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STARTUPS AND INVESTORS AND TROLLS, OH MY!: HOW COMMERCIALIZATION PATENTS CAN BENEFIT STARTUP INNOVATION

Robert Chou

Northwestern Pritzker School of Law

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TROLLS, OH MY!: HOW
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Robert Chou



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*Robert Chou**

ABSTRACT—Venture-backed startups play a crucial role in innovation and advancing our technology. However, the development of secondary markets for patents and the proliferation of patent assertion entities starting in the early twenty-first century has made the patent ecosystem a difficult environment for startups to navigate. Startups face challenges that their more established counterparts do not. First, startups must rely heavily on external sources of funding and, as a result, many decide to file for patents early in their lifecycle to signal their value to potential investors. Second, patent assertion entities threaten startups with patent infringement suits at a disproportionately high rate, which disrupts startups’ productivity and diverts their limited resources. This Note explores the “vicious patent cycle.” The cycle begins when startups file patents to signal worth. Then, when 90% of these startups fail, they leave behind patents that grow the “patent thicket” as well as opportunities for patent assertion entities to stifle innovation. Together, these negative externalities exacerbate the challenge of building a new company. Unfortunately, the United States patent system is not well suited to put an end to the cycle. Thus, this Note introduces a solution for startups: the small business commercialization patent. The small business commercialization patent is a modified form of the commercialization patent introduced by Ted Sichelman but is tailored to meet the unique needs of venture-backed startups.

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INTRODUCTION

Venture-backed technology companies (startups) produce significantly more influential inventions per investment dollar compared to established firms in the same industry.¹ Startups are commonly associated with terms like “innovation,” “game-changing,” and “disruption.” It is easy to think these things about startups because we only hear about the successful ones. Companies such as Uber, Airbnb, and Slack are “unicorns,” representing only 1% of technology companies that raised seed-round capital.² We do not often hear about failed startups because there is no such thing as a “startup death certificate,”³ so the estimated 90% of startups that fail do so quietly.

If the goal of the patent system is to enable innovation and to facilitate the commercialization of novel products, then our current patent system is not doing its job, at least not for startups. Startups, like their more-established counterparts, are incentivized to acquire patents as a means to exclude competitors and reap the benefits of a limited monopoly. However, as a result of the startup industry’s business model, startups face unique challenges that larger technology companies do not. Specifically, startups face hurdles during venture capital (VC) fundraising and have a high rate of failure. As a result, startups are further incentivized to expend limited resources to obtain

* Northwestern University Pritzker School of Law, J.D., 2020. I would like to give a special thanks to Professor Laura Pedraza-Fariña for her guidance through this writing process.

¹ David Benson & Rosemarie H. Ziedonis, *Corporate Venture Capital as a Window on New Technologies: Implications for the Performance of Corporate Investors When Acquiring Startups*, 20 *ORG. SCI.* 329, 332 (2009).

² *Venture Capital Funnel Shows Odds Of Becoming A Unicorn Are About 1%*, CB INSIGHTS (Sept. 6, 2018), <https://www.cbinsights.com/research/venture-capital-funnel-2/> [https://perma.cc/SB7C-53F7]. Seed-round capital is the first of several rounds of funding for a startup to become an established business. Carol M. Kopp, *Seed Capital*, *INVESTOPEDIA* (Apr. 16, 2019), <https://www.investopedia.com/terms/s/seedcapital.asp> [https://perma.cc/86F2-7AAA].

³ CB INSIGHTS, *supra* note 2.

patents as a means to signal the value of their technology and inventiveness to potential investors or acquirers. Startups are also more susceptible to the looming threat of demands made by patent assertion entities (PAEs).⁴

Startups that obtain patents experience a number of benefits, including increased growth in employment and sales over the following five-year period, as well as increased quantity and quality of subsequent patents granted.⁵ It is not surprising that the totality of these benefits are pushing one-third of startups to file a patent application at some point during their lifetime.⁶ This fact alone is not necessarily bad; however, given the current patent ecosystem, patenting startups can inadvertently contribute to the clog in the innovation pipeline.

The broader literature⁷ has discussed the challenges faced by startups individually, but this Note brings them all together in what I refer to as the “vicious patent cycle.” This cycle, put simply, is a phenomenon where startups are incentivized to patent early to signal their value, but because nine-out-of-ten startups fail, many of these startups ultimately create negative externalities, e.g., adding to the “patent thicket”⁸ and selling patents to PAEs. In turn, the patent thicket and PAE portfolios grow, making it increasingly more difficult for startups to break into a technology space and remain operational. The cycle is inevitably a product of the patent ecosystem, and unfortunately, the current patent regime is not well suited to intervene. Left unchecked, the problems in the startup industry will continue to worsen as more and more patents are left unused or end up in the wrong hands. In response, I present a new type of patent called the small business

⁴ Robin Feldman & Evan Frondorf, *Patent Demands and Initial Public Offerings*, 19 STAN. TECH. L. REV. 52, 55 (2015). The terms “patent assertion entity,” “non-practicing entity,” and “patent troll” are often used synonymously, but at the end of the day, these terms refer to “any entity or individual whose core business involves licensing or litigating patents rather than making products.” *Id.* Patent demands are “letters indicating that the recipient may be infringing a patent and demanding a license fee, threats of litigation, or lawsuits.” Robin Feldman, *Patent Demands & Startup Companies: The View from the Venture Capital Community*, 16 YALE J.L. & TECH. 236, 238 n.2 (2014).

⁵ Joan Farre-Mensa, Deepak Hegde & Alexander Ljungqvist, *What is a Patent Worth? Evidence from the U.S. Patent “Lottery”*, 75 J. FIN. 639, 641 (2020).

⁶ Leonid Kravets, *Do Patents Really Matter to Startups? New Data Reveals Shifting Habits*, TECHCRUNCH (June 21, 2012), <http://techcrunch.com/2012/06/21/do-patents-really-matter-to-startups-new-data-reveals-shifting-habits/> [https://perma.cc/883Y-VFPB]. These numbers can be significantly higher depending on the specific industry. For example, patenting by startups, specifically in the software and biotechnology industries, is at least correlated with greater total number of financing rounds, greater total investment, and firm longevity. Ted Sichelman & Stuart J.H. Graham, *Patenting by Entrepreneurs: An Empirical Study*, 17 MICH. TELECOMM. & TECH. L. REV. 111, 122 (2010).

⁷ Colleen V. Chien, *From Arms Race to Marketplace: The Complex Patent Ecosystem and Its Implications for the Patent System*, 62 HASTINGS L.J. 297 (2010) [hereinafter Chien, *From Arms Race*]; Feldman & Frondorf, *supra* note 4.

⁸ “Patent thickets” are large groups of patents that block innovators from performing research, development, and commercialization. Sichelman & Graham, *supra* note 6, at 141.

commercialization patent (SBCP) as a solution to break the cycle. The SBCP uses the commercialization patent envisioned by Ted Sichelman⁹ as a starting point but further develops it to address the unique challenges faced by the startup industry. The SBCP, which grants its holder the affirmative right to make and sell the patented invention, would give startups a path to circumvent the patent thicket, while at the same time effectively disarming patent trolls. SBCPs would also act as effective signals of a startup's value and provide investors with more certainty around their investments, which could lead to more investment activity. Overall, the SBCP has the potential to decrease the rate at which startups are failing.

Startups are an important engine for innovation, and they deserve a more effective form of intellectual property protection. With the startup industry growing, and the outlook improving over previous years,¹⁰ startups will continue to play a vital role in pushing us through the twenty-first century. Thus, it is imperative that we create the type of ecosystem which allows startups to freely operate and focus on what they do best—innovate.

I. THE PATENT ECOSYSTEM

Before diving into the startup industry, it is important to understand the forces at play in today's patent ecosystem. The twenty-first century patent ecosystem was largely shaped by three interrelated phenomena: the "patent arms race," the patent marketplace, and the rise of PAEs. The patent arms race—the building up of a patent arsenal by technology companies—exponentially increased the number of patents filed and granted, many of which were of lower quality and uncommercializable. The patent marketplace—a secondary market where patents are bought, sold, and traded—gave companies the opportunity to monetize their unused, lower-quality patents.¹¹ Through the marketplace, PAEs began to build their own patent portfolios, but with the goal of asserting them against practicing entities to extract settlement moneys and licensing royalties. In the following sections, I will provide some background on the patent arms race, the patent marketplace, and the rise of PAEs. However, as you read, keep in mind that these three phenomena are interrelated forces that developed concurrently in time.

⁹ Ted Sichelman, *Commercializing Patents*, 62 STAN. L. REV. 341 (2010).

¹⁰ *2018 Startup Outlook US Report*, SILICON VALLEY BANK, <https://www.svb.com/trends-insights/reports/startup-outlook/startups-enter-2018-with-confidence-about-innovation-economy/2018-startup-outlook-report-us-report/> [https://perma.cc/6LQ4-2TEF].

¹¹ Chien, *From Arms Race*, *supra* note 7, at 303–04, 310, 339.

A. *The Patent Arms Race*

The patent arms race was the exponential increase of defensive patenting¹² activity by high-tech firms around the turn of the century.¹³ One of the earliest users of defensive patenting was Ford Motor Company which sought to reduce the risk of being sued and to obtain the freedom to operate within the automotive space.¹⁴ The more aggressive, modern-day practice of defensive patenting emerged as a result of a few individual companies.

In the 1980s and 1990s, Texas Instruments and IBM amassed considerable patent portfolios and monetized them through licensing and litigation campaigns, “‘setting off . . . a chain reaction’ in the software industry and usher[ing] in a new era of software patenting and licensing.”¹⁵ Companies that were on the receiving end of patent infringement lawsuits and cross-licensing programs began patenting anything and everything in an effort to develop their own patent arsenals.¹⁶ And thus began the patent arms race. Cross-licensing negotiations became a “stack-measuring contest” where the winner was determined solely on the quantity of patents as opposed to evaluating each patent for its substance.¹⁷ In a patent battle between Kodak and Polaroid, Kodak paid over \$1.6 billion in damages and was forced to shut down its instant camera business at a cost of another \$1.5 billion. The settlement demonstrated the full extent of the risks and rewards that can flow from defensive patenting.¹⁸

B. *The Patent Marketplace*

While the patent arms race was raging on, another phenomenon was developing in the background: the patent marketplace (also referred to as “secondary markets”). The patent arms race led companies to acquire patents that “cover[ed] smaller, more incremental inventions, which [were] further removed from the company’s core operations and represent[ed] inventions with limited commercialization potential,” resulting in the accumulation of

¹² “Defensive patenting” is the practice of filing patents in order to prevent others from entering a technology space, to obtain access to the technology of others through cross-licensing deals, and to neutralize patent infringement lawsuits. *Id.* at 308. While defensive patents do not offer any actual legal defense, they can be used to bring counterclaims in response to a patent infringement suit with the goal of both parties dropping the suit to end a stalemate. James M. Rice, *The Defensive Patent Playbook*, 30 BERKELEY TECH. L.J. 725, 731 (2015).

¹³ Chien, *From Arms Race*, *supra* note 7, at 303–04.

¹⁴ *Id.* at 303.

¹⁵ *Id.* at 305–06.

¹⁶ *Id.* at 306.

¹⁷ *Id.* at 308.

¹⁸ *Id.* at 306–08.

“low-quality” patents.¹⁹ Not wanting to maintain a large number of these patents, companies looked to the patent marketplace as a means to dispose of them.²⁰ Jerome Lemelson, an independent inventor, and Intellectual Ventures, a patent holding company, earned massive sums of money by asserting, rather than commercializing, the patents they acquired, which raised awareness of the opportunities offered by the patent marketplace.²¹ The proliferation of PAEs in the 2000s created a new class of active buyers eager to follow in the footsteps of Lemelson and Intellectual Ventures.²² Since the 2000s, NPEs have collectively purchased as much as 90% of the patents sold in public auctions, with a single entity, Intellectual Ventures, accounting for 75%.²³ With the supply of and demand for patents high, the marketplace continued to grow, maturing into the state it is in today.

C. Rise of the Patent Assertion Entity

PAEs are a subset of non-practicing entities (NPEs) which obtain patents without any intention to practice the patents or release them into the public domain.²⁴ PAEs assert their patent portfolios through litigation or the threat of litigation against operating companies that are currently practicing or will in the future practice the patent being asserted.²⁵

PAE activity has grown substantially during the twenty-first century, especially over the past decade.²⁶ In 2007, PAEs filed 25% of patent lawsuits, jumping to 60% in 2012.²⁷ Their emergence followed in the wake of the dot-com bubble-burst and dramatically altered the patent landscape.²⁸ During the 1990s and 2000s, tech startups accumulated patents as a means to secure venture capital funding and to prolong incubation periods.²⁹ When the bubble burst in the early 2000s, failed startups and other tech companies auctioned off their patents in secondary markets.³⁰ PAEs that acquired these patents

¹⁹ *Id.* at 339.

²⁰ *Id.* at 313–14.

²¹ *Id.* at 311–13.

²² *Id.* at 311.

²³ *Id.* at 314.

²⁴ Kristin Garr, *IP Protection for Startups: The Role of Legislation in Stopping Patent Trolls and Encouraging Innovation*, B.C. INTEL. PROP. & TECH. F., Aug. 30, 2018, at 1, 4, <http://bciprf.org/wp-content/uploads/2018/08/Kristin-Garr-S18.pdf> [<https://perma.cc/J4KE-RSML>].

²⁵ *Id.*

²⁶ FED. TRADE COMM’N, PATENT ASSERTION ENTITY ACTIVITY: AN FTC STUDY 55 (2016), https://www.ftc.gov/system/files/documents/reports/patent-assertion-entity-activity-ftc-study/p131203_patent_assertion_entity_activity_an_ftc_study_0.pdf [<https://perma.cc/R633-DQN4>].

²⁷ Feldman, *supra* note 4, at 238.

²⁸ Rice, *supra* note 12, at 737.

²⁹ *Id.* at 738.

³⁰ *Id.*

would then use them to threaten patent infringement litigation against productive companies.³¹ PAEs predominately assert weak claims through “nuisance suits,”³² and by exploiting the high cost of litigation and defendants’ desire to settle as quickly as possible, they can force licensing agreements or monetary settlements.³³

II. STARTUPS ARE INCENTIVIZED TO PATENT IN THE FACE OF UNIQUE CHALLENGES

An estimated 90 to 95% of startups fail, with a majority of them doing so after their fourth year when investors cease funding.³⁴ Shikhar Ghosh conducted a study of 2,000 companies that received at least \$1 million in venture funding between 2004 and 2010.³⁵ He found that 75% of venture-backed companies never returned cash to their investors, with 30 to 40% of them liquidating their assets and investors losing everything.³⁶ There are many reasons why a startup fails, but the reason that tends to appear at the top of the list is running out of money.³⁷ Thus, startups are incentivized to patent early as a means of signaling their value to potential investors, in hopes of securing additional funding or to attract potential acquirers.

A. Venture Capital Fundraising Incentivizes Patenting for Signaling Purposes

Startups are incentivized to patent early to increase their access to funding.³⁸ The “signaling theory” of patent law suggests that patents play an important role in signaling the value of a firm’s technology and inventiveness.³⁹ Patents are considered effective signals in the context of

³¹ Chien, *From Arms Race*, *supra* note 7, at 312.

³² Rice, *supra* note 12, at 738.

³³ *Id.* at 739.

³⁴ Deborah Gage, *The Venture Capital Secret: 3 Out of 4 Start-Ups Fail*, WALL ST. J. (Sept. 20, 2012, 12:01 AM), <https://www.wsj.com/articles/SB10000872396390443720204578004980476429190> [<https://perma.cc/FYQ8-LKAH>].

³⁵ *Id.*

³⁶ *Id.*

³⁷ *The Top 20 Reasons Startups Fail*, CB INSIGHTS (Nov. 6, 2019), <https://www.cbinsights.com/research/startup-failure-reasons-top/> [<https://perma.cc/2D2Y-NL6W>].

³⁸ See Bronwyn H. Hall, *Is There a Role for Patents in the Financing of New Innovative Firms?*, 28 INDUS. & CORP. CHANGE 657, 670 (2019).

³⁹ Sichelman & Graham, *supra* note 6, at 113; see Clarisa Long, *Patent Signals*, 69 U. CHI. L. REV. 625, 653 (2002) (positing patents may be used to signal quality of a start-up); see also Mark Lemley, *Reconceiving Patents in the Age of Venture Capital*, 4 J. SMALL & EMERGING BUS. L. 137, 143–44 (2000) (discussing patents’ increasing use as financing tools with the advent of VC financing and VCs’ “love-hate relationship” with patents).

startup financing because they reduce the information asymmetry between investors and entrepreneurs by conveying three pieces of important information.⁴⁰ First, a patent's specification and claims reveal a wealth of information that is otherwise unobtainable: how to make and use the invention, the best mode of practicing the invention, and how the invention is novel and nonobvious.⁴¹ Second, because patents are relatively costly for startups, they signal positive attributes about the startup that are difficult to mimic by firms without such positive attributes.⁴² Third, as a result of the patent application and review process, information contained in patents tends to be credible, which reduces investors' verification costs.⁴³

In practice, patenting positively correlates to certain firm characteristics and it plays a valuable signaling role in the early stages of a startup. The number of patents a firm owns has been correlated to a firm's knowledge capital, productivity of R&D spending, innovativeness, and value.⁴⁴ Several studies have reported these effects, especially among startup and early-stage companies seeking to use patents to attract financing events and to improve their chances of being acquired or going public.⁴⁵ VCs view patents and patent applications as evidence that the firm is "well managed, is at a certain stage in development, and has defined and carved out a market niche."⁴⁶ Patenting activity by startups is correlated to better performance and an increased likelihood of success.⁴⁷ An empirical study examining VC-backed companies in the U.S. from 1976 through 2005 found that 31.5% of patenting startups were successful in completing an IPO, whereas only 7.2% of non-patenting startups were so.⁴⁸ Furthermore, only 5.6% of patenting startups, compared to 14.2% of non-patenting startups, filed for bankruptcy.⁴⁹ Additionally, startups with patents receive more investments and have longer incubation periods compared to startups that do not patent.⁵⁰

40 Jerry Cao & Po-Hsuan Hsu, *The Informational Role of Patents in Venture Capital Financing* 1 (June 8, 2011) (unpublished manuscript), <http://ssrn.com/abstract=1678809> [<https://perma.cc/LY9Y-3YV4>].

41 Long, *supra* note 39, at 647.

42 *Id.* at 648.

43 *Id.* at 649.

44 *Id.* at 652.

45 Sichelman & Graham, *supra* note 6, at 113.

46 Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1505–06 (2001).

47 Cao & Hsu, *supra* note 40, at 3.

48 *Id.*

49 *Id.*

50 *Id.* at 9–10.

B. *The Current Patent System Favors the Inventor Who Files First*

To make matters worse, the U.S. patent system not only permits inventors to file early, but it also incentivizes them to do so. The current patent laws do not require *actual* reduction to practice—the act of making the invention “exist in real space, and showing that it works.”⁵¹ Instead, the U.S. Patent and Trademark Office (USPTO) allows inventions to be *constructively* reduced to practice when it meets the disclosure requirements in 35 U.S.C. § 112, which only requires that the inventor “adequately describe, enable, and convey the best mode of the invention[.]”⁵² The shift from *actual* to *constructive* reduction to practice effectively removed a barrier, e.g., having a working prototype, that previously prevented premature patenting.⁵³ Furthermore, the Leahy-Smith America Invents Act, which went into effect March 16, 2013, shifted the U.S. patent system from a “first-to-invent” to a “first-to-file” approach. The first-to-file system grants the patent to the inventor who races to the USPTO and files for the patent first, placing an even greater emphasis on patenting early compared to its first-to-invent predecessor. Issues with early patenting are further exacerbated by the tendency of the USPTO to grant patent claims that greatly exceed the scope of the patent’s disclosure, giving the patentee a broad exclusionary right and the ability to block inventions that are “far removed from the disclosed invention.”⁵⁴

III. STARTUPS ARE CREATING NEGATIVE EXTERNALITIES FOR INNOVATION

There is no doubt that startups are pushing the envelope and have an overwhelmingly net positive effect on innovation. However, in their pursuit of innovation, startups can inadvertently create negative externalities that perpetuate the vicious patent cycle. It is important to understand what these negative externalities are and how they are created, so that their impact may be curtailed or avoided altogether.

A. *The Threat of PAEs and the Startup Industry*

PAEs are a major player in the vicious patent cycle and impact the startup industry. Startups are particularly susceptible to the threat of a patent lawsuit and PAEs are aware of this fact. A staggering 75% of defendants in

51 Christopher A. Cotropia, *The Folly of Early Filing in Patent Law*, 61 HASTINGS L.J. 65, 73 (2009).

52 *Id.*; see also 35 U.S.C. § 112(a) (2018).

53 Cotropia, *supra* note 51.

54 Sichelman, *supra* note 9, at 350.

PAE suits are privately held companies,⁵⁵ and more than half of defendants make less than \$10 million in revenue per year.⁵⁶ As a comparison, startups make up only 16% of the defendants when the suing entity is operational, which leads to the inference that PAEs are selectively targeting startups at a disproportionately high rate.⁵⁷ These statistics are corroborated by survey results revealing that 59% of VCs and 66% of startup companies reported that all or most of the patent demands they received come from “entities that license or litigate patents as their core activity.”⁵⁸ Overall, 70 to 75% of VCs reported that PAEs have threatened litigation against one of their portfolio companies.⁵⁹

Startups, especially those in the early stages, are not equipped to deal with PAE demands for various reasons. For one, startups lack the necessary resources and experience to analyze patent validity or infringement claims within the context of a patent demand.⁶⁰ Second, PAEs can often point to other firms that have settled on a similar demand, which creates precedent and adds a presumption of validity to their claim.⁶¹ Third, PAEs strategically target startups during critical phases in their lifecycle, e.g., prior to a funding event or an IPO, to force a quick settlement.⁶² Fourth, PAEs hold hundreds, if not thousands, of patents, compared to the handful of patents (if any) that a startup may have.⁶³ Lastly, PAEs leverage the high cost of litigation to force smaller firms to choose the more rational and less costly option to settle outside of court.⁶⁴

Settle, fight, or do nothing—a startup is financially burdened by PAE demands no matter what they do. For example, the cost of defending against a patent demand ranged from \$168,000 to \$857,000, depending on whether the startup decided to fight inside or outside of the courtroom, and the cost of settling was an average of \$340,000.⁶⁵ Adding in the fact that the median seed-round deal size was \$350,000, and half of startups never move past the

⁵⁵ Nathaniel Borenstein, *More Patent Trolls Are Targeting Startups. Here's What You Can Do.*, ENTREPRENEUR (Apr. 10, 2018), <https://www.entrepreneur.com/article/310648> [<https://perma.cc/7DXP-485Q>].

⁵⁶ Colleen Chien, *Startups and Patent Trolls*, 17 STAN. TECH. L. REV. 461, 464 (2014) [hereinafter Chien, *Startups and Patent Trolls*].

⁵⁷ *Id.*

⁵⁸ Feldman, *supra* note 4, at 242–43.

⁵⁹ *Id.*

⁶⁰ Neal S. Vickery, *Don't Forget About the Little Guys: Trolls, Startups, and Fee Shifting*, 13 COLO. TECH. L.J. 171, 177–78 (2015).

⁶¹ *Id.* at 178.

⁶² *Id.*

⁶³ Chien, *Startups and Patent Trolls*, *supra* note 56, at 466.

⁶⁴ Borenstein, *supra* note 55.

⁶⁵ Chien, *Startups and Patent Trolls*, *supra* note 56, at 465.

seed stage,⁶⁶ the following inference can be drawn: settling the average demand from a PAE, which is \$340,000, is almost enough to bankrupt half of the startups that raised seed-round funding. Fast-forward to the second-quarter of 2018, the average and median size of seed-stage deals was \$600,000.⁶⁷ Even with the growth of VC deals, at least half of startups would lose over half of their seed funding when settling a patent demand.⁶⁸

PAEs' demands have other undesirable side-effects, such as negatively impacting the productivity of startups and deterring potential investors. Colleen Chien's survey of seventy-nine startups that had received a patent demand revealed that 40% experienced a significant impact which resulted in outcomes such as a business strategy pivot, a product change, or a delay in hiring or meeting operational milestones.⁶⁹ Patent demands also hurt startups indirectly by signaling a risky investment to investors. In a study conducted by Robin Feldman, every VC surveyed indicated that the mere presence of a patent demand on a startup could potentially be a deterrent in deciding whether to invest in that company.⁷⁰ About half of the respondents indicated that it would be a major deterrent on its face, and the other half indicated that their decision to invest would depend on the particular circumstances.⁷¹ After all, "no one wants to invest in a company where . . . investor money is going to be 'bled to patent trolls.'"⁷² PAEs are a serious threat to startups because they have the potential of shutting them down with one fell swoop. At a minimum, a looming patent demand is a distraction that diverts limited resources away from productive activities, such as R&D, and creates a drain on innovation.⁷³

B. *The Vicious Patent Cycle*

Once issued a patent, there are multiple ways in which a startup can monetize it. The most obvious is to commercialize the patented invention under the benefits of a limited monopoly. Less