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PATENT AGGREGATION: MODELS, HARMS, AND THE LIMITED ROLE OF ANTITRUST

Justin R. Orr[†]

In what the Wall Street Journal called “the largest intellectual property auction of all time,” a consortium of technology rivals including Apple, Microsoft, Sony, and Research in Motion outbid Google for a portfolio of 6,000 patents auctioned as part of Nortel Networks’ liquidation for \$4.5 billion in July 2011.¹ One month later, Google dwarfed the Nortel deal with its purchase of Motorola Mobility for \$12.5 billion, a deal that many believe was directed toward acquiring Motorola’s 17,000 existing patents and 7,500 pending patent applications.² Although practicing technology companies like the household names listed above own some of the world’s largest patent portfolios, large non-practicing entities (“NPEs”)³ like Intellectual Ventures,

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1. Sven Grunberg & Don Clark, *Phone Rivals Gang Up, Outbid Google*, WALL ST. J. Jul. 21, 2011, <http://online.wsj.com/article/SB10001424052702304584004576418962301518284.html>.

2. When announcing the Motorola acquisition, Larry Page stated, “Our acquisition of Motorola will increase competition by strengthening Google’s patent portfolio, which will enable us to better protect Android from anti-competitive threats from Microsoft, Apple and other companies.” Larry Page, *Supercharging Android: Google to Acquire Motorola Mobility*, GOOGLE OFFICIAL BLOG (Aug. 15, 2011), <http://googleblog.blogspot.com/2011/08/supercharging-android-google-to-acquire.html>. See also, e.g., Marguerite Reardon, *Google Just Bought Itself Patent Protection*, C-NET (Aug. 15, 2011), http://news.cnet.com/8301-30686_3-20092399-266/google-just-bought-itself-patent-protection/; Matt Richtel & Jenna Wortham, *Motorola’s Identity Crisis*, N.Y. TIMES, Aug. 21, 2011, <http://www.nytimes.com/2011/08/22/technology/after-google-motorola-to-face-identity-crisis.html>; Shira Ovide, *Google-Motorola: It’s All About the Patents*, WALL ST. J., Aug. 15, 2011, <http://blogs.wsj.com/deals/2011/08/15/google-motorola-its-all-about-the-patents/>.

3. The term “NPE” generally encompasses all patent owners who seek to monetize their patents without practicing the technologies themselves—a group that includes singular inventors as well as research universities and companies specializing in research. See Mark A. Lemley, *Are Universities Patent Trolls?*, 18 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 611, 629–31 (2008). This Note, however, is primarily concerned with NPEs that serve as intermediaries, particularly those which aggregate patents invented by others. See Allen W. Wang, *Rise of the Patent Intermediaries*, 25 BERKELEY TECH. L.J. 159, 165–82 (2010) (separating intermediary activities into three categories: brokers, defensive aggregators, and offensive aggregators). The Federal Trade Commission has adopted the term “patent assertion entity” (“PAE”) to refer to “firms whose business model primarily focuses on purchasing and asserting patents.” FED. TRADE COMM’N, THE EVOLVING IP MARKETPLACE: ALIGNING

Acacia Technologies, Round Rock Research, and RPX Corporation have become active purchasers from patent producers as well as at open auction.⁴ The largest of these NPEs, Intellectual Ventures, has acquired more than 70,000 patents, making it the fifth largest patent holder worldwide.⁵

Aggregating patents, whether by practicing or non-practicing entities, seems at first like a strange strategy: buyers often purchase or license a patent portfolio without analyzing the strength and validity of most of the individual patents within that portfolio,⁶ and they often have no intention of practicing the technologies underlying the patents.⁷ Although different entities aggregate patents for vastly different reasons, unique features of the current patent ecosystem are responsible for both encouraging and facilitating this aggregation strategy. In particular, due to the difficulty of evaluating the scope and validity of any given patent claim, an aggregated patent portfolio provides a stronger patent position than the sum of its patent parts—a kind of “super-patent.”⁸ Practicing entities thus enter a virtual “arms race” under which they seek to build portfolios that will deter potential infringement claims by signaling their ability to bring strong infringement counterclaims, thus encouraging would-be complainants to cross-license or settle disputes rather than resorting to costly and potentially disruptive litigation.⁹

PATENT NOTICE AND REMEDIES WITH COMPETITION 8 n.5 (2011), available at www.ftc.gov/os/2011/03/110307patentreport.pdf. PAEs represent a subset of NPEs that primarily seek to monetize patents on inventions that they themselves did not invent, and would therefore encompass offensive aggregators. However, because this Note also considers NPE activities not based around assertion, particularly defensive aggregation models, the term “NPE” will be continued throughout.

4. Robin Feldman & Tom Ewing, *The Giants Among Us*, 2012 STAN TECH. L. REV. 1, 2, 5 (2012) (describing patent aggregators generally, with special focus on explaining the activities of Intellectual Ventures, and estimating that the company amassed 30,000 to 60,000 patents over the span of five years). Intellectual Ventures has been estimated to have purchased three-quarters of all patents sold at auctions run by Ocean Tomo, the intellectual property auctioneer. *Publicly Auctioned Patent Buyers: Intellectual Ventures & Others*, AVANCEPT, LLC (Mar. 2010), <http://avancept.com/iv-report-auction.html>.

5. *Our Patent Portfolio*, INTELLECTUAL VENTURES, <http://www.intellectualventures.com/index.php/inventions-patents/patent-portfolio> (last visited Dec. 19, 2012); see also Feldman & Ewing, *supra* note 4, at 5.

6. See *infra* note 76 (discussing the “ruler method” of valuing patent portfolios by the relative height of patent stacks).

7. By definition, NPEs do not actually make anything, and many practicing companies purchase patents not for technology transfer, but in order to deter against litigations from competitors, as discussed *infra* Section II.A.

8. See *infra* Part III; see also Gideon Parchomovsky & R. Polk Wagner, *Patent Portfolios*, 154 U. PA. L. REV. 1, 7 (2005).

9. See Colleen Chien, *From Arms Race to Marketplace: The Complex Patent Ecosystem and Its Implications for the Patent System*, 62 HASTINGS L.J. 297, 308–10 (2010); Tom Ewing, *Indirect*

Patent-asserting NPEs may decrease transaction costs by offering licenses to entire patent portfolios, compressing costly negotiation processes for many related patents into a more efficient process. On the other hand, when patent aggregation confers a stronger right to exclude than the underlying patents should convey, and when it does not actually promote the transfer of technology, then patent aggregation represents a net tax on consumers, distracting from real innovation rather than promoting it.¹⁰ Expanding a patent's limited right to exclude may raise costs throughout highly patented industries, and concentrations of patent rights in single entities may offer competitors the ability to collude on prices and raise the intellectual property costs of current or future competitors to an extent that could harm the industry for innovation. In this context, antitrust analysis provides insights into the relationship between patent aggregation and the markets for innovation and technology goods. Applying antitrust scrutiny to patent aggregators' activities—both in the context of patent acquisitions and attempted assertions—might help to discourage wasteful and anticompetitive activity.

This Note considers the benefits and the harms of patent aggregation and explores the possible roles and likely limits of antitrust law in providing a regulatory role. Part I explores how patent law and the patent prosecution process encourage and facilitate patent aggregation. Part II describes how practicing and non-practicing entities aggregate patents to exploit the aspects of the patent system described in Part I to either defend against assertion, draw revenue from other practicing entities, or both. Part III describes the potential benefits of the aggregation activities described in Part II as well as the harms that such activities may pose as understood through the prism of antitrust law. Part IV considers various remedies to determine the role that antitrust law can play to limit the social costs of aggregation while promoting its possible efficiencies.

I. BACKGROUND: THE PATENT ECOSYSTEM

Before considering the development of patent aggregation and its competitive possibilities, this Part briefly describes: the purpose and contours

Exploitation of Intellectual Property Rights By Corporations and Investors: IP Privateering and Modern Letters of Marque and Reprisal, 4 HASTINGS SCI. & TECH. L.J. 1, 15–17 (2011).

10. See Carl Shapiro, Fed. Trade Comm'n: Patent Assertion Entity Activities Workshop (Dec. 10, 2012), available at <http://www.ftc.gov/video-library/index.php/ftc-events/patent-assertion-entity-activities-session-14/2028431448001>.

of the patent right; how that right encourages patent aggregation; and the ways in which those rights are granted, asserted, and contested.

A. THE PURPOSE AND CONTOURS OF PATENT RIGHTS

In the most basic sense, patents are property rights granted to stimulate innovation. By granting an inventor the right to exclude others from using her invention—the theory goes—a patent rewards her for the money, time, energy, and creative energies she puts into the inventive process, thus encouraging inventive behavior throughout society.¹¹ Innovation, therefore, lies at the very heart of the patent right. Article I of the Constitution provides Congress the power to “promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.”¹² The Patent Act states that “whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor,” subject to certain conditions.¹³ Specifically, the Patent Act’s requirements for novelty,¹⁴ utility,¹⁵ and non-obviousness¹⁶ seek to ensure that a patent is granted only in exchange for an invention that is new and useful and which represents more than a trivial advance on existing technology.

But thinking of a patent right simply as a property right, or as a “monopoly” over a certain technology, oversimplifies the matter. A valid patent grants “the right to exclude others from making, using, offering for sale, or selling the invention.”¹⁷ It conveys a *negative* right to keep others from

11. See Peter S. Menell & Michael J. Meurer, *Notice Failure and Notice Externalities*, J. Legal Analysis (forthcoming 2013), available at <http://ssrn.com/abstract=1973171> (analogizing patent law to property law in an agricultural context, where “the right to exclude encourages farmers to cultivate crops by ensuring that they, and not interlopers, will be able to reap the harvest”).

12. U.S. CONST. art. I, § 8, cl. 8.

13. 35 U.S.C. § 101 (2011).

14. See *id.* § 102.

15. See *id.* § 101; *Brenner v. Manson*, 383 U.S. 519 (1966) (“The basic quid pro quo contemplated by the Constitution and the Congress for granting a patent monopoly is the benefit derived by the public from an invention with substantial utility.”).

16. See 35 U.S.C. § 103 (2012) (“[A] patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.”).

17. *Id.* § 154(a)(1). Note, although § 154(a)(1) is still valid, it may be more accurate to say that a patent confers a right to exclude *in some cases*, and in other cases confers only a right to license. See *eBay, Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391–94 (2006) (holding that patent infringement plaintiffs must satisfy the traditional four-factor test to be granted injunctive relief).

using an inventor's idea, but it does not convey any corresponding *positive* right to actually practice, make, or sell the invention.¹⁸ For instance, someone who invents some never-before imagined self-cleaning sofa might nevertheless be prevented from building her invention—even if she holds a valid patent for it—because someone else owns a patent on the sofa's reclining system. Indeed, an infinite number of “blocking patents” might apply to any given invention, effectively blocking a patentee from legally using the invention without first securing licenses to all of the valid patents covering the product or process.¹⁹

Furthermore, although patent infringement is—like trespass onto real property—an absolute liability offense, patent rights are intangible and often amorphous.²⁰ Anyone who “without authority makes, uses, offers to sell, or sells any patented invention . . . infringes a patent” whether or not they know that any relevant patent exists or that their actions might infringe any such patent.²¹ Unlike tangible property that can be touched and clearly defined in space, it is a patent's claims—intangible and often confusingly worded—that determine what the patent holder owns.²² Thus inventors, manufacturers, vendors, and even consumers can infringe a patent despite ignorance, good faith efforts to search for and avoid infringement, and even efforts to obtain licenses to all relevant patents in the field.²³

B. BASIC PROBLEMS IN THE PATENT SYSTEM: HIGH QUANTITY, LOW QUALITY, AND NOTICE FAILURE

The complexities of the patent right and the processes through which patents are created and litigated result in certain basic problems that encourage patent aggregation for both offensive and defensive purposes. In

18. See ROBERT P. MERGES & JOHN F. DUFFY, *PATENT LAW AND POLICY: CASES AND MATERIALS* 48–49 (5th ed. 2011) (explaining that, for example, a patent for a radar gun does not permit an inventor to use the invention in states where such use is illegal).

19. *Id.* at 49.

20. See Menell & Meurer, *supra* note 11, at 2 (“Unlike tangible assets, the nonrivalrous nature of intangibles enables many people to possess them simultaneously without interfering with others’ use of the resource. It can be exceedingly difficult and costly to even identify ‘neighboring’ intangible property rights owners.”).

21. 35 U.S.C. § 271(a) (2011).

22. The boundaries of the property right often remain unclear until a patent is actually litigated in federal court. Courts determine the meaning of a patent's claims, and thereby the boundaries of the property right therein, as a matter of law in pretrial hearings commonly referred to as “*Markman*” hearings. See *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 374, 388 (1996).

23. See *In re Seagate Tech. LLC*, 497 F.3d 1360, 1368 (Fed. Cir. 2007) (en banc) (“Because patent infringement is a strict liability offense, the nature of the offense is only relevant in determining whether enhanced damages are warranted.”).

particular, notice failure and patent thickets encourage patent aggregation by creating opportunities to exploit—or to defend against—the assertion of amorphous patent rights.

1. *Too Many Bad Patents and the Creation of “Patent Thickets”*

Many commentators believe that the patent system creates too many bad patents.²⁴ The Patent and Trademark Office (the “PTO”)—experts have observed—sometimes overlooks obvious examples of prior art when issuing patents that appear invalid on their face.²⁵ Resource constraints likely limit the effectiveness of the patent prosecution process.²⁶ In 2011, the PTO employed 6,785 patent examiners, received 536,604 patent applications, and issued 244,430 patents.²⁷ Although the PTO has already made significant strides in working through its own backlog, more than 600,000 patents remained unexamined as of September 2012.²⁸ Examiners have a limited amount of time to devote to each patent, and must therefore study the underlying invention, analyze claims, search for prior art, and determine

24. See, e.g., Richard A. Posner, *Why There Are Too Many Patents in America*, THE ATLANTIC (Jul. 12, 2012), <http://www.theatlantic.com/business/archive/2012/07/why-there-are-too-many-patents-in-america/259725/> (questioning the need for patents in the high-tech industry and lamenting that most industries have too many patents); Joshua L. Sohn, *Can't the PTO Get a Little Respect?*, 26 BERKELEY TECH. L.J. 1603, 1630–32 (2011) (surveying common criticisms of the PTO's examination process, including the criticism that examinations are “insufficiently rigorous,” that examiners are incentivized to grant rather than reject patent applications, and that examiners lack sufficient expertise); Jay P. Kesan, *Carrots and Sticks to Create a Better Patent System*, 17 BERKELEY TECH. L.J. 145, 147 (2002); Robert P. Merges, *As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform*, 14 BERKELEY TECH. L.J. 577, 589–91 (1999).

