innovation Regimes* (Univ. of S. Cal. Law & Econ. Working Paper Series, Paper No. 86, 2008), *available at* http://law.bepress.com/usclwps/lewps/art86.

86. *Id.* at 5 (stating that his article's goal is "to identify the conditions under which privately-interested innovator populations will (and will not) have the incentives and capacity to undertake socially-interested actions that avoid or substantially remedy any excessive propertization outcome").

87. *Id.* at 7.

> Building in part on established lessons from the public-choice literature, [Barnett] argues that markets are likely to resist and correct overpropertization—that is, the property trap is likely to be broken—where two conditions are satisfied: (i) adversely-affected innovators tend to enjoy low coordination costs, which is likely to be the case where innovators are few in number (or act through a collective organization) and occupy a dominant market position, and (ii) adversely-affected innovators are neither clearly net users nor clearly net producers of the relevant pool of intellectual goods . . . .

Id.

small firms) defect from a pre-existing "sharing" equilibrium by racing aggressively to acquire more and more property rights.[88]

B. MECHANISMS OF REFORM: POLITICAL ECONOMY CONSIDERATIONS

Scholarship since Harold Demsetz's 1967 article[89] has emphasized the need to augment the bottom-up view of property evolution.[90] A 2005 article by Katrina Wyman captures the basic thrust of the newer literature:

> While directly affected parties must agree to rearrange rights through market transactions, many directly affected parties may not be consulted personally when rights are rearranged through political processes, let alone given a veto over the decision to change. Since the political process does not require unanimity to proceed, it is important, in determining the probability of change, to analyze the expected distribution of the benefits and costs of private property among the influential interest groups who are likely to be consulted.[91]

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88. *Id.*; Raustiala and Sprigman, in a related vein, show the adaptation of the fashion industry to a low level of IP protection. The authors argue that the fashion industry has settled on a low-IP protection "equilibrium" that permits a form of insurance; when firms miss out on an important fashion trend, they can copy other firms' designs for the mutually tolerated "knockoff market." *See* Kal Raustiala & Christopher Sprigman, *The Piracy Paradox: Innovation and Intellectual Property in Fashion Design*, 92 VA. L. REV. 1687, 1698–1717 (2006).

89. Demsetz, *supra* note 77 (explaining that growth of economic activity concerning economic assets leads to a strengthening of property rights over those assets, and that generally property rights specifications adjust to changing economic conditions).

90. *See, e.g.*, Saul Levmore, *Property's Uneasy Path and Expanding Future*, 70 U. CHI. L. REV. 181, 184–86 (2003) (distinguishing between efficiency (Demsetzian) and interest group theories of property rights); Saul Levmore, *Two Stories About the Evolution of Property Rights*, 31 J. LEGAL STUD. 421, 429–33 (2002) (describing competing economic efficiency and interest group theories of the evolution of property rights).

91. Katrina Miriam Wyman, *From Fur to Fish: Reconsidering the Evolution of Private Property*, 80 N.Y.U. L. REV. 117, 122 (2005). There is an interesting middle ground between what has been called the "naïve theory" (which does not take political economy into account at all) and an explicitly political theory of property right change. This might be described as the "property rights possibility frontier," and it is suggested in some comments about the demand for property rights by economist Lee Alston:

> There seems to be some confusion in the literature over which way causation runs between property rights and value. The confusion is cleared up if we remember the following. It is true that a resource becomes more valuable the greater the rights one has over the resource, and in this sense value (or actual rent) is a function of property rights. But it is not actual rent, but rather potential rent, that drives the demand for property rights. Potential rent is a function of the inherent rental stream (e.g., world price of the resource) and some benchmark set of possible property rights that are culturally and institutionally specific to a time and place.

William Landes and Richard Posner, in their book on the economic structure of intellectual property law, describe the "asymmetry between the private value of intellectual property rights and the private value of the . . . public domain."[92] This asymmetry drives the public choice aspects of their analysis of the demand for IP protection through legislation. They make the common sense, but important, point: The private value of specific IP extensions can be very high, which serves as a strong motivation for firms to lobby heavily for stronger IP protection statutes.[93]

This public choice story is often deployed to explain the "overexpansion" of IP protection during the past fifteen or twenty years.[94] In the article quoted earlier, Wyman goes on to state an important point:

> [R]ecognizing the significance of political decisionmaking rules underscores the need to examine these rules closely in any particular context as variations in them may affect the success of rearranging rights. In particular, the more the collective-choice rules tend toward mandating the unanimity of the affected parties to alter rights in the market, the more difficult it may be to rearrange rights politically.[95]

Although IP legislation does not demand congressional unanimity, voting rules and procedures in this domain follow the general pattern in Congress. This means that it is much easier to veto proposed legislation than to get a particular bill passed. Due in part to the increasing value of intellectual property, and the increasing investment in IP lobbying that has resulted (as public choice theory would of course predict), there are now many more "veto players" in the IP legislation arena than there were, say, twenty years ago.[96] Recent efforts to pass "patent reform" legislation are only the latest evidence of this trend.

In particular, the recent battles over patent reform in Congress show that there is a major divergence between the interests of the biomedical industries

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Lee Alston, *Toward an Understanding of Property Rights*, *in* EMPIRICAL STUDIES IN INSTITUTIONAL CHANGE 31, 32 (1996).

92. WILLIAM M. LANDES & RICHARD A. POSNER, THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW 409 (2003).

93. *Id.* at 407–09.

94. This is a common theme in the works of Lawrence Lessig. *See, e.g.*, LAWRENCE LESSIG, CODE VERSION 2.0 (2006). For a similar perspective, see also YOCHAI BENKLER, THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM (2006).

95. Wyman, *supra* note 91, at 124.

96. For background on veto players, see generally GEORGE TSEBELIS, VETO PLAYERS: HOW POLITICAL INSTITUTIONS WORK (2002).

(pharmaceuticals, biotechnology, medical devices) and information technology companies (semiconductors, software, and the like).[97]

The upshot is that rent-seeking will have to be curtailed in the courts. As Polk Wagner stated it recently:

> At the same time that the patent system is plainly becoming more economically important, more utilized, more costly, and more complex, the emergence of the technology industry as a major player—and one with divergent interests from the traditional players—seems likely to have a deeply politicizing effect. As the patent law becomes more politicized and the stakes rise, the opportunities for substantial reform of the system narrow. This is in large part because the structure of the U.S. political system is well designed to slow the pace of change of controversial legislation, especially such legislation that has a ratio of economic importance to public visibility. This fact does not, of course, mean that there will be less legislative activity surrounding the patent system; indeed, with higher public visibility, more controversy, and more lobbying dollars likely to be spent, legislative activities, hearings, proposed legislation, and the like should only increase. But these activities, I suggest, will fall short of real, substantive patent reform.[98]

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97. This split, and its stalling effect on patent reform legislation, is described in a Congressional Research Service study from 2006. WENDY H. SCHACHT, CONG. RESEARCH SERV., CRS REPORT NO. RL33367, PATENT REFORM: ISSUES IN THE BIOMEDICAL AND SOFTWARE INDUSTRIES (2006). For background on the formation of patent reform lobbying groups centered in rival industries, see generally Candace Lombardi, *Tech Firms to Lobby for Patent Litigation Reform*, ZDNET NEWS, May 11, 2006, http://news.zdnet.com/2100-9595_22-148032.html; *New Coalition Seeks to Protect American Innovation*, IP FRONTLINE, Mar. 23, 2007, http://www.ipfrontline.com/depts/article.asp?id=14571&deptid=8 (illustrating the formation of the 21st Century Coalition for Patent Reform, an organization of pharmaceutical companies, some universities, and companies from other industries).

98. R. Polk Wagner, *The Supreme Court and the Future of Patent Reform*, 55 FED. LAW. 35, 35 (2008). The real action, according to Wagner, will be in the courts and even inside the PTO:

> [Major trends today include] a growth in patent-related activity, and the emergence of the technology industry (on the West Coast) as a major player in the political economy of the patent system. It is these "plate tectonics," . . . that both explain the recent interest in the patent system as well as suggest important features of its future. . . . [A]s the paths for change narrow, meaningful patent reform will increasingly fall to the courts. This case-by-case, litigation-driven change has, . . . important consequences. . . . This, in turn, suggests that a re-evaluation of patent reform options is required, and that, in particular, the understudied role of the U.S. Patent and Trademark Office (PTO) should be revisited.

Id. at 35.

Real change—real reforms to rein in rent-seeking—will have to come from the courts.

1. Policing the eBay *Line*

What the Court recognized in *eBay* was that it must police the line between rent-seeking and innovation.[99] This opinion recognized the important threat that non-innovating patent owners posed to the health of the innovation system. And it announced a considered approach to maintaining the overall viability of the macro-environment for innovation.

As I have been arguing, the fault line between innovation and rent-seeking defines a major policy issue in the IP field. In my view, the Court in its eBay opinion tried to establish some basic parameters for drawing this line. The purpose of the line is to separate socially productive innovation from socially wasteful rent-seeking. This is easy enough to see at the conceptual level; the difficulties all come when we try to apply this principle in individual cases. I will discuss here just two examples of these difficulties, though many more are sure to arise, starting with troll-related activities and then turning to university research.

Rooting out pure rent-seeking might seem easy, but it is not always so. It is tempting to simply target specific companies or entities—law firms (meaning contingency fee patent firms) that acquire patents and then assert them against numerous defendants, for example;[100] or perhaps large-scale "patent aggregators" that acquire many patents and then sell "litigation insurance" to many companies, in exchange for a promise not to assert those patents against companies willing to pay the "premium."[101] It may be relevant that a specific company is a repeat offender in the rent-seeking game. But typically, it is not specific entities but rather specific tactics or practices that are most relevant. Intellectual Ventures, for example, has engaged in an effort to finance forward-looking "pure" R&D; patents arising from this sort of effort may wind up being a far cry from the acquisition of a patent in bankruptcy, or a patent bought on the cheap and later asserted against numerous defen-

99. *See supra* Part I.

100. *Cf.* Raymond P. Niro, *Who Is Really Undermining the Patent System—"Patent Trolls" or Congress?*, 6 J. MARSHALL REV. INTELL. PROP. L. 185 (2007) (defending patent acquisition and assertion from one often accused of being a troll). Niro cites to and argues against an opposing article, Brenda Sandburg, *You May Not Have a Choice. Trolling for Dollars*, THE RECORDER, July 30, 2001, at 1 (describing of patent troll tactics). *See* Niro, *supra*, at 186.

101. The most prominent is Intellectual Ventures, Inc. *See generally* Nicholas Varchaver, *Who's afraid of Nathan Myhrvold?*, FORTUNE, July 10, 2006, at 110.

dants.[102] Trolling, to put it simply, is a matter of behavior rather than status. One can act as a troll, but it will usually not be true that one simply is a troll. The "troll line," in other words, must be policed case-by-case and fact-by-fact.

Now let us consider university research. Mark Lemley recently wrote an article whose title is self-explanatory: "Are Universities Patent Trolls?"[103] Lemley notes the growth of patenting by universities, which held sixteen times as many patents in 2004 as in 1980, and the concomitant sprouting of university technology transfer offices (which are 100 times more numerous now than in 1980).[104] This is not of course bad in itself; federal policy has been aimed at just this result since the Bayh-Dole Act of 1980.[105] But what is troubling is that the universities are increasingly seeking to maximize not technology transfer per se, but short-term licensing revenues. This has led to what Lemley describes as "a growing frustration on the part of industry with the role of universities as patent owners. Time and again, when [talking] to people in a variety of industries, their view is that universities are the new patent trolls."[106] As he points out, this is not a good development. Lemley offers a variety of policy recommendations to offset it, but the stark fact remains: universities,[107] at least some of them, have crossed the line between innovators and rent-seekers. This is not good for society, and ultimately, not good for the universities themselves.

Even so, an overreaction might be just as bad as no reaction at all. That's because universities continue to generate important, horizon-stretching tech-

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102. Intellectual Ventures, Who We Are, http://www.intellectualventures.com/about.aspx (last visited Nov. 20, 2009).

103. Mark A. Lemley, *Are Universities Patent Trolls?*, 18 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 611 (2008).

104. *Id.* at 614.

105. Bayh-Dole Act, Pub. L. No. 96-517, 94 Stat. 3019 (codified as amended at 35 U.S.C. §§ 200–12 (1980)). *See generally* James D. Clements, *Improving Bayh-Dole: A Case for Inventor Ownership of Federally-Sponsored Research Patents*, 49 IDEA 469 (2009) (arguing that the Bayh-Dole Act disincentivizes university patenting).

106. Lemley, *supra* note 103 at 615.

107. More accurately, technology transfer offices within universities. There is a growing "agency problem" in this area; university scientists, and the law professors who study IP law, usually counsel restraint and a long-term orientation as the focal points of university licensing policy. But technology transfer offices are profit centers, and they are evaluated on the basis of net short-term financial contributions to the university. So it is not surprising to see a congressional patent reform hearing on legislation to curtail rent-seeking where a policy expert from a university argues in favor of the measure, but a technology transfer officer from the same university argues against it.

nologies.[108] Clearly the right response is not to unilaterally curtail university licensing. It is instead to redraw the fault line, to more effectively rule out rent-seeking and thus more thoroughly encourage the real innovation we are after.

2. A Case Study: Policing the Troll Line through Damages Doctrine

In the end what matters most is that property rights be appropriately monitored and maintained. Like a traditional stone wall demarcating a physical boundary, property rights must be patrolled and policed. Where there are signs of decrepitude, some agent must step in to fix the fallen structure, to replace the fallen rocks. Otherwise the property line loses its meaning and ceases to perform its correct function. This in turn creates a threat to the integrity of the boundary.

We have seen that this process is already underway when it comes to patent institutions. *EBay* is the best current example. As I have explained, however, the patent troll phenomenon is robust and adaptable. More action is needed to shut down the avenues of rent-seeking activity. A current, pressing example is the problem of damages in patent cases.

The problem here is driven by the same logic noted by the Supreme Court in *eBay*. Under current damages rules, patents over small components can often be effectively leveraged into disproportionately large monetary awards—creating rents that are then sought out by patent trolls. Congressional testimony over proposed reforms in this area summarized the reasons why this is possible:

> Unfortunately, current law does not do a good job of ensuring that a patentee receives a royalty in proportion to the true role of the patented invention. As an example, in many cases damages' experts will rely on the traditional principle that, as a "rule of thumb," licensors should receive a quarter to a third of the profit made on a product. However, if there are five patents relevant to a complex

108. To take one example among many: Harvard University recently licensed a series of patents on "black silicon" technology, which is a technique for transforming silicon into a much more effective light sensor and power generator. Silicon treated using the Harvard process becomes much more receptive to photons (i.e. light). So transformed silicon has potential applications in medical imaging (where light is absorbed to make an image), digital cameras, and solar power (where silicon-based photovoltaic cells are used to absorb light and transmit electrons to generate electricity). Dylan McGrath, *Harvard Spinout Licenses 'Black Silicon' Patents*, EE TIMES, Oct. 13, 2008, *available at* http://www.eetimes.com/showArticle.jhtml?articleID=211200183.

The licensee in this case, a small company called SiOnyx, is in the process of developing the technology for a number of applications. *Id.* This active participation in research and development is what sets this company apart from a patent troll.

> product, much less thousands, all the profit and then some would go to patent licensors applying this "rule of thumb." The party that actually created and sold the product would be forced to lose money on its products sales, under this common royalty analysis. Yet, this type of testimony is often permitted because of years of authority and longstanding licensing practices from a bygone era.
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> Another factor is that the legal form of patent claims can be manipulated to inflate damage demands and awards. A patentee can draft a patent claim to cover a large and expensive product even where the invention relates only to a minor and inexpensive component. For example, if one were to invent a new type of windshield wiper, patent law permits the patent to be granted on a standard car with the improved windshield wiper. Under common interpretations of patent law, the royalty percentage is then based on the price of the entire car, not just the improved windshield wipers. This, not surprisingly, inflates unduly the plaintiffs' demands.
>
> Put simply, in the real world, a host of factors impede attempts to put a patent in context so one can effectively explain to a jury this concept of proportionality. For example, judges often do not want a trial to involve what other patents may cover a product beyond those that are allegedly infringed because it is complex enough for the jury to determine whether the asserted patent or patents cover the product. In addition, a juror is subjected to so much focus on the asserted patent and the accused feature in the trial process that efforts to put into perspective the limited role of the patented technology are difficult.[109]

The solution here, stated broadly, parallels the new injunction rule announced in *eBay*: shut down the opportunities for rent-seeking.[110] What that means practically is that we need a simple test for damages in patent cases that measures a patentee's compensation strictly with reference to the actual economic value of the patented invention relative to the overall product produced and sold by the defendant. The test should inquire into the difference between the actual profit to the infringer, made with the patented invention incorporated into the infringer's product, and what the infringer's profit would have been if its product had instead included the next best (unpatented) alternative technology.[111] This would conform the damages test with

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109. *Patent Trolls: Fact or Fiction?: Hearing Before the Subcomm. on Courts, the Internet, and Intellectual Property of the H. Comm. on the Judiciary*, 109th Cong. 10 (2006) (statement of Edward R. Reines, Patent Litigation Partner, Weil, Gotshal & Manges LLP).

110. *See supra* Part I.

111. This test follows closely one announced by Judge Frank Easterbrook, sitting as a trial judge in a patent case. Grain Processing Corp. v. Am. Maize-Prods. Co., 979 F. Supp. 1233 (N.D. Ind. 1997) (Easterbrook, J., sitting by designation), *aff'd*, 185 F.3d 1341 (Fed. Cir.

general compensation principles in patent law, and simultaneously reduce the opportunities for rent-seeking via excessive damage awards.[112]

IV. CONCLUSION

Patent trolls threaten the integrity of the innovation system in the U.S. today. We must not be blinded to the threat by the rote invocation of market-oriented mantras. All the evidence points to a major incidence of rent-seeking, mixed in with the emergence of a perhaps valuable market for independent ideas and inventions. If we are to preserve the traditional justification of patents as an important part of our innovation system, and if we are to uphold the social value of real innovation versus legal gamesmanship and "paper rent-seeking," there is only one course to take: We must act to delineate troll activity more precisely, and when it is present to shut it down, for now, primarily through the courts; in the future, through whatever means present themselves. By carefully distinguishing artificial rents from true innovation, and shutting off or reducing rents when we find them, we can put the trolls out of business while preserving and perhaps nurturing a valuable market for patented innovations. The idea is simple: to make sure patent law is serving its intended purpose, by encouraging real, socially-useful innovations.

1999). See the write-up of these issues in JOHN W. SCHLICHER, PATENT LAW: LEGAL AND ECONOMIC PRINCIPLES § 13:138 (2d ed. 2008):

> This test [for deciding whether the entire market value of the product is attributable to the patented invention] would properly measure the value of an invention only if it asks, "What are the profits available to the infringer from selling a product with the patented feature or component, and what would be the profits from selling a product with the next-best noninfringing substitute feature or component." The difference measures the value of the invention and may be the entire profits or only part of them. In determining lost profits, the courts have recognized that the value of a particular invention is this difference, as the court of appeals made clear in Grain Processing.

112. The Federal Circuit recently took a step in this direction. *See* Lucent, Inc. v. Gateway, Inc., 580 F.3d 1301 (Fed. Cir. 2009) (vacating jury's damage award; remanding for reconsideration on the basis of more realistic evidence of royalty rates from truly comparable licensing agreements).