25. See Merges, *supra* note 24, at 590.

26. See *id.* at 602–05 (discussing the PTO's budget constraints and suggesting a cost-benefit analysis for assessing the value of expending additional resources on the examination process).

27. *Performance and Accountability Report: Fiscal Year 2011*, U.S. PATENT & TRADEMARK OFFICE, at 159, 187 (2011) [hereinafter *2011 PTO Report*], available at <http://www.uspto.gov/about/stratplan/ar/USPTOFY2011PAR.pdf>.

28. *Data Visualization Center, Patents Dashboard*, THE U.S. PATENT AND TRADEMARK OFFICE, <http://www.uspto.gov/dashboards/patents/kpis/kpiBacklogDrilldown.kpixmap> (last visited Apr. 4, 2013). Unexamined patents fell to 590,000 as of April 2013. *Id.* These numbers represents a tremendous improvement over the past several years. In March 2010, the backlog of unexamined patents was more than 720,000. See Dennis Crouch, *The USPTO Patent Backlogs: Falling and Rising*, PATENTLY-O, (May 9, 2012), <http://www.patentlyo.com/patent/2012/05/the-uspto-patent-backlogs-falling-and-rising.html>.

validity in a fraction of the amount of time that patent lawyers may devote during prosecution or subsequent litigation.²⁹

Because so few patents are ever litigated, it is difficult to know how many of the hundreds of thousands of patents that are granted annually are valid, but a number of studies suggest that the economic value of most issued patents is very low. One 2001 study estimated that the PTO eventually grants approximately 85% of all patent applications.³⁰ Studies suggest it is unlikely that such a high percentage of patent applications actually represent worthwhile contributions.³¹ Indeed, a 1998 study estimates that nearly half of all litigated patents are eventually found to be invalid.³² Another study found that U.S. corporations allow nearly half of their patents to expire after twelve years.³³ Non-corporate inventors allow their patents to expire at even higher rates.³⁴

Of greater concern, however, are the patents that are renewed, never litigated, and thus never invalidated. Because patents are intangible, and because many patents may apply to the technology behind a single finished product or process, practicing entities must be vigilant in certain areas of highly patented technology. “Patent thickets” occur where a very large number of overlapping blocking patents apply to a given product or area of innovation, making it difficult for practicing companies and innovators to operate without engaging in costly licensing negotiations or litigation.³⁵ The most frequently discussed patent thicket is in the smartphone industry, where

29. In 2001, Mark Lemley estimated that patent examiners spend an average of eighteen hours reviewing each patent throughout the entirety of the examination process. Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1496 (2001).

30. Cecil D. Quillen, Jr., Ogden H. Webster & Richard Eichmann, *Continuing Patent Applications and Performance of the U.S. Patent and Trademark Office—Extended*, 12 FED. CIR. B.J. 35, 38 (2002). The study takes into account “final rejections” that later receive continuation applications which the USPTO eventually approves. *Id.*

31. See John R. Allison and Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185, 201 (1998) (finding that 46% of litigated patents were later found to be invalid).

32. *Id.*

33. Kimberly A. Moore, *Worthless Patents*, 20 BERKELEY TECH. L.J. 1521, 1535 (2005) (measuring patent value (or lack of value) based on patentees’ decisions to forego patent renewal prior to the end of the patent term).

34. See *id.* at 1531–35 (showing that 53.71% of all patents expire in twelve years, and that all other categories of inventors allow their patents to expire before twelve years more than 50% of the time).

35. See Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting*, in INNOVATION POLICY AND THE ECONOMY 119, 120 (Adam B. Jaffe, Josh Lerner, & Scott Stern eds., 2001) (defining a “patent thicket” as a “dense web of overlapping intellectual property rights that a company must hack its way through in order to actually commercialize new technology”).

as many as 250,000 active patents might apply to a single working phone once one considers its hardware, software, and methods of communication.³⁶

2. *Notice Failure*³⁷

Patent infringement is an absolute liability offense, yet the patent right is intangible, meaning that someone can easily practice a patented process without knowing they are infringing. In contrast, physical property rights are more easily defined and discerned. For example, a home-builder can check her deed or pay a land surveyor to determine where she can build because her deed provides a positive right. Negative rights in the form of easements or other encumbrances might complicate her ability to build, but knowing the boundaries of her neighbors' rights should provide notice as to the parties with whom she must negotiate before she builds.³⁸ If a neighbor owns a right to a part of the property, the builder will either make an agreement with that person beforehand or try to build in such a way that does not infringe the neighbor's right. Not knowing the extent and ownership of neighbors' property rights drastically increases the chance that a builder will infringe inadvertently.

Two basic notice challenges increase the difficulty and cost of identifying competing patent rights: first, the complexity and costs of searching for intangible property, and second, the difficulty of determining the boundaries of a competing patent's claim. First, a developer cannot seek a license for or design around a patent of which she is unaware. The PTO maintains a searchable registry containing all issued patents and published applications, and recommends a seven-step process for finding potentially relevant patents

36. See Steve Lohr, *Apple-Samsung Patent Battle Shifts to Trial*, N.Y. TIMES (July 29, 2012), <http://www.nytimes.com/2012/07/30/technology/apple-samsung-trial-highlights-patent-wars.html?pagewanted=all> (citing estimation by RPX); RPX Corporation, Registration Statement (S-1) (Sep. 2, 2011) at 59, available at <http://www.sec.gov/Archives/edgar/data/1509432/000119312511240287/ds1.htm>. But see Paul Melin, Chief Intellectual Property Officer for Nokia, Fed. Trade Comm'n: Patent Assertion Entity Activities Workshop (Dec. 10, 2012) available at <http://www.ftc.gov/video-library/index.php/ftc-events/patent-assertion-entity-activities-session-24/2028431449001> (expressing doubt that so many patents could apply to mobile phones, noting that even at \$0.01 per patent per phone, licenses to all 250,000 patents would create a minimum price of \$2,500 per device).

37. Menell & Meurer, *supra* note 11, at 1–2; JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK 19, 46–72 (2008) (concluding that the failure of the patent system in late 1990s, when profits from litigation first began to consistently exceed profits made directly from patent licensing and production, is attributable to the fuzzy boundaries of patent claims).

38. See *id.* at 4 (employing the analogy of a resource developer).

based mainly on searching for relevant keywords.³⁹ But hiring a lawyer to search for relevant patents is costly, and where patents employ ambiguous titles and avoid obvious keywords,⁴⁰ even a diligent lawyer might miss something. And patent applications can remain secret for the first eighteen months after filing, meaning that a developer might begin investing without knowing that a patent for her technology has already been filed by someone else.⁴¹ When dealing with real property, searching through one's own title registry and those of one's neighbors will probably reveal any relevant negative rights or encumbrances affecting that property. But when any of millions of issued patents might apply, the likelihood of missing a relevant patent increases dramatically.

In the case of patents, “notice externalities” exacerbate the problem.⁴² A patentee only benefits from providing notice of her property right to the extent that she can extract licensing fees or deter competition. However, if she waits until a potential infringer has invested heavily into an infringing product or process, she will enjoy far greater bargaining power and will have the potential to inflict far greater damage on the infringer.⁴³ Notice externalities may thus encourage patentees to essentially hide their patents from future targets until those targets have already invested in an infringing technology.⁴⁴

Second, even when a developer does know of a potentially relevant patent, she may reasonably but incorrectly believe that her product does not infringe upon the patent's amorphous claims.⁴⁵ Professors Bessen and Meurer provide the example of E-Data's patent from 1985 entitled “System

39. See *Seven Step Strategy*, U.S. PATENT & TRADEMARK OFFICE, <http://www.uspto.gov/products/library/ptdl/services/step7.jsp> (last visited Dec. 19, 2012).

40. See Menell & Meurer, *supra* note 11, at 12; Thomas Chen, *Patent Claim Construction: An Appeal for Chevron Deference*, 94 VA. L. REV. 1165, 1177–78 (2008).

41. See 35 U.S.C. § 122(b) (2011).

42. See Menell & Meurer, *supra* note 11, at 7. Professors Menell and Meurer define a notice externality as a situation where “the private returns to providing notice information are less than the social value.” *Id.*

43. See *id.* at 7–8 (providing the example of NTP's patent assertion against RIM, discussed *infra*); see also Robert P. Merges, *The Trouble with Trolls: Innovation, Rent-Seeking, and Patent Law Reform*, 24 BERKELEY TECH. L.J. 1584, 1590–91 (2009) (describing the strategy as one that takes advantage of “lock-in” that occurs once a company has invested significantly into a patented technology).

44. Note, money damages can only be recovered for the period after which there exists proof that an infringer has been notified of the infringement and continued to infringe after notice was received. See 35 U.S.C. § 287(a). A party asserting a patent therefore does not directly profit from delaying notice except by improving its bargaining position by waiting until the infringer has become “locked-in” to an infringing technology.

45. See Menell & Meurer, *supra* note 11, at 2, 4–5.

for Reproducing Information in Material Objects at a Point of Sale Location,” which E-Data later asserted successfully against more than 100 parties in the e-commerce space.⁴⁶ When the patent issued, a “point of sale location” was commonly understood to refer to in-store payment terminals, but in 2001 the Court of Appeals for the Federal Circuit determined that sales from the bedroom, offices, or anywhere with an Internet connection also constituted infringement.⁴⁷ Hundreds of companies suddenly learned that their basic services directly infringed a patent issued sixteen years before.⁴⁸ The doctrine of equivalents, which may expand the scope of a patent claim to cover activities that do not literally infringe every element of the claim, further obscures the boundaries of claimed property rights in a given field.⁴⁹

3. *Outcome Potential: Inadvertent Infringement and a High Compliance Costs*

High-patent quantity, low-patent quality, and high information costs combine to dramatically increase the cost of avoiding infringement for developers and inventors. Acquiring licenses to every relevant patent in a heavily patented sector of technology may be extremely expensive, and in some instances essentially impossible.⁵⁰ When combined with high information costs and notice failure, patent thickets may form “patent minefields” for practicing companies.⁵¹ The sheer quantity of issued patents in some technology sectors and the difficulty of identifying relevant patent claims means that even after a diligent search, some other valid patent might spring up once a company has already invested in a technology, possibly leading to imbalances in bargaining power and excessive litigations that combine to tax current production and future innovation.⁵²

46. BESSEN & MEURER, *supra* note 37, at 1–2, 8–9.

47. *Id.* at 9; *Interactive Gift Exp., Inc. v. CompuServe Inc.*, 256 F.3d 1323, 1333–35, 1340 (Fed. Cir. 2011).

48. BESSEN & MEURER, *supra* note 37, at 9.

49. *See* Menell & Meurer, *supra* note 11, at 8. The doctrine of equivalents developed to capture activities that do not literally infringe a patent only because of some unimportant or insubstantial change that avoids infringement as a technicality while substantially fulfilling all of the elements of the patented invention. *See Festo v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 731–32 (2002) (“It is true that the doctrine of equivalents renders the scope of patents less certain.”).

50. If 250,000 relevant patents apply to the mobile phone industry, *see supra* note 36, even well-resourced, diligent companies will likely infringe some patents.

51. *See* Shapiro, *supra* note 35, at 126.

52. *See* Merges, *supra* note 43, at 1600–02; Feldman & Ewing, *supra* note 4, at 25–28.

II. THEORY AND MODELS OF PATENT AGGREGATION

Many of the basic problems in the patent ecosystem that spawn high compliance costs also create an environment in which patent aggregation has flourished, both as a means of defending against those costs and as a means of exploiting them. Both practicing and non-practicing entities may aggregate patents, but often for different purposes. For practicing entities, rather than attempt to negotiate or litigate patents under a one-off scenario, aggregating negative rights to technologies practiced by other practicing entities encourages those practicing entities to cross-license their patent portfolios rather than asserting their own patents. Thus, patent aggregation can create the efficiency of compressing several one-off negotiations for many smaller portfolios into a single negotiation for licensing a larger portfolio, and create leverage that deters assertion. But patent portfolios can also serve offensive, revenue generating purposes, increasing the patent monetizer's negotiating power and rent-seeking capabilities.

NPEs that act primarily as intermediaries neither practice nor directly innovate, but rather purchase patent rights or assert the rights of others, developing and exploiting a comparative advantage in monetizing those patents through licensing or litigation.⁵³ Because NPEs do not practice any technology, they are practically invulnerable to the threat of patent counterclaims and have no need to cross-license. All NPEs, including research universities, research groups, and individual inventors share this invulnerability to infringement counterclaims, and therefore threaten practicing portfolios in a way that other practicing companies cannot.⁵⁴ However, only those patent intermediaries whose primary source of profit is to leverage the inventions of others generally receive the “troll” moniker.⁵⁵

Just as practicing entities might aggregate patents for either or both defensive and offensive purposes, NPE aggregators can practice either or both offensive aggregation and defensive aggregation.⁵⁶ Offensive aggregators seek to monetize their portfolios rather than create freedom to operate. Defensive aggregators build portfolios to help their clients or members decrease their defensive patent litigation costs, for example, by identifying and purchasing or licensing patents that could be asserted against

53. See Wang, *supra* note 3, at 165.

54. *But see* Lemley, *supra* note 3 (recognizing that universities are sometimes called trolls, and sometimes exhibit behavior similar to trolling).

55. *See id.*; Merges, *supra* note 43, at 1611–12.

56. These larger aggregators receive particular attention because their activities likely have a greater effect on the patent ecosystem and because their size means they are more likely to attract antitrust scrutiny, as discussed *infra* Parts III and IV.

their members. Each entity-type raises its own potential anticompetitive concerns, which will be discussed further in Part III, *infra*.

A. PRACTICING ENTITIES AND PATENT AGGREGATION

1. *Aggregation for Mutually Assured Infringement: The Patent Arms Race*

Although a right to exclude does not directly convey a right to practice a technology, it can act as a bargaining chip to dissuade infringement suits. For example, if Company A threatens to assert its patents against Company B, the fact that Company B owns patents over its own technology does not constitute a defense against Company A's assertions. However, if Company B's patents might realistically cover Company A's product, then Company B can threaten to bring a countersuit for infringement, creating an incentive for the two companies to drop their suits or enter into a cross-licensing agreement, providing both companies protection from the negative rights of the other's patents.

But Company B need not have actually been the first to patent a technology, much less invent the technology behind a patent, in order to assert that patent against Company A, as the aborted patent litigation between Facebook and Yahoo! illustrates. On March 12, 2012,⁵⁷ Yahoo! asserted ten patents against Facebook, claiming that "Facebook's entire social network model... is based on Yahoo!'s patented social networking technology."⁵⁸ On April 3, Facebook counterclaimed against Yahoo! with ten of its own patents:⁵⁹ two of which it acquired December 8, 2011; two of which it acquired on February 1, 2012; and four of which it acquired on March 30, 2012—eighteen days after Yahoo! asserted its ten patents.⁶⁰

57. In March 2012, Facebook was preparing to issue its initial public offering. Yahoo! may have believed that Facebook would be more likely to settle the lawsuit in order to avoid a drawn out battle that might affect the IPO or may have been directly trying to affect Facebook's public offering price. Tom Ewing discusses this sort of behavior and the concerns it might raise in the context of patent privateering. *See* Ewing, *supra* note 9, at 70–72.

58. Complaint for Patent Infringement ¶ 26, Yahoo! Inc. v. Facebook, Inc., No. CV12-01212 (N.D. Cal. Mar. 12, 2012), 2012 WL 764479.

59. Defendant Facebook, Inc.'s Answer; Counterclaim Against Yahoo! Inc. for Patent Infringement, Yahoo! Inc. v. Facebook, Inc. No. CV-12-01212 (N.D. Cal. 2012 Apr. 3, 2012), 2012 WL 1094169.

60. *Id.* The December patents came from a San Diego based aggregator called IPG Electronics 503 Limited; the February patents came from an aggregator called Cheah Intellectual Property Licensing. One of the March 30th patents came from an aggregator called Right Point LLC, and three others came from New York University. *See* Jon Brodtkin, *Facebook countersues Yahoo with patent acquired after being sued by Yahoo*, ARS TECHNICA (Apr. 3, 2012), <http://arstechnica.com/tech-policy/2012/04/facebook-countersuing-yahoo-with-patent-acquired-after-being-sued-by-yahoo/>.

Yahoo! then added five more of its patents in a counter-counterclaim on April 27,⁶¹ just days after Facebook purchased 650 patents from Microsoft—patents which Microsoft had purchased from AOL earlier that same month.⁶² The infringement suit ended abruptly on July 6, 2012 when Yahoo! and Facebook announced a deal to settle and cross-license their patents in a “strategic alliance.”⁶³ Although it is difficult to know the degree to which the threat of Facebook’s counterclaims with its newly acquired patents convinced Yahoo! to drop its suit, those patents certainly provided a good bargaining chip.

Professors Parchomovsky and Wagner have developed a theory of patent portfolios positing that the size and diversity of a portfolio makes the whole greater than the sum of its parts, creating a “super-patent.”⁶⁴ If one patent creates space to operate by preventing some rivals from asserting their patents, then more patents are more likely to deter more rivals, encouraging potential patent asserters to settle and cross-license or forego action in the first place. By aggregating many patents into a “strategic collection of distinct-but-related individual patents,” a portfolio’s scale and diversity offers a stronger threat over a broader range of activity.⁶⁵

The scale of a portfolio offers several advantages. Its redundancy increases the likelihood that even if some of the patents within it are found to be invalid or contain claim construction too limited to impart any value,⁶⁶ the valid claims of some other patent will cover at least some activity of a

61. See Brodtkin, *supra* note 60.

62. Shira Ovide & Geoffrey A. Fowler, *Facebook Buys AOL Patents from Microsoft for \$550 Million*, WALL ST. J. (Apr. 23, 2012), <http://online.wsj.com/article/SB10001424052702303592404577361923087607762.html>. Note, some believe that Facebook’s acquisition of the AOL patents was geared toward strengthening itself against the prospect of future conflicts with Google over competition with Google+ and mail-related features, rather than social advertising-related conflicts with companies like Yahoo!. See, e.g., Leonid Kravets, *Facebook’s Patent Acquisitions? They’re More About Google Than Yahoo*, TECHCRUNCH (Apr. 27, 2012), <http://techcrunch.com/2012/04/27/facebook-google-patents/>.

63. *Yahoo! and Facebook Launch Strategic Alliance and Resolve Patent Dispute*, FACEBOOK (July 6, 2012), <http://newsroom.fb.com/News/387/Yahoo-and-Facebook-Launch-Strategic-Alliance-and-Resolve-Patent-Dispute>; John Letzig, *Facebook, Yahoo Kiss and Make Up*, WALL ST. J. (July 6, 2012), <http://online.wsj.com/article/SB10001424052702303684004577511132642631606.html>.

64. Parchomovsky & Wagner, *supra* note 8, at 5, 7. A patent portfolio, Professors Parchomovsky and Wagner explain, is “a strategic collection of distinct-but-related individual patents that, when combined, confer an array of important advantages upon the portfolio holder. *Id.* at 27.

65. *Id.* at 27–29.

66. See Mark A. Lemley & Carl Shapiro, *Probabilistic Patents*, 19 J. OF ECON. PERSPECTIVES 75, 85–86 (2005).

target entity. A large portfolio thus exploits the high information costs involved with valuing patents.⁶⁷ If a party has only a few patents, a target may carefully examine the claims of those patents and decide that it can invalidate or avoid those claims through careful design.⁶⁸ If, however, the party owns a portfolio containing hundreds or thousands of patents, then the target's cost of determining the credibility of the portfolio's threat increases dramatically, encouraging the target to forego or settle its claim, or pay the portfolio-owner for a blanket license.⁶⁹ In short, patent quantity makes a portfolio stronger than the sum of its parts because, even if unpatented spaces exist within a technological field, finding those spaces becomes more difficult with each patent added to the portfolio.

The diversity of a portfolio creates additional value not only by widening the range of the portfolio's scope, but also by hedging against uncertainties in the future direction that technologies might develop.⁷⁰ For instance, a holder of ten valid patents specific to Betamax technology probably does not receive much value if consumers stop using that technology, but a portfolio covering many formats of recording and viewing technology will likely retain some value.⁷¹ A diverse portfolio also provides flexibility to assert against or bargain with a wider range of other patent-holding parties, providing broader protection in the present, as well as the ability to enter new areas of technology as technologies shift.⁷²

Taken together, the patent aggregation strategy, as Parchomovsky & Wagner explain, shifts value away from the strength of an individual patent toward the marginal benefit of increasing the size and diversity of a portfolio.⁷³ This "superadditivity" places a higher value on the aggregated effect of many patents, rather than the quality of the individual patents

67. See *supra* Section I.B.2 (discussing notice failure and information costs); Parchomovsky & Wagner *supra* note 8, at 73.

68. See Parchomovsky & Wagner *supra* note 8, at 73–74.

69. See *id.*

70. See *id.* at 37–38.

71. Betamax preceded VHS as the first technology behind the home VCR. Although it had been recognized as a "superior" format to VHS, it ultimately lost out to VHS as the dominant home-recording technology. See generally, Marc Wielage & Rod Woodcock, *The Rise and Fall of Beta*, VIDEOFAX, Mar. 2003, available at <http://www.betainfoguide.net/RiseandFall.htm> (last visited Jan. 22, 2013) (providing a history of the rise and fall of Sony's Betamax technology).

72. See Parchomovsky & Wagner *supra* note 8, at 39–41.

73. See *id.* at 42. This marginal benefit also includes the added information costs to one's rival of evaluating a portfolio's strength based on the patent claims added to the portfolio.

therein,⁷⁴ and thus explains the “patent paradox,” where the volume of patent filings and the value of patent portfolio acquisitions climb despite the falling average value of newly issued patents.⁷⁵ The theory also begins to explain how companies may rationally evaluate portfolios of patents based on the amount of paper on which they are printed rather than the substance behind them.⁷⁶ The rapid aggregation of large portfolios, as evinced by Facebook’s patent acquisitions, can bestow defensive strength by discouraging competing practicing entities from asserting their patents, and by encouraging cross-licensing rather than royalty-based licensing payments.⁷⁷

2. *Portfolio Monetization for Practicing Companies*

Patent assets are expensive both to acquire and to maintain, and companies with large portfolios may seek to monetize their patent assets.⁷⁸ Monetization strategies often take two forms: (1) direct licensing campaigns and assertion campaigns, and (2) monetization through third party companies, sometimes referred to as privateering.⁷⁹

a) Direct Monetization

Companies may offset the costs of their patent portfolios, and may even turn their patent portfolios into major sources of revenue, by directly asserting or licensing those portfolios. For example, in the mid-1980s, Texas Instruments saved itself from bankruptcy through an “all-out patent licensing and litigation effort,” eventually earning the company more than \$4 billion in

74. *See id.* at 58 n.198 (explaining that “superadditivity” exists when $f(x+y) > f(x) + f(y)$).

75. *See id.* at 16–19.

76. This “ruler” method of evaluating patents is apparently practiced widely in the technology field. *See* Ewing, *supra* note 57, at 19 n.62 (quoting Ron Epstein, Chief Executive Officer of Ipotential, describing the “infamous ‘ruler’ methodology” in his remarks before the FTC, where “you would bring your stack [of patents] and you’d bring a ruler, and you’d put each stack next to each other and you’d take a ruler and you measure the relative heights of the stack and some algorithm would tell you the [relative values of the stacks].”); Chien, *supra* note 9, at 308.

77. *See, e.g.*, Joseph N. Hosteny, *Litigator’s Corner: Is IBM a Patent Troll?*, INTELL. PROP. TODAY, May 2006, at 26, 27 (relating a story where representatives of a large company seeking a license settlement “walked into the negotiation, put a box of patents on the table, and announced: ‘You must be infringing one of these.’”).

78. *See* Chien, *supra* note 9, at 303–17 (describing the monetization of patent portfolios).

79. *See* Ewing, *supra* note 9, at 5 (defining “privateering” as “the assertion of [intellectual property rights] by an entity (the privateer) . . . against a target company for the direct benefit of the privateer and the consequential benefit of a sponsor, where the consequential benefits are significantly greater than the direct benefits.”).

patent licenses by the year 2000.⁸⁰ American Express and General Electric both evolved strategies that began by building patent portfolios largely for defensive purposes, but later built separate licensing and assertion divisions to generate royalties based on those patent portfolios.⁸¹ Intel, IBM, and Texas Instruments have each declared annual licensing revenues exceeding \$1 billion per year.⁸²

These licensing and assertion campaigns help to offset the expense of building large patent arsenals and offer a return on research and development that can feed directly back into a company's budget for innovation.⁸³ Whatever the purpose, portfolios aggregated for licensing or assertion exploit the same weaknesses within the patent system as portfolios aggregated for defense and cross-licensing, and thus provide similar advantages.⁸⁴ However, a number of constraints will often limit a practicing company's ability to directly monetize its patents, not least of which may be the threat of a target's own patent portfolio.⁸⁵ Practicing companies hesitate to bring infringement claims against competitors who they credibly believe will assert counterclaims against them, and they may not wish to develop a reputation as an aggressive patentasserter.⁸⁶

80. KEVIN G. RIVETTE & DAVID KLINE, REMBRANDTS IN THE ATTIC: UNLOCKING THE HIDDEN VALUE OF PATENTS 125–26 (2000); Chien, *supra* note 9, at 304.

81. Chien, *supra* note 9, at 322–24. Professor Chien provides further examples of aggressive monetization strategies of existing patent portfolios by technology-centric companies such as Xerox Corporation, Lucent, Harris Corporation, Kodak, Thompson, and Philips, which earn significant patent royalties as major parts of their revenue streams. *Id.* at 323–24.

82. GORDON V. SMITH & RUSSELL L. PARR, INTELLECTUAL PROPERTY: VALUATION, EXPLOITATION, AND INFRINGEMENT DAMAGES 606 (2005).

83. Chien, *supra* note 9, at 325–26.

84. This strategy has also been referred to as the “IBM strategy,” where a portfolio holder seeks to persuade a target company to pay licensing fees by exposing its portfolio to the target in small but seemingly endless batches of potentially infringed patents. *See* Hanno Kaiser, Remarks, Fed. Trade Comm’n: Patent Assertion Entity Activities Workshop (Dec. 10, 2012) available at <http://www.ftc.gov/video-library/index.php/ftc-events/patent-assertion-entity-activities-session-44/2028431451001>. The strategy demonstrates the strength of the asserting company's portfolio, but also exploits the information costs of assessing each patent's worth to convince the target that even if most of the patents are individually too weak to be of any value, at least some patents will probably be found valid and infringed, and the cost of assessing each patent will likely exceed the potential savings from avoiding infringement or licensing payments.

85. See the example of the Yahoo! and Facebook litigation provided in Section II.A.1, *supra*.

86. *But see* Chien, *supra* note 9, at 334–35 (finding that suits between companies with annual revenue above \$100 million represented a high proportion of high-tech litigations overall, and tended to last longer than suits involving NPEs).

b) Indirect Monetization: Patent Privateering Through NPEs

Indirect monetization through privateering does not always involve aggregating patents,⁸⁷ but it does exploit the aggregated portfolios of the practicing companies, and sometimes involves aggregating related portfolios from multiple practicing companies.⁸⁸ By selling full or partial interests in their patents to NPEs under revenue sharing arrangements, practicing companies may be able to monetize their patent portfolios indirectly, avoiding barriers to direct monetization like the risk of expensive retaliation and reputational harms.⁸⁹ Although these indirect privateering models differ, the basic approach involves a practicing entity transferring patent rights to an NPE under some agreement to share licensing and assertion royalties.⁹⁰

Even without the benefits of avoiding retaliatory or reputational harm, this outsourced litigation and licensing model represents a rational business strategy that allows the practicing entity to focus on its core business.⁹¹ Philips and 3Com Corporation respectively formed Sisvel and US Ethernet Innovations specifically to assert and license their patents and have done so openly and publicly.⁹²

Privateering arrangements become more complicated, however, where multiple practicing entities with related or competing technologies and products sell to the same NPE to assert against others in a given technology field.⁹³ Nokia and Sony, for example, have each sold patents to an NPE called MobileMedia LLC, which has since asserted those patents against Apple.⁹⁴ Similar sales from Nokia and Microsoft to Mosaid Technologies, a Canadian NPE, drew regulatory scrutiny after Google filed an antitrust complaint over the deal, alleging that the two companies were using the NPE

87. The practicing company is generally breaking up its portfolio, thus *disaggregating*.

88. Chien, *supra* note 9, at 326.

89. *See* Ewing, *supra* note 9 (providing a detailed overview of the privateering model).

90. *See id.* at 6.

91. *See id.* at 14 (noting that such a specialization strategy fits well into classical management theory).

92. *See* Chien, *supra* note 9, at 324 (citing the websites of both Sisvel and US Ethernet Innovations, which explain the origin of their respective patent portfolios). Note, however, that Ewing's definition of modern privateering—activity that may bring the added benefits of covertly changing the competitive position or stock price, or to provide plausible deniability to avert reputational harm or infringement retaliation—depends on secrecy with regard to the relationship between the practicing entity and the privateering NPE. *See* Ewing, *supra* note 9, at 5–6, 28–39.

93. *See* Ewing, *supra* note 9, at 6.

94. *See* Phil Milford & Dawn McCarty, *Apple Infringes Three Patents With the iPhone*, *Jury Says*, BLOOMBERG (Dec. 13, 2012), <http://www.bloomberg.com/news/2012-12-13/apple-infringes-three-patents-with-the-iphone-jury-says.html>.

as a proxy to harm Google's Android software.⁹⁵ Nokia claims that the patent portfolios it sold to Mosaid and MobileMedia covered antiquated technology that the company was looking to pivot away from, and that it directs the revenue generated by those agreements back into research and development.⁹⁶ However, as discussed *infra* in Part III, the revenue that privateering generates for practicing entities will often implicate increased levels of patent assertion and, in some instances, may raise anticompetitive concerns.

B. NPE AGGREGATORS: OFFENSIVE AGGREGATION

Offensive aggregators acquire large portfolios of patents to generate revenue from licensing and litigation. Their strategies are similar to the activities of other patent asserting NPEs, but at much greater scale. Large patent aggregators include companies like Acacia Research,⁹⁷ Round Rock Research,⁹⁸ and Intellectual Ventures. Intellectual Ventures ("IV") is the largest patent aggregator and therefore serves as a useful example for discussing offensive aggregation.⁹⁹ IV funded its early activities through large investments from both practicing entities and investment funds.¹⁰⁰ Robin

95. Discussed further *infra* Part III. See John Letzig, *Google Points Finger at Microsoft, Nokia*, WALL ST. J. (May 31, 2012), <http://online.wsj.com/article/SB10001424052702304821304577438740232322350.html>. The sale of Nokia's and Microsoft's patents were made under the agreement that Nokia and Microsoft share revenue from the licensing and assertion activities of those patents, and the rights to those patents revert back to Nokia and Microsoft if certain thresholds are not met. See also Chien, *supra* note 9, at 344.

96. Paul Melin, Chief Intellectual Property Officer for Nokia, Fed. Trade Comm'n: Patent Assertion Entity Activities Workshop (Dec. 10, 2012), available at <http://www.ftc.gov/video-library/index.php/ftc-events/patent-assertion-entity-activities-session-24/2028431449001>.

97. Acacia Research is a publicly traded company that, together with its many subsidiaries, generates revenues by licensing the patented technologies it owns. See Acacia Research Corporation, Quarterly Report (Form 10-Q) (July 30, 2012).

98. Round Rock Research—a private company founded by prominent patent litigator John Desmarais—now owns a large portfolio of patents apparently originating from the practicing company Micron Technology. See Feldman & Ewing, *supra* note 4, at 17–18.

99. See Feldman & Ewing, *supra* note 4, at 2, 7–8.

100. See *id.* Early investors include Microsoft, Intel, Apple, and Google, as well as institutional investors and endowments like the William and Flora Hewlett Foundation and the Bill and Melinda Gates Foundation, as well as university endowments from schools like Notre Dame and the University of Pennsylvania. *Id.* Feldman and Ewing look extensively into IV and the patent holdings of its many shell companies to shed light on its activities. See *id.* Despite their research, IV retains a high degree of secrecy. *Id.* See also Mike Masnick, *Nathan Myrsvold's Intellectual Ventures Using Over 1,000 Shell Companies To Hide Patent Shakedown*, TECHDIRT (Feb. 18, 2010, 7:44AM), <http://www.techdirt.com/articles/20100217/1853298215.shtml> (likening IV to a "pyramid scheme" because it promises early investors the fruits of early investment). Other projects have sought to shed light on IV and

Feldman and Tom Ewing have estimated that IV holds between 30,000 and 60,000 patents and patent applications divided between more than 1,300 patent shell companies.¹⁰¹ Although IV maintains a division dedicated to research and development, the vast majority of its patents come from acquisition agreements it makes with research entities like universities, as well as from patent portfolio sales from practicing entities.¹⁰²

Offensive aggregators like IV benefit from many of the same advantages that an aggregated portfolio brings to practicing entities, but with a few key differences. First, because offensive aggregators do not practice any technology, they are not vulnerable to countersuits and therefore are not inhibited from employing more aggressive licensing and litigation campaigns.¹⁰³

Second, NPEs' invulnerability to infringement suits means they have different incentives with regard to secrecy and signaling. Signaling the strength of a practicing company's portfolio will help it deter infringement claims and may even help discourage competitors from implementing competing technologies that might infringe, but aggregating NPEs share neither of these interests.¹⁰⁴ Instead, offensive aggregators have a greater incentive to exploit the possibility that their targets become locked into a technology to maximize their bargaining power and rent-seeking ability.¹⁰⁵ Thus, offensive aggregators benefit from signaling the strength of their portfolios to the extent that such signaling convinces target licensees to pay licensing fees, but may also benefit from concealing their patent interests

its patent holdings. *See, e.g.*, IP CHECKUPS, <http://www.ipcheckups.com/> (last visited Jan. 16, 2013).

101. *See* Feldman & Ewing, *supra* note 4, at 4–5. In their 2011 study on IV, Feldman & Ewing have found 954 shell companies they believe to belong to IV. *See id.* As of February 2013, IV's website claims that the company owns more than 70,000 "intellectual property assets" spread between "nearly 40,000 active monetization programs." INTELLECTUAL VENTURES, <http://www.intellectualventures.com/index.php/license> (last visited Feb. 20, 2013).

102. *See* Feldman & Ewing, *supra* note 4, at 7–9. *See also* Glyn Moody, *Don't Feed the Super-Troll*, COMPUTERWORLDUK, (June 30, 2009, 11:31AM), <http://blogs.computerworlduk.com/open-enterprise/2009/06/dont-feed-the-supertroll/index.htm>; Alex Blumberg & Laura Sydell, *This American Life: When Patents Attack*, NATIONAL PUBLIC RADIO, (July 22, 2011), <http://www.npr.org/blogs/money/2011/07/26/138576167/when-patents-attack> (suggesting that IV's research lab is mostly just for show).

103. This point represents one major source of distaste among practicing entities for "patent trolls."

104. *See* Chien, *supra* note 9, at 319–20 (describing patent signals versus patent secrecy).

105. *See* discussion of the "lock in" problem, discussed *supra* Section I.B.2 and *infra* Section III.C.

until after a technology has been accepted and locked in within an industry.¹⁰⁶ IV's use of shell companies to hide its patent assets helps IV strategically reveal only limited segments of its portfolio, while keeping other areas of its portfolios secret.¹⁰⁷

A third difference between the portfolios of practicing entities and offensively aggregating NPEs relates to patent quality. Despite criticisms that nuisance patent suits brought by patent trolls are generally based on low quality patents, a number of studies suggest that the opposite is true, and that NPEs generally focus on acquiring a higher percentage of high quality patents.¹⁰⁸

Offensive aggregator NPEs, however, also benefit from many of the same advantages that aggregating brings to practicing companies. Specifically, an offensive aggregator exploits the same information costs associated with evaluating the scope and validity of patents within a portfolio to induce target licensees to pay rather than fight. Therefore, while offensive aggregators may look to acquire higher percentage of "crown jewel" patents that they could directly assert, they still benefit from an increased quantity of patents regardless of their quality.¹⁰⁹

C. NPE AGGREGATORS: DEFENSIVE PATENT AGGREGATION

Defensive aggregators are NPEs that seek to lower the costs of patent defense and avoid patent assertions against their members or clients by essentially removing nuisance patents from the market, and thus have very different goals from those of offensive aggregators. For example, in 2008, RPX Corporation introduced a new service it termed "Defensive Patent Aggregation," which aimed to reduce the costs associated with defending against patent litigation.¹¹⁰ Similarly to offensive aggregators like IV, RPX does not practice any technology, but instead purchases patents from other entities to provide its clients with licenses to the purchased patents. Unlike

106. See Chien, *supra* note 9, at 319–20 (noting that secrecy serves a "troll" business model such that PAEs are more likely to "speak softly and wield a big stick," but noting that practicing companies may also have some incentive to hide information to avoid public scrutiny over the costs of IP maintenance).

107. See Feldman & Ewing, *supra* note 4, at 3–4.

108. See Michael Risch, *Patent Troll Myths*, 42 SETON HALL L. REV. 457, 478–81 (2012); see also Timo Fischer & Joachim Henkel, *Patent Trolls on Markets for Technology—An Empirical Analysis of Trolls' Patent Acquisitions* 1 (unpublished manuscript) (Apr. 28, 2011) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1523102.

109. See Chien, *supra* note 9, at 318–19.

110. See RPX Corporation, Registration Statement (S-1) (Sept. 2, 2011).

IV, however, RPX has committed itself to never asserting its patents and thus carries no direct patent infringement threat to practicing entities.¹¹¹

RPX behaves differently from litigation-minded practicing entities. Uninterested in offensive litigation, RPX has no use for the “superadditivity” provided by a strategically built patent portfolio.¹¹² Instead, RPX focuses more specifically on “nuisance value”¹¹³ patents that are likely to be litigated.¹¹⁴ Once RPX acquires a patent and provides licenses to its members, the company may sell the patent back into the patent market in what has been dubbed a “catch and release” method.¹¹⁵

Defensive aggregation models vary between companies. RPX generates revenue on an annual subscription basis, where each member pays a rate based on that member’s operating income.¹¹⁶ RPX conducts its own market research, which it provides to clients, and independently decides which patents to target for acquisition and license.¹¹⁷ Some defensive aggregators, however, decide which patents to acquire differently. Instead of independently choosing which patents to acquire, Allied Security Trust utilizes a process under which individual members determine which patents

111. *See id.* However, as RPX itself points out, it often purchases only licenses for its members rather than full patent rights, which may therefore be asserted against non-RPX members. *See The “Free Rider” Fallacy*, RPX CORPORATION, <http://www.rpxcorp.com/index.cfm?pageid=14&itemid=8> (last visited Dec. 18, 2012).

112. *Cf.* Parchomovsky & Wagner, *supra* note 8, at 7.

113. Nuisance patents are generally weak patents, but ones that may apply to a broad range of activities. Nuisance suits are brought to inflict the cost of legal defense, and take advantage of the high information costs discussed in Part I. The goal of a nuisance suit is not necessarily to prove infringement at trial, but to induce a target to settle rather than litigate. *See Merges, supra* note 43, at 1600; Colleen Chien, *Reforming Software Patents*, 50 HOUS. L. REV. 101, 150–51 (2012).

114. *See* Feldman & Ewing, *supra* note 4, at 17.

115. David Hetzel, *Embracing the new IP reality*, INTELL. ASSET MGMT. MAG. 32, May/June 2010. RPX may sell its patents to more litigious patent trolls after it has retained a license. This practice has led one company to claim RPX is guilty of “extortion” and “racketeering” after a practicing technology company was sued by a patent troll soon after RPX unsuccessfully tried to sell a subscription to its patent services. *See* Patrick Andersen, *Patent Aggregator RPX Accused of Extortion, Racketeering & Wire Fraud*, GAMETIME IP, available at <http://gametimeip.com/2011/05/31/patent-aggregator-rpx-accused-of-extortion-racketeering-wire-fraud/> (last visited Dec. 18, 2012).

116. The rates are subject to change, but as of December 2012, annual subscription rates spanned from \$5.38 million plus 0.05% of annual income for companies with revenues above \$2 billion per year, down to 1% of annual income (but not less than \$65,000) for companies with annual incomes under \$100 million per year. *See Annual Rate Calculator*, RPX CORPORATION, <http://www.rpxcorp.com/index.cfm?pageid=85> (last visited Dec. 18, 2012).

117. Hetzel, *supra* note 115, at 34. Allied Security Trust is structured as a member-owned trust. *Id.* at 33.

to acquire and each member decides on whether they will contribute financially to purchase the target patent or portfolio.¹¹⁸

D. AGGREGATION MODELS IN SUMMARY

Patent aggregation represents a strong tool for practicing entities and NPEs alike, but with some important differences based on the interests of the parties.

For practicing entities, aggregated portfolios provide a “mutually assured infringement” defense, encouraging other practicing entities to cross-license or forego assertion altogether. Aggregation is a response to the high costs associated with identifying patents that might apply to a given technology and determining the value of those patents. Practicing entities may also choose to monetize their patent portfolios, directly through licensing and assertion campaigns, or indirectly by selling their patents under revenue sharing arrangements with NPEs specializing in patent assertion.

Offensive aggregators, NPEs whose primary source of revenue comes from licensing and litigating patents acquired from others, exploit the same aspects of the patent system that encourage practicing entities to aggregate, but do not face retaliatory risks because they do not practice any technology. Defensive aggregators, NPEs whose revenue relies on subscription fees from practicing entities for whom they acquire patent rights, but who do not themselves assert patents, seek to identify and remove patent-threats from the patent market by purchasing rights to those threats and licensing to their members.

III. THE EFFECTS OF AGGREGATION AND THE ROLE OF ANTITRUST

Each of the aggregation models above provides direct benefits to its practitioners, but they may also present certain costs to particular targets and to the technology universe as a whole. Many of these models display anticompetitive potential or present anticompetitive externalities.

Antitrust and patent law share the goal of maximizing society’s wealth by encouraging output and innovation, but the two strive toward this goal through means that are often in tension.¹¹⁹ Patent law grants patent holders

118. *Id.*

119. *See, e.g.,* Atari Games Corp. v. Nintendo of Am., 897 F.2d 1572, 1576 (Fed. Cir. 1990) (“[T]he aims and objectives of patent and antitrust laws may seem, at first glance, wholly at odds. However, . . . both are aimed at encouraging innovation, industry and competition.”); WARD BOWMAN JR., PATENT AND ANTITRUST LAW: A LEGAL AND

the right to exclude competitors from practicing certain patented activities.¹²⁰ Antitrust law assumes the premise that the public benefits most from a competitive marketplace,¹²¹ and thus generally condemns activities that decrease competition.¹²² The concern of antitrust law, however, is harm to the competitive process, not harm to individual competitors.¹²³ This Part therefore considers the potential benefits and concerns that patent aggregation presents to society as a whole in an effort to identify both procompetitive and anticompetitive effects of patent aggregation strategies.

A. GENERAL IMPLICATIONS OF AGGREGATION

Patent aggregation, without regard to the entities practicing it, affects the patent system in ways that skew patenting incentives and thus the balance between innovation and competition. The focus on quantity over quality presents two immediate concerns. First, as patent aggregation spreads as a strategy both for offensive and defensive purposes, more value will be placed on patents regardless of quality, incentivizing patent filings for small innovations or inventions that would be unlikely to hold up on their own under litigation.¹²⁴ This increase will likely further strain the PTO's resources, which in turn may result in the issuance of more low-quality patents.¹²⁵ The result, as Professor Wagner explains, is a "feedback effect, whereby low-quality patents (organized into ever-larger portfolios) beget even more low-quality patents."¹²⁶

Second, the focus on patent quantity within a portfolio over the substance of its parts divorces a patent's value from the innovative contribution underlying it.¹²⁷ The patent portfolio's "super-patent" effect, providing a stronger ability to exclude than the sum of its patent-parts, may

ECONOMIC APPRAISAL (1973) ("Both antitrust law and patent law have a common central economic goal: *to maximize wealth by producing what consumers want at the lowest cost.*").

120. See 35 U.S.C. § 154.

121. *Standard Oil Co. v. United States*, 221 U.S. 1, 58 (1911); *SCM Corp. v. Xerox Corp.*, 645 F.2d 1195, 1203 (2d Cir. 1981).

122. Robin Feldman, *Patent and Antitrust: Differing Shades of Meaning*, 13 VA. J.L. & TECH. 1, 1–3 (2008); *SCM*, 645 F.2d at 1203.

123. *Brown Shoe Co. v. United States*, 370 U.S. 294, 320 (1962) (stating that antitrust law concerns "the protection of competition, not competitors").

124. See Parchomovsky & Wagner, *supra* note 864, at 61.

125. *Id.*

126. R. Polk Wagner, *Understanding Patent Quality Mechanisms*, 157 U. PA. L. REV. 2135, 2155 (2009).

127. Note, separating patent rights from the innovations they represent defeats the purpose of the patent system in the first place and produces a phenomenon that Professor Merges describes as reducing patent "market-making" to mere rent-seeking. See Merges, *supra* note 43, at 1588–91.

thus grant the portfolio holder more exclusionary power than its underlying innovations are worth. As a result, patent portfolios may tax practicing entities—and therefore production—to a greater degree than society benefits from the inventions behind the patents, providing an obvious opportunity for wasteful rent seeking.

These implications represent costs as well as opportunities for exploitation. Whether or not aggregation is used for anticompetitive purposes, however, depends on the way that a given entity uses its aggregated portfolio.

B. PRACTICING ENTITIES

As discussed in Section II.A, patent aggregation affords practicing entities protection against the patent assertions of other practicing entities, because “mutually assured infringement” encourages would-be asserters to cross-license rather than sue.¹²⁸ The Department of Justice (“DOJ”) and Federal Trade Commission (“FTC”) generally consider licensing schemes to be procompetitive because they facilitate more efficient exploitation of intellectual property and remove barriers to the use and development of patented technologies.¹²⁹ This Section explores the effects of practicing entity aggregation with regard to the market for innovation.

1. *Effects of Aggregation by Practicing Entities: Defense and Direct Monetization*

Aggregation can facilitate cross-licensing related efficiencies by combining separate but related patents into large portfolios and thus decreasing transactions costs by combining many smaller licensing negotiations into fewer larger ones. However, direct monetization by practicing entities, as discussed in greater detail *infra* Section III.C in the context of NPEs that aggregate for offensive purposes, may also force licensees to pay for licenses to portfolios containing patents for which they have no use and would not otherwise seek to obtain, thus imposing unnecessary costs.¹³⁰ Thus, when calculating the net competitive effect of

128. *See supra* Section II.A.1.

129. *Antitrust Guidelines for the Licensing of Intellectual Property*, U.S. DEP’T OF JUSTICE AND FED. TRADE COMM’N, §§ 2.0, 2.3. (1995) available at <http://www.justice.gov/atr/public/guidelines/0558.htm> [hereinafter 1995 IP Guidelines].

130. This scenario might implicate the doctrine of patent misuse, which provides an affirmative defense to infringement claims if an alleged infringer can “show that the patentee has impermissibly broadened the physical or temporal scope of the patent grant with anti-competitive effect.” *Virginia Panel v. MAC Panel*, 133 F.3d 860, 868 (Fed. Cir. 1998). However, the Federal Circuit has cut back on the scope of patent misuse, creating a bright line rule stating that “In the cases in which the restriction is reasonably within the patent

aggregation for practicing entities, the costs of obtaining rights to unneeded patents must be offset by the cost savings of conducting a single licensing agreement instead of many.¹³¹ Even defensive portfolios might facilitate unfair outcomes if they allow practicing entities to avoid obtaining licenses to technologies that they knowingly infringe by using their portfolios to intimidate the rightful inventors of a technology from asserting their patents.¹³²

2. *The Effects of Indirect Monetization by Privateering*

As discussed *supra* Section II.A.2, indirect monetization by privateering through patent-asserting NPEs is a form of specialization that provides practicing entities the benefit of being able to focus on their core business while generating revenue from their patents. However, privateering raises a number of possible concerns. First, privateer NPEs are far more likely to assert or license their patents because they do not face the same retaliatory or reputational barriers to assertion.¹³³

Second, “unpooling” aggregated patents held by practicing entities and selling portions to NPEs for privateering purposes may create additional costs for entities with existing licenses to the previously whole portfolios, especially if that portfolio contains patents encumbered with reasonable and nondiscriminatory (“RAND”) licensing agreements.¹³⁴ For example, Practicing Entity X (“PEX”) might agree as part of its RAND commitment that it will not charge above a 2% royalty rate for licenses to its WiFi-related

grant, the patent misuse defense can never succeed.” *Monsanto Co. v. McFarling*, 363 F.3d 1336, 1341 (Fed. Cir. 2004). Patent misuse is discussed in greater detail *infra* Part IV.

131. *See Automatic Radio Mfg. Co. v. Hazeltine Research*, 339 U.S. 827, 834 (1950) (“Sound business judgment could indicate that such payment represents the most convenient method of fixing the business value of the privileges granted by the licensing agreement.”).

132. Judge Rader has termed entities that refuse to pay licensing fees “IP Grasshoppers.” Chief Judge Randall R. Rader, *The State of Patent Litigation*, 17 *available at* <http://www.patentlyo.com/files/raderstateofpatentlit.pdf> (“A grasshopper is any entity which refuses to license even the strongest patent at even the most reasonable rates.”).

133. *See supra* Section II.A.2.

134. RAND and F/RAND (fair, reasonable and nondiscriminatory) terms are common licensing requirements set by standard setting organizations (“SSOs”) to facilitate interoperability across a given industry. *See Statement of the Department of Justice’s Antitrust Division on its Decision to Close Its Investigations of Google Inc.’s Acquisition of Motorola Mobility Holdings Inc. and the Acquisitions of Certain Patents by Apple Inc., Microsoft Corp, and Research in Motion Ltd.*, U.S. DEP’T OF JUSTICE, (Feb. 13, 2012), *available at* <http://www.justice.gov/opa/pr/2012/February/12-at-210.html>.

patent portfolio.¹³⁵ If PEX then split its RAND-encumbered portfolio by selling half to another company “NPEX” (Non-Practicing Entity X) while retaining the other half of the portfolio, then both PEX and NPEX might be able to extract more licensing fees than what PEX’s RAND agreement originally outlined.¹³⁶ Specifically, NPEX could argue that it cannot be bound to any 2% royalty cap because it was never party to PEX’s original RAND agreement, which would have taken the form of a contract between PEX and a member-based standard-setting organization for WiFi technology.¹³⁷ And even if NPEX’s portfolio was still bound, both PEX and NPEX could argue that they each should be allowed to charge up to a 2% royalty rate, since PEX’s original agreement never specified how much each RAND-encumbered patent contributed to the agreed upon maximum royalty rate.¹³⁸ This arrangement could facilitate double-rents being extracted for the patented technologies if others in the industry have already invested in the standard, ultimately increasing costs for consumers.¹³⁹

Third, a scenario under which two or more companies practicing in the same or related technology spaces transfer their patent rights to the same NPE to assert under revenue sharing privateering relationships may facilitate horizontal collusion among competitors to raise rivals’ costs.¹⁴⁰ This scenario raises serious concerns if the combined patents of the practicing competitors represent a large share of the market which other competitors in the industry are likely to infringe, because the privateering arrangement might allow them to asymmetrically raise costs for competitors or new entrants, which may effectively exclude new companies from successfully competing in the industry, directly decreasing competition in that industry.¹⁴¹

135. See Iain Cockburn, Fed. Trade Comm’n: Patent Assertion Entity Activities Workshop (Dec. 10, 2012), *available at* <http://www.ftc.gov/video-library/index.php/ftc-events/patent-assertion-entity-activities-session-34/2028431452001>.

136. *See id.*

137. *See id.*

138. *See id.*

139. Google filed an antitrust complaint with the European Union against Nokia in May 2012, under a similar scenario, claiming that Microsoft’s and Nokia’s transfers of patent rights to the PAE Mosaik Technologies were made with the purpose of avoiding Nokia’s RAND commitments, and in order to threaten manufacturers of products using Google’s Android operating system. See Letzig, *supra* note 95; Ilene Knable Gotts & Scott Sher, *The Particular Antitrust Concerns with Patent Acquisitions*, COMPETITION L. INT’L 30, 36 (Aug. 2012) *available at* <http://www.wsgr.com/publications/PDFSearch/sher-august-12.pdf>.

140. *See supra* note 139 and accompanying text.

141. The DOJ has recognized such a scenario as possibly creating particular anticompetitive concerns. See Fiona M. Scott Morton, Deputy Assistant Attorney Gen., Dep’t of Justice, Patent Portfolio Acquisitions: An Economic Analysis, *available at* <http://www.justice.gov/atr/public/speeches/288072.pdf>.

C. IMPLICATIONS OF OFFENSIVE AGGREGATION

NPEs that aggregate patents for licensing and assertion combine many of the same market benefits and market costs associated with the effects of aggregation by practicing entities, discussed in the previous Part, and of NPE activity commonly associated with “trolling.” Patent intermediaries often claim to represent the interests of small inventors who, for lack of financial resources, market knowledge, or access to the American legal system, turn to others to enforce their patents.¹⁴² In this regard, intermediaries act as brokers between technology suppliers and technology buyers, removing asymmetries in bargaining power and information.¹⁴³ By allowing inventors to more easily monetize their patents, the theory goes, inventors will have more capital to invest in further innovation, thus increasing the efficiency of the patent system on the whole.¹⁴⁴ This may be especially true in the context of failing startups, where startup employees wish to sell off their assets to move on to other businesses. In this sense, patent intermediaries may even facilitate entry into technology fields by providing assurance to investors that should a startup ultimately fail, the liquid market for patents which patent intermediaries help to create will compensate bondholders and other early investors.¹⁴⁵ IV has cast itself in a similar light, emphasizing its role in supporting a market maker for innovation.¹⁴⁶

Like other patent intermediaries, offensive aggregators may help support a well-functioning market for technology transfer,¹⁴⁷ but trolling activities tax innovation.¹⁴⁸ Two activities present particular concern. First, trolls often wait to assert patents until practicing entities are “locked in” to a

142. *See, e.g.*, Complaint and Demand for Jury Trial, Cascade Computer Innovation LLC v. RPX Corp., No. CV-12-1143, (N.D. Cal. Mar. 7, 2012), 2012 WL 753910, ¶ 17 [hereinafter “Cascades Complaint”]. The NPE plaintiff’s complaint stemmed from an alleged refusal to negotiate for licenses to patents that were originally owned by a Russian inventor. *Id.* The plaintiff explained that individual inventors “turn[] to an NPE for financial or strategic assistance in asserting his or her patent rights, since inventors oftentimes lack the financial wherewithal or experience to do so themselves.” *Id.*

143. *See* Wang, *supra* note 3, at 167.

144. *See id.*

145. *See id.*

146. *Intellectual Ventures Fact Sheet*, INTELLECTUAL VENTURES, http://www.intellectualventures.com/assets_docs/IV_Corporate_Fact_Sheet.pdf (last visited Dec. 19, 2012) (“We are building a market for invention by making invention a profitable activity.”).

147. *See* Wang, *supra* note 3, at 182–83; Robert P. Merges, *A Transactional View of Property Rights*, 20 BERKELEY TECH. L.J. 1477 (2005).

148. *See* Merges, *supra* note 43, at 1587–88 (stating that strategies that seek rents from manufacturers through “inefficient, socially wasteful patent transactions” tax innovation and should be curbed).

technology.¹⁴⁹ This strategy exploits the patent system's notice failure and high information costs, allowing the troll to extract higher payments than if the party asserted against was able to identify and either bargain ex ante or design around the patented process before investing in means of production.¹⁵⁰

Especially notable in this context is the notorious secrecy with which IV maintains its patent holdings.¹⁵¹ If IV's primary purpose were to encourage the transfer of technology from inventors to manufacturing entities, one might argue, then it would focus its activities on facilitating ex ante technology transfers, and would seemingly have little reason to keep its patent holdings secret. Instead, secrecy likely helps IV to spring its patents on companies once they are locked in to the underlying technology.¹⁵² IV's use of non-disclosure agreements with its licensees has received significant criticism.¹⁵³ IV has responded to such criticisms by noting that secrecy is a "common practice for asset management firms," and claims that its secrecy merely helps to avoid tactical declaratory judgments, reexaminations, and competing investments.¹⁵⁴

The second concern relates to the sheer quantity of patents that offensive aggregators purchase and the bad incentives that quality-divorced purchases

149. *Id.* at 1590–91.

150. See Menell & Meurer, *supra* note 11. The FTC has recognized that encouraging ex ante transactions while reducing the frequency of ex post transactions should be a goal of patent remedies law. *The Evolving IP Marketplace: Aligning Patent Notice and Remedies with Competition*, FED. TRADE COMM'N (2011), available at www.ftc.gov/os/2011/03/110307patentreport.pdf. ("An important goal in aligning the patent system and competition policy is to facilitate *ex ante* transactions while making *ex post* transactions less necessary or frequent.")

151. See Feldman & Ewing, *supra* note 4, at 3 n.6; *Caution! Shallow water in the "blind" patent pools: Intellectual Property Analysis of the DOJ review of Google and Motorola Mobility*, M-CAM, (Oct. 7, 2011), <http://www.m-cam.com/patently-obvious/caution-shallow-water-blind-patent-pools-intellectual-property-analysis-doj-review-> (suggesting that the DOJ turn its attention to the "blind" patent pool IV has created and its potential to "shakedown" practicing companies).

152. This practice is similar to "submarine patenting," to which the equitable defense of prosecution delay laches can now be applied. Jerome Lemelson famously perfected submarine patenting, exploiting the patent continuance system to keep his patents from publishing until the underlying technologies had been widely adopted within an industry. See Mark A. Lemley & Kimberly A. Moore, *Ending Abuse of Patent Continuances*, 84 B.U. L. REV. 63, 76–77 (2004).

153. See Nathan Myrsvold's *Intellectual Ventures Using Over 1,000 Shell Companies to Hide Patent Shakedown*, TECHDIRT (Feb. 18, 2010), <http://www.techdirt.com/articles/20100217/1853298215.shtml>.

154. See Peter Detkin, *The Red Herring of Transparency*, INTELLECTUAL VENTURES, (Dec. 6, 2012), <http://www.intellectualventures.com/index.php/insights/archives/the-red-herring-of-transparency>.

create in the patent system as a whole. Professor Merges contends that social waste occurs where a troll asserts a patent that does not represent true innovation,¹⁵⁵ an activity he describes as similar to those of blackmailers or rent-seeking personal injury lawyers.¹⁵⁶ If an aggregator purchases its portfolios for the “superadditivity,” leveraging the added strength of its portfolio, then it exploits the difficulty and expense of assessing the validity and value of an identified patent, hoping that its targets will simply settle rather than expending the cost of mounting a defense.¹⁵⁷ As with the defensive portfolios of practicing entities, an NPE aggregator’s portfolio may allow it to seek greater rents on the practicing entities against which it asserts its patents than the underlying patents are worth.¹⁵⁸ However, unlike the portfolios of practicing entities, offensive aggregators assert their portfolios not to encourage cross licensing, but solely for the ability to assert patents, extending their ability to exclude or seek rents.

NPEs that aggregate patents in order to monetize them through licensing and assertion campaigns may do so for procompetitive and anticompetitive reasons. By offering licenses to large portfolios and creating market liquidity for patent assets, offensive aggregators decrease transaction costs and promote innovation and competition. However, by aggressively asserting their portfolios and taking advantage of notice failure and lock-in effects, they also create substantial costs for the technology industries.

D. IMPLICATIONS OF DEFENSIVE AGGREGATION

NPEs that specialize in defensive aggregation do not assert their patents and thus serve very different market functions than those of offensive aggregators. Although the defensive NPE aggregation model is fairly new, practicing companies have participated in defensive patent pools for some time.¹⁵⁹ As discussed in Section III.B, *supra*, cross-licensing schemes are generally considered procompetitive because they facilitate the transfer of technology and remove barriers to production, lowering costs across the

155. *See* Merges *supra* note 148, at 1601.

156. *See id.* at 1599–01.

157. Note, although studies suggest that NPE-owned patents are generally of higher quality than practicing companies’ defensive patents, NPEs may still leverage information costs to seek reward for low-value patents *See* Chien, *supra* note 3; Risch, *supra* note 108, at 478–81; Fischer & Henkel, *supra* note 108.

158. As discussed *supra* Sections III.A and III.B, this superadditivity may raise concerns of patent misuse.

159. *See* HERBERT HOVENKAMP ET AL., IP AND ANTITRUST: AN ANALYSIS OF ANTITRUST PRINCIPLES APPLIED TO INTELLECTUAL PROPERTY LAW § 32.2 (2009) (providing the examples of patent pools over MPEG technology of the 1990s and the Ford patent pools from the early 20th century).

technology field.¹⁶⁰ However, like patent pools, defensive aggregation may provide an avenue for competitors to collude on price,¹⁶¹ or to collude to raise rivals' costs.¹⁶²

In addition to the anticompetitive price information sharing practices associated with patent pools, the strategies utilized by defensive aggregators such as RPX and Allied Security Trust may raise additional concerns. Because these aggregators seek to strategically acquire patent assets to lower their members' licensing and litigation costs, the deliberations by their members about which assets to purchase may represent a form of anticompetitive collusion. For example, if an inventor receives a patent on a technology practiced by only three competing companies, those three companies could agree to boycott negotiations to license that patent to keep the price of a license low. If all three companies are members of a single defensive aggregator, then that defensive aggregator may be able to purchase rights to the patent at a sub-competitive price and license those rights to all three competitors. In effect, defensive aggregators may facilitate agreements between competitors to collude on the purchase of patent assets, thus creating a buyer-side price control mechanism.¹⁶³

In summary, by removing barriers to practicing and developing patented technologies for their members and reducing transaction costs, defensive aggregation provides clear procompetitive benefits. However, by creating a hub for potential hub-and-spoke arrangements between competitors, defensive aggregation can facilitate anticompetitive conduct.

IV. POSSIBILITIES AND LIMITS TO SOLUTIONS IN ANTITRUST

Antitrust law focuses on competitive harms, but because the Patent Act expressly confers the right to exclude some competition, most uses for patents are presumed legal even when they directly decrease competition.¹⁶⁴ Thus, many of the problems in the patent system can only be solved through patent law. The PTO can best address issues of patent quality through better

160. *See id.* § 34.4; 1995 IP Guidelines, *supra* note 129.

161. As with trade associations, patent pools provide a venue for competitors to share pricing information, and thus may help facilitate price collusion. *See United States v. U.S. Gypsum*, 438 U.S. 422, 439–40 (1978) (applying a rule of reason analysis to information sharing, noting that sharing price information facilitates price fixing).

162. HOVENKAMP ET AL., *supra* note 159, § 34.4b3.

163. This scenario served as the basis for antitrust claims recently asserted against RPX by a self-described “patent troll,” and is discussed further *infra* at Part IV. *See Cascades Complaint*, *supra* note 142.

164. *See MERGES & DUFFY*, *supra* note 18, at 1245–46.

examination process, which already appears to be improving.¹⁶⁵ Courts are already addressing patent holdup problems through heightened injunction standards¹⁶⁶ and reasonable damages measures.¹⁶⁷ Standard-setting bodies can help address notice failure through disclosure requirements,¹⁶⁸ and courts can do the same by enjoining assertions by companies they find to exploit secrecy inequitably.¹⁶⁹ Chief Judge Rader of the Federal Circuit has suggested a number of discovery and fee redistribution reforms to curb exploitation of litigation costs.¹⁷⁰ Prudential standing requirements requiring any parties with “substantial rights” to a patent to join as parties in an infringement litigation may allow courts to address privateering arrangements.¹⁷¹ The PTO, FTC, and DOJ are currently exploring ways to improve patent ownership transparency by requiring that owners and “real parties in interest” of patent rights record their interests with the PTO periodically or whenever significant patent rights are transferred.¹⁷² However, barring radical change to

165. 2011 PTO Report, *supra* note 27 (showing dramatic increases in the number of PTO examiners and examiner retention, and a decrease in the patent backlog); Carl Shapiro, Fed. Trade Comm’n: Patent Assertion Entity Activities Workshop (Dec. 10, 2012) *available at* <http://www.ftc.gov/video-library/index.php/ftc-events/patent-assertion-entity-activities-session-14/2028431448001> (noting improvements to PTO under direction of current Director, David Kappos).

166. *See* eBay, Inc. v. MercExchange, L.L.C., 547 U.S. 388 (2006) (ruling that injunctive relief for patent assertion must satisfy four-part test for equitable relief).

167. *See* Lucent Technologies v. Gateway, Inc., 580 F.3d 1301, 1330, 1336–38 (Fed. Cir. 2009) (rejecting damages holding based on entire market value of gateway product where infringed portion of software found only to make up a small portion of infringing products value).

168. *See* Menell & Meurer, *supra* note 11.

169. For example, courts might apply laches where they find evidence that a company has intentionally waited for a target to lock in to a technology in order to gain bargaining power. *See* Symbol Techs., Inc. v. Lemelson Med., Educ. & Research Found., 422 F.3d 1378, 1386 (Fed. Cir. 2005) (affirming application of prosecution delay laches, rendering unenforceable fourteen patents inequitably delayed through prosecution).

170. *See* Rader, *supra* note 132.

171. *See, e.g.*, A10 Networks, Inc. v. Brocade Commc’ns Sys., Inc., No. 5:11 CV 05493 LHK, 2012 WL 1932878 at *1 (N.D. Cal. May 29, 2012) (finding counter-infringement claim because party owned “fewer than all substantial rights” to patent and dismissing with leave to join other parties with retained interest in patent); Intellectual Prop. Dev., Inc. v. TCI Cablevision of Cal., 248 F.3d 1333, 1347–48 (Fed. Cir. 2011).

172. *See* *In the Matter of Notice of Roundtable on Proposed Requirements for Recordation of Real-Party-in-Interest Information Throughout Application Pendency and Patent Term, Comments of the Antitrust Division of the U.S. Dep’t of Justice and Fed. Trade Comm’n*, U.S. DEP’T OF JUSTICE AND FED. TRADE COMM’N, (Feb. 1, 2013) *available at* <http://www.ftc.gov/os/2013/02/130201pto-rpi-comment.pdf>. Such a system could conceivably address some of the costs associated with notice failure if practicing companies can use the information to track the patent acquisitions of active patent asserting entities and use that information to design around highly patented technologies or bargain for licenses before investing in those

the patent system,¹⁷³ patent aggregation will likely remain a rational means for maximizing the value of one's patent assets and for defending against assertions.

Antitrust law can, however, help restrain some anticompetitive exploitations of patent aggregation. This Part will consider the legality of aggregation strategies currently in place from an antitrust perspective, as well as how antitrust laws might be employed by courts to encourage the beneficial, procompetitive uses of aggregation while discouraging activities that tax innovation or impair competition.¹⁷⁴

A. BARRIER: CONTEMPORARY ANTITRUST AND THE ROLE OF MARKET POWER

Contemporary antitrust law provides a number of possibilities for regulating potentially harmful activities of patent aggregation, but these remedies must be weighed against the potential for further complicating the already complex patent ecosystem. The DOJ and FTC expressly state that they “apply the same general antitrust principles to conduct involving intellectual property that they apply to conduct involving any other form of tangible or intangible property.”¹⁷⁵ Section 1 of the Sherman Act addresses concerted actions by competitors that create unreasonable restraints on trade. Section 7 of the Clayton Act allows the DOJ and FTC to regulate patent portfolio acquisitions that have the potential “substantially to lessen competition.”¹⁷⁶ Section 5 of the FTC Act provides a broad prohibition against “unfair or deceptive acts or practices in or affecting commerce.”¹⁷⁷ Although section 2 of the Sherman Act may also apply to patent arrangements, the unlikelihood of finding monopoly power in most patent markets under modern antitrust law makes it an unlikely candidate for successful regulation.¹⁷⁸

technologies. The potential benefits of such a system, as well as its costs, require further study.

173. Such as the elimination of patents for high-technology products, as proposed by some critics of the patent system, including Judge Posner. *See* Posner, *supra* note 24.

174. Merges, *supra* note 43.

175. 1995 IP Guidelines, *supra* note 129.

176. 15 U.S.C. § 18 (2000).

177. *Id.* § 45.

178. Finding monopoly power in a market for patents, as opposed to a market for technology-related products, is unlikely because there is generally no limit to the number of patents that can apply to a given sector and nothing to stop any independent inventor from patenting a related technology and thus entering the market for patents, meaning that entry barriers to a patent market would be considered very low. *But see* *Kobe, Inc. v. Dempsey Pump Co.*, 198 F.2d 416 (10th Cir. 1952) (upholding jury verdict that plaintiff violated

The market power requirement for most causes of action under current antitrust law presents a significant hurdle for most claims related to aggregation.¹⁷⁹ Courts determining market power must first define a relevant geographic market and “product market.”¹⁸⁰ Defining the market in cases related to patent aggregation, the court must consider two types of product markets: (1) a market for patents, and (2) a market for the products and services covered by those patents.¹⁸¹ After identifying relevant markets, courts assess market power by looking to direct evidence¹⁸² and circumstantial evidence.¹⁸³ A patent alone does not convey market power for the purposes of antitrust law,¹⁸⁴ and courts generally assume that because any inventor can innovate and receive a patent, firms rarely possess market power in a market for patents themselves.

Sherman Act §§ 1, 2, finding that plaintiff who acquired more than seventy patents over hydraulic oil pump technologies violated patent laws could be found to have willfully acquired a monopoly).

179. See HOVENKAMP ET AL., *supra* note 159, § 3.3. This would not be true of actions brought under the Sherman Act that implicate naked restrictions on price and would therefore be illegal per se. See *United States v. Socony-Vacuum Oil Co.*, 310 U.S. 150, 223 (1940) (“Under the Sherman Act a combination formed for the purpose and with the effect of raising, depressing, fixing, pegging, or stabilizing the price of a commodity in interstate or foreign commerce is illegal per se.”). Tying claims under Sherman Act §§ 1, 2, or Clayton Act § 3 technically receive per se treatment, but generally receive rule of reason analysis where the allegedly anticompetitive conduct takes place within an industry with unfamiliar consequences. See *United States v. Microsoft Corp.*, 253 F.3d 34, 84 (D.C. Cir. 2001) (“rule of reason, rather than per se analysis, should govern the legality of tying arrangements involving platform software products.”). Even the nominally “per se” analysis of tying arrangements requires some showing of market power by asking whether a purchaser of a tied product is “forced” to purchase the tied product. See *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 16 (1984). Market power is defined as the power to raise prices in a specific market.

180. See *United States v. E. I. du Pont de Nemours & Co.*, 351 U.S. 377, 395 (1956) (defining a relevant market, stating that “commodities reasonably interchangeable by consumers for the same purposes make up that ‘part of the trade or commerce’”). The DOJ and FTC define a product market as a set of products over which a hypothetical monopolist “likely would impose at least a small but significant and non-transitory increase in price (‘SSNIP’).” *Horizontal Merger Guidelines*, U.S. DEPT. OF JUSTICE AND FED. TRADE COMM’N, § 4.1.1 (Aug. 19, 2010), available at <http://www.ftc.gov/opa/2010/08/hmg.shtm> [hereinafter “Merger Guidelines”].

181. See HOVENKAMP ET AL., *supra* note 159, § 4.3c.

182. Direct evidence includes measures of demand elasticity as well as evidence that parties have been able to exclude competitors or control prices in the identified market. See *Merger Guidelines*, *supra* note 180.

183. Circumstantial evidence includes evidence of persistently high market shares in a relevant market, the existence of barriers to entry, etc. See *id.*

184. See *Illinois Tool Works Inc. v. Indep. Ink, Inc.*, 547 U.S. 28, 45 (2006) (“Congress, the antitrust enforcement agencies, and most economists have all reached the conclusion that a patent does not necessarily confer market power upon the patentee.”).

Other aspects of patent law further constrain the reach of antitrust. Patent rights convey a lawful means for excluding others, and a “patent holder is permitted to maintain his patent monopoly through conduct permissible under the patent laws.”¹⁸⁵ As for the acquisitions of patents themselves, the Supreme Court has held that the “mere accumulation of patents, no matter how many, is not in and of itself illegal.”¹⁸⁶ The *Noerr-Pennington* doctrine protects private entities from antitrust liability for attempting to influence the passage or enforcement of laws, and thus immunizes parties from liability for lobbying for relief from the courts by bringing patent infringement litigation.¹⁸⁷

However, not all uses of patents are immune to antitrust scrutiny, as discussed in the remainder of this Part. Patent misuse¹⁸⁸ provides a narrow exception to *Noerr-Pennington*.¹⁸⁹ And a handful of cases have held that acquiring a large number of patents in a particular technology field might violate antitrust laws and constitute patent misuse.¹⁹⁰ A patent asserter may also be liable under antitrust law where courts determine that a patent has been “acquired illegally” based on the circumstances of the acquiring party and the “status of the relevant product and geographic markets at the time of acquisition.”¹⁹¹ Certain uses of patent rights, such as tying,¹⁹² violate antitrust laws.¹⁹³

185. *SCM Corp. v. Xerox Corp.*, 645 F.2d 1195, 1204 (2d Cir. 1981).

186. *Automatic Radio Mfg Co. v. Hazeltine Research*, 339 U.S. 827, 834 (1950).

187. *See E. R.R. Presidents Conference v. Noerr Motor Freight, Inc.*, 365 U.S. 127 (1961); *United Mine Workers v. Pennington*, 381 U.S. 657 (1965).

188. Patent misuse is a common law defense to claims of patent infringement that “limits a patentee’s right to impose conditions on a licensee that exceed the scope of the patent right” by making unenforceable patents held to have been misused. *Princo Corp. v. Int’l Trade Comm’n*, 616 F.3d 1318, 1321 (Fed. Cir. 2010) (en banc).

189. *See Kobe, Inc. v. Dempsey Pump Co.*, 198 F.2d 416, 426–27 (10th Cir. 1952) (upholding jury verdict that plaintiff violated Sherman Act §§ 1, 2, finding that plaintiff who acquired more than seventy patents over hydraulic oil pump technologies violated patent laws could be found have willfully acquired a monopoly); *see also* Tom Ewing, *Practical Considerations in the Indirect Deployment of Intellectual Property Rights By Corporations and Investors: Limitations on Letters of Marque and Reprisal for Latter Day Sea Dogs*, 4 HASTINGS L. J. 109, 141 (2011) (suggesting that the patent misuse exception to *Noerr-Pennington* should be applied to targets of privateering activities).

190. *See Kobe*, 198 F.2d at 422.

191. *SCM Corp. v. Xerox Corp.*, 645 F.2d 1195, 1206–07 (2d Cir. 1981).

192. *See infra* note 195 and accompanying text (explaining “tying”).

193. *Int’l Salt Co. v. United States*, 332 U.S. 392 (1947); 1995 IP Guidelines, *supra* note 129.

B. SHERMAN ACT SECTION 1: REGULATING COLLUSIVE BEHAVIOR

Section 1 of the Sherman Act addresses concerted actions that might create unreasonable restraints to trade.¹⁹⁴ Aside from tying claims,¹⁹⁵ which can also be addressed under Sherman Act § 2 and Clayton Act § 3, § 1 violations generally involve agreements between competitors to collude on price or raise rivals' costs. Thus, courts and the antitrust enforcement agencies could apply § 1 to ensure that arrangements between aggregators and practicing entities, whether under privateering or defensive aggregation relationships, do not create exclusionary harms beyond what the Patent Act confers as a reward for innovation.¹⁹⁶

1. *Regulating Collusive Harms in Depressing Patent Prices*

As discussed *supra* Part III, defensive aggregators could serve as a “hub” through which competitors could collude to restrain competition and prices. For example, in March 2012, Cascades Computer Innovation (“Cascades”), a patent asserting NPE, filed claims under section 1 and section 2 of the Sherman Act alleging that RPX and several of its members formed a group boycott not to license Cascades' patents.¹⁹⁷ In January 2013, a Northern District federal judge granted the defendants' motions to dismiss those claims on several bases, all with leave to amend.¹⁹⁸ The court found Cascades had failed to allege with sufficient specificity any “agreement between antitrust co-conspirators.”¹⁹⁹ It also found that Cascades had failed to present

194. See 15 U.S.C. § 1 (2004) (“Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce . . . is declared illegal.”).

195. Tying occurs where a supplier conditions the sale of one product, the “tying” product, on the purchaser's agreement to some other “tied” product. See *Illinois Tool Works Inc. v. Indep. Ink, Inc.*, 547 U.S. 28, 31 (2006). A successful tying claim requires that, among other things, the plaintiff prove that the defendant had market power in the tying product to sufficient to compel the sale of the tied product. *Id.* (holding that patents do themselves create a presumption of market power in a given product).

196. Exclusionary harms are activities that foreclose rivals' access to a given market, which often facilitates monopolist prices or collusive arrangements to raise prices in the long term. See Thomas G. Krattenmaker and Steven C. Salop, *Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power over Price*, 96 YALE L.J. 209, 214; RICHARD A. POSNER, *ANTITRUST LAW* 194 (2d ed. 2001).

197. See Cascades Complaint, *supra* note 142 (bringing complaint against RPX and, HTC, Motorola, Samsung, LG for Dell for refusing to negotiate for license owned by plaintiff Cascades).

198. See *Cascades Computer Innovation LLC v. RPX Corp.*, No. 12-CV-001143 YGR, 2013 WL 316023, at *6–7, *15 (N.D. Cal. Jan 24, 2013).

199. *Id.* at *6–7 (finding only the “sort of generic pleading—alleging misconduct against various defendants without specifics as to the role each played—that was rejected by [Bell Atl. Corp. v. Twombly, 550 U.S. 544 (2007)]”).

a “coherent market definition” by equivocating between a market defined as a “market for patented technology” and the market for the devices incorporating the patented technology.²⁰⁰ It found that Cascades’ allegations were too “vague” to “plausibly infer” it suffered harms “due to a conspiracy in a particular market, rather than due to individual business disputes between independent actors.”²⁰¹ And, the court found that Cascades failed to provide specific facts to show that it was “economically irrational” for RPX’s members to decline Cascades’ licensing offers.²⁰² The dismissal of Cascades’ complaint perhaps most directly demonstrates the difficulty of bringing conspiracy-related claims in the post-*Twombly* and *Iqbal* era,²⁰³ but it also demonstrates the general skepticism with which courts will likely view such claims, and provides a useful lens through which to consider how courts might address antitrust allegations against defensive aggregators in future cases.

Agreements between competitors to restrain competition or fix prices are per se illegal under the Sherman Act section 1. To establish a prima facie case, a plaintiff must prove that competitor-defendants (1) entered an agreement (2) with the intent or effect to restrain competition or control price.²⁰⁴ For example, Cascades claimed that RPX’s actions constituted illegal buyer boycotts where RPX negotiated as an agent for its members, who in turn refused to compete for patent licenses.²⁰⁵ The court expressly declined to address whether it would apply a per se rather than a rule of reason analysis to Cascades’ claims, finding insufficient facts to make a determination as a matter of law.²⁰⁶ It seems clear, however, that courts should not apply per se analysis to defensive aggregation activities. Because RPX purchases patents independently of its members, its purchases do not require horizontal agreements between competitors to choose patents. The agreements between defensive aggregators and their members are in fact vertical agreements, which courts view as having procompetitive purposes

200. *Id.* at *9–10 (emphasis omitted) (granting leave to amend to provide “sufficient specificity of each alleged violation in each alleged market or sub-market”).

201. *Id.* at *11.

202. *Id.* at *12.

203. *See generally* Bell Atl. Corp. v. Twombly, 550 U.S. 544 (2007); Ashcroft v. Iqbal, 556 U.S. 662 (2009).

204. *See* United States v. Socony-Vacuum Oil Co., 310 U.S. 150, 223 (1940).

205. *See* Cascades Complaint, *supra* note 142.

206. *Cascades*, 2013 WL 316023, at *9 n.14.

more often than horizontal agreements, and thus generally receive the more relaxed rule of reason analysis.²⁰⁷

However, defensive aggregation models like that of Allied Security Trust (“AST”) may have a more difficult time avoiding *per se* analysis.²⁰⁸ Because AST does not acquire patents as an independent entity, but rather facilitates direct agreements among its members to decide which patents to acquire and how much to pay for them, plaintiffs may be able to more easily satisfy the agreement requirement of *per se* analysis.²⁰⁹ Still, defensive aggregation models are not traditional restraints on trade that courts are accustomed to assessing,²¹⁰ and courts would likely find that defensive aggregators create a wholly new service (defensive aggregation) with substantial procompetitive attributes that should not be considered illegal *per se*.²¹¹

Under a rule of reason analysis, a plaintiff must make a *prima facie* showing that an agreement constitutes an unreasonable restraint of trade, which requires proof of competitive harm as well as proof of the defendant’s market power in the relevant market.²¹² As discussed *supra* Section IV.A, proof of market power can pose a significant hurdle under a rule of reason analysis. If, however, the defensive aggregator represents many members in a given product market, as is the case with RPX, the plaintiff may succeed in showing the competitors collectively have market power. A rule of reason analysis, therefore, will likely come down to weighing the anticompetitive potentials of such arrangements against the procompetitive effects of defensive aggregation. In most cases, courts will likely decide that the ability of competitors to clear barriers to production through cross-licensing arrangements, discussed *supra* Part III, outweigh the anticompetitive harms. Defendants could persuasively argue that plaintiff patent holding inventors or NPEs are free to refuse licenses to defensive aggregators and instead sue for patent infringement. Thus, only nakedly anticompetitive conduct would

207. *See, e.g.*, *Continental T.V., Inc. v. GTE Sylvania Inc.*, 433 U.S. 36, 58 (applying rule of reason analysis to non-price vertical restrictions); *Leegin Creative Leather Products, Inc. v. PASKS, Inc.*, 551 U.S. 877, 881 (“[V]ertical price restraints are to be judged by rule of reason.”). This is not to say that all vertical agreements avoid antitrust scrutiny, but that they do not receive *per se* analysis.

208. *See* discussion of Allied Security Trust *supra* Section II.C.

209. *See* Hetzel, *supra* note 115, at 34.

210. *Cf.* *United States v. Topco Assocs., Inc.*, 405 U.S. 596, 607–08 (1972) (“[I]t is only after considerable experience with certain business relationships that courts classify them as *per se* violations . . .”).

211. *Cf.* *Broadcast Music, Inc. v. Columbia Broad. Sys.*, 441 U.S. 1, 24–25 (1979) (holding that procompetitive virtues of blanket license services requires application of rule of reason analysis rather than *per se* analysis).

212. *See* *Standard Oil Co. v. United States*, 221 U.S. 1, 58 (1911).

likely prevail under rule of reason analysis when considering collusive refusals to deal in the context of defensive aggregation.²¹³

2. *Regulating Collusive Arrangements to Raise Rivals' Costs*

As discussed *supra* Part III, aggregation models under which multiple competing entities direct the activities of an NPE present the potential for illegal arrangements between competitors to raise rivals' costs. For example, Mosaid's acquisition of patents formerly belonging to Microsoft and Nokia under revenue sharing arrangements with each company has raised exactly these concerns.²¹⁴ Mosaid purchased the Nokia and Microsoft patents, which had been aggregated into a company called CoreWireless, under an arrangement where Nokia and Microsoft would receive a percentage of revenues from the portfolio's assertion and licensing.²¹⁵ However, the agreement also stated that the patents would revert back to Nokia and Microsoft if Mosaid failed to meet certain revenue targets on the portfolio.²¹⁶ Critics of the deal note that the reversion stipulation incentivizes Mosaid to assert aggressively against companies practicing the Nokia and Microsoft patents, which are most likely to include the competitors of those two companies. In effect, critics might argue, Nokia and Microsoft have entered into vertical arrangements with Mosaid, facilitating their ability to raise the costs of rivals who wish to compete in the technology markets covered by Mosaid's Nokia- and Microsoft-originated patents.²¹⁷

Because antitrust law concerns the protection of competition rather than competitors, exclusionary harms such as raising rivals' costs generally receive

213. For example, if a plaintiff could show that competing entities were conspiring through a defensive aggregator to refuse licenses or depress license prices while also deterring infringement litigation through some otherwise illegitimate means (for example, by refusing membership to the defensive aggregator itself or by threatening to withhold business from the plaintiffs), then courts would likely find anticompetitive conduct on the part of the competing entities.

214. See Letzig, *supra* note 95.

215. See *supra* note 139 and accompanying text.

216. See Letzig, *supra* note 95.

217. Such a claim would likely require a plaintiff showing that Mosaid used its portfolio either to refuse licenses to certain competitors of Microsoft and Nokia, or that it granted licenses to certain competitors at much greater costs, or that the portfolio was being misused by targeting certain competitors with nuisance actions. A plaintiff might claim that such activities are analogous to vertical agreements policing a cartel, where Mosaid was policing a cartel arrangement. *Compare with* JTC Petroleum Co. v. Piasa Motor Fuels, Inc., 190 F.3d 775, 779–81 (7th Cir. 1999) (Posner, J.) (reversing summary judgment for defendants, finding sufficient evidence for a jury to infer that asphalt suppliers were withholding asphalt supply from competing applicator in order to enforce applicator cartel).

a rule of reason rather than per se treatment.²¹⁸ Courts and antitrust enforcement agencies would likely have difficulty determining the market power conferred by competitors' patents in a privateering context. Because patent holdings do not necessarily correspond to market share in a product market and because competitors generally will not provide complete details of their patent holdings to a privateer or offensive aggregator, determining the market power of a privateer based on its patent holdings cannot accurately reflect the market shares of the competing entities with which it has reached agreements.

Instead, courts might choose to measure the market power of the practicing entities by aggregating their respective market shares. Thus, if the multiple practicing entities party to a privateering arrangement with a single NPE possessed market power collectively, a court would weigh the procompetitive and anticompetitive effects of their arrangement. As discussed *supra* Part III, privateering provides efficiencies for companies by using the specialized abilities of NPEs to assert patents. However, if the privateering arrangement significantly raises costs for rivals so as to exclude competitors from the market with the effect of weakening competition, then courts may find a party to the arrangement to have impermissibly expanded its exclusionary power, thus creating liability under section 1 of the Sherman Act.

Ultimately, section 1 of the Sherman Act can provide plaintiffs with the tools to regulate the anticompetitive activities of aggregating NPEs and their partner practicing entities. However, it does not fully address the supracompetitive rents that high information costs place on product markets, which is one of the primary concerns regarding patent aggregation activities. This Note finds that although the FTC may be able to use section 5 of the FTC Act to address rents associated with information costs,²¹⁹ current antitrust law does not seem well suited to solve the problem.

218. *See* *Brown Shoe Co. v. United States*, 370 U.S. 294, 320 (1962) (stating that antitrust law concerns “the protection of competition, not competitors”); HOVENKAMP ET AL., *supra* note 159. The exclusionary harm of “tying” represents one exception to this rule, but even tying arrangements rarely receive actual per se treatment. *See, e.g.*, *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 12–18 (1984) (enunciating four-elements test to “per se” tying violations); *United States v. Microsoft Corp.*, 253 F.3d 34, 84 (D.C. Cir. 2001) (“We hold that rule of reason, rather than per se analysis, should govern the legality of tying arrangements involving platform software products.”).

219. *See infra* Section IV.D.

C. CLAYTON SECTION 7: REGULATING PORTFOLIO ACQUISITIONS

Under section 7 of the Clayton Act, the DOJ and FTC have the power to prohibit a patent acquisition if the acquisition's likely effect "may be substantially to lessen competition."²²⁰ Patent sales are considered vertical mergers and are therefore subject to FTC or DOJ approval under section 7 of the Clayton Act when reaching a certain value-threshold.²²¹ Section 7 promotes greater regulatory reach than the more restrictive theories of liability available under the Sherman Act by directly inhibiting acquisitions that *may* lead to anticompetitive effects. However, weighing the anticompetitive effects of an acquisition of patents will likely be too uncertain and indefinite to create a viable cause of action in most instances.

In a traditional merger situation, a plaintiff must first make a *prima facie* case showing undue concentration in a particular market, which creates a presumption that the transaction will substantially harm competition.²²² In the context of patent acquisitions, identifying which patents are implicated by a relevant market definition would be quite difficult.²²³ If a plaintiff can show substantial concentration, a defendant may rebut the presumption of competitive harm by showing either that the plaintiff's theory inaccurately predicts concentration or harm, or that the acquisition provides significant procompetitive effects.²²⁴ A defendant will likely respond with the argument discussed in Section IV.A, *supra*, that entrants may easily access the market for patents simply by inventing competing technologies and patenting those inventions, then adding those patents to the patent market.²²⁵

To be successful under Clayton Act section 7 in the context of patent acquisitions, a plaintiff will therefore need to focus more directly on potential

220. 15 U.S.C. § 18 (1996).

221. *Id.* Mergers reaching a certain value threshold, which is adjusted annually with inflation, are subject to *ex ante* approval by the DOJ and FTC. The threshold set for 2012 was \$68.2 million. *See FTC Announces Revised Thresholds for Clayton Act Antitrust Reviews*, FED. TRADE. COMM'N, (Jan. 24, 2012). Any merger is subject to liability under section 7 of the Clayton Act *ex post*.

222. *See United States v. Baker Hughes*, 908 F.2d 981, 982–83 (D.C. Cir. 1990).

223. *But see Kobe, Inc. v. Dempsey Pump Co.*, 198 F.2d 416 (10th Cir. 1952). Another difficulty in defining a patent market lies in weighing validity of the other patents that might be relevant to that market.

224. *See Baker Hughes*, 908 F.2d at 983.

225. *Cf. id.* at 988–99 (finding defendants had successfully rebutted government's *prima facie* case by showing that entry into defendants' market for specialized drilling equipment "would likely avert anticompetitive effects" of the acquisition); *United States v. Waste Mgmt., Inc.*, 743 F.2d 976, 983 (2d Cir. 1984) (finding that ease of entry into Fort Worth's waste management market would defeat any anticompetitive impact of defendants' merger).

harms rather than market concentrations.²²⁶ Antitrust officials from both agencies have recognized the potential for anticompetitive harms from trolling activities.²²⁷ In a speech delivered in September 2012 at Northwestern University, Fiona Scott Morton, Deputy Assistant Attorney General for Economic Analysis in the DOJ's Antitrust Division, considered the potential harms that patent transactions between different types of entities might pose, distinguishing among transactions between practicing entities, sales from a practicing entity to an NPE, and sales from multiple practicing entities to the same NPE.²²⁸ The potential harms and benefits of such transactions, discussed *supra* Part III, are discussed below through the lens of Clayton Act section 7.

1. *Acquisitions by Practicing Entities Generally*

Although portfolio acquisitions by practicing entities implicate concerns related to the “superadditivity” that portfolios provide for both offensive and defensive purposes,²²⁹ the strong procompetitive effects of cross licensing must be weighed against any anticompetitive potential. Furthermore, determining *ex ante* the purposes for which a practicing entity will use its patent portfolio presents tremendous difficulties. Acquiring patents is a legal and desirable activity if it promotes technology transfer. Overregulation of general acquisitions would deter the transfer of patent rights, stagnating liquidity and encouraging infringement. Of course, plaintiffs could bring section 7 actions against a transaction *ex post* when evidence of anticompetitive conduct surfaced, but then the conduct itself, not the acquisition, would constitute the harm. Thus, although Clayton section 7 may

226. However, a departure from focusing on market concentration may sit uneasily with courts considering market concentration is what is most directly affected by a merger. Focusing instead on “potential harms” would require a high degree of speculation and assumption with regard to an entity’s future harmful activities.

227. Brent Kendall & Ashby Jones, *Regulators Take Look at Patent Firms’ Impact*, WALL ST. J., (Nov. 18, 2012), <http://online.wsj.com/article/SB10001424127887324595904578123493335950754.html> (quoting former Justice Department antitrust chief Joseph Wayland stating that the DOJ is focusing “huge energy, particularly at a senior level” toward patent and antitrust issues related to trolls,” and FTC Chairman Jon Leibowitz stating “there has been a great deal of controversy and disagreement about whether [patent trolls] stifle innovation and whether they are an anticompetitive problem”).

228. Morton, *supra* note 141. Although the speech does not directly identify any particular companies, its description seems to be that of an offensive aggregator. Morton describes an NPE that “buys large quantities of patents from others, and [whose] business model is to monetize intellectual property,” and that “by combining weak patents into large groups, the troll increases the likelihood that the licensee has infringed at least one valid patent in the portfolio.” *Id.* at 3.

229. See *supra* Section II.A.

provide a strong regulatory tool against anticompetitive behaviors, courts are unlikely to apply them *ex ante* to transactions between practicing entities.²³⁰

2. *NPE Acquisitions of Practicing Entity Patents*

A portfolio sale between a practicing entity and an NPE, as discussed *supra* Part III, likely increases the likelihood that the underlying patents will be asserted against competitors, raising costs across an industry. Indeed, enjoining acquisitions by non-practicing entities based on powers provided by the Clayton Act would severely constrain the ability of NPEs to place costs on the patent system. However, a blanket proscription against sales from practicing entities to NPEs would constrain liquidity in the market for patents. Such a proscription would leave practicing entities as the only buyers of patents from other practicing entities, which may potentially reduce liquidity in the patent market and remove the efficiencies that specializing patent intermediaries bring to the patent system. The reduced liquidity emanating from intellectual property assets might reduce competition from startup companies whose investors rely on the ability to sell off patents as a way of mitigating losses after a startup's ultimate failure. Furthermore, the lack of a liquid market might also reduce income from the sale of patent assets, which in turn might make it more difficult for companies to offset the costs of research and development.²³¹

There may be middle-ground solutions available. For example, courts might find that the anticompetitive effects of NPE aggregation deserve a high degree of scrutiny under the Clayton Act, but that the procompetitive effects that NPEs provide by injecting liquidity into the market in certain circumstances outweigh those anticompetitive effects. Under such a scenario, the antitrust agencies and the courts might recognize different levels of procompetitive outcomes for different types of sales, and apply different levels of scrutiny to sales accordingly. Courts might find, for example, that permitting NPEs to acquire the patents of bankrupt entities provides strong

230. Fiona M. Scott Morton suggests that patent sales to practicing entities that practice in the field of technology underlying those patents ("PPEs") create greater competitive concerns than sales to practicing entities that do not practice the technologies underlying the patents ("PEs") because PPEs will demand higher rates from competitors practicing the underlying technologies. Morton, *supra* note 141. Although this may be true, it is unlikely that courts would punish a company for obtaining patents to technologies they practice or might potentially practice without an obvious risk of such a transaction granting a company monopoly power, considering that is the most direct form of technology transfer. Without the ability to buy and sell patent rights, a patent would no longer behave as a property right.

231. As discussed *supra* Section II.A.2.b), Nokia has defended its sale of patents to PAEs by stating that such sales allow it to pivot away from older technologies and reinvest in research and development. *See* Melin, *supra* note 96.

procompetitive effects, whereas sales creating privateering relationships deserve higher scrutiny.

3. *A Competition-Focused Approach*

Rather than focus on the type of entity party to a patent transaction, antitrust agencies should focus, on a case-by-case basis, on the type of parties to a given transaction and the specific details of their agreements. Shared purchases by competing companies present a clear opportunity for collusion among competitors to raise rivals' costs, as do sales by competitors under revenue sharing arrangements to patent-asserting NPEs. The DOJ and FTC already investigate such transactions.²³² If, for example, entities party to large patent transactions also made agreements explicitly involving the targeting of certain competitors to raise costs, or implicitly by incentivizing such activity, enforcement bodies might apply greater scrutiny. Of particular significance in this context might be agreements between transferring parties that created undue secrecy with regard to who might maintain some property interest or control over patents after they are transferred to a second party.

D. FTC ACT SECTION 5

Perhaps the broadest tool available to regulators are the investigative and regulating powers given to the FTC under section 5 of the FTC Act, which empower the FTC to prohibit practices that it deems "unfair."²³³ The standard of unfairness encompasses activities that would otherwise constitute violations under other antitrust laws but also includes any practices that the FTC determines are "against public policy."²³⁴ For example, the FTC has prohibited certain unilateral activities facilitating collusion for anticompetitive activities, even where the action lacks an explicit agreement between competitors and would therefore not raise liability under section 1 of the Sherman Act.

232. For example, the DOJ investigated Google's acquisition of Motorola Mobility Holdings and its 17,000 patents, as well as the combined purchase of Nortel's 6,000 patents by the Rockstar Bidco consortium consisting of Apple, Sony, Microsoft, RIM, EMC, and Ericsson. See *Statement of the Department of Justice's Antitrust Division on its Decision to Close Its Investigations of Google Inc.'s Acquisition of Motorola Mobility Holdings Inc. and the Acquisitions of Certain Patents by Apple Inc., Microsoft Corp, and Research in Motion Ltd.*, DEPT. OF JUSTICE (Feb. 13, 2012) available at <http://www.justice.gov/opa/pr/2012/February/12-at-210.html>. See also Cockburn, *supra* note 135.

233. See 15 U.S.C. § 45 (2006).

234. See *F.T.C. v. Indiana Fed'n of Dentists*, 476 U.S. 447, 454 (1986) ("The standard of 'unfairness' under the FTC Act is, by necessity, an elusive one, encompassing not only practices that violate the Sherman Act and the other antitrust laws, but also practices that the Commission determines are against public policy for other reasons.") (internal quotations omitted).

Likewise, the FTC might use its broad powers under section 5 to loosen a plaintiff's burden of showing market power under rule of reason analyses involving patent transactions from multiple competitors to a single NPE, or agreements between competitors involving the use of patents. A loosened standard for market power would help capture practices that have the effect of raising rivals' costs under a privateering model. Rule of reason analysis would then focus on anticompetitive intent or on its effects on the market rather than direct findings of market power.

If the collection of supracompetitive rents based on aggregated portfolios could directly fall under section 5's proscription against "unfair practices," then it might indeed address many of the harms associated with the direct exploitation of flaws within the patent system. Such claims might focus on whether aggregators were either intentionally exploiting the high information costs associated with evaluating their portfolios or deliberately leveraging notice failure to extract unwarranted licensing revenues. Still, courts might justifiably refrain from expanding liability too liberally to either the accumulation of portfolios or the licensing of those portfolios out of fear of chilling legitimate, procompetitive activity. Finding the line between legitimate licensing activities and the compulsion of supracompetitive rents may simply be too difficult in most instances. Thus, although the broad language of section 5 might conceivably apply to "unfair" uses of aggregated portfolios, as well as the accumulation or transfer of patent portfolios that could facilitate unfair uses, courts are unlikely to use section 5 to substantially alter the antitrust law with respect to patent portfolios.

V. CONCLUSION

Patent aggregation presents potential competitive harms that largely result from flaws within the patent system. Many of those harms will be best addressed using principles of patent law or through reforms of the patent system. Companies aggregate patents both to exploit information costs and to defend against those information costs. Patent aggregation is often wasteful because it values quantity of patents over the quality of the underlying innovation, and it can allow entities to tax production more than they benefit innovation. Antitrust law may provide useful tools to curb the negative consequences of certain patent aggregation strategies—particularly the collusive opportunities presented by vertical arrangements between NPEs and multiple practicing entities, both under privateering arrangements and under defensive aggregation arrangements. However, antitrust law is not well-suited to address the harms inherent in the current patent system that patent aggregation simply exacerbate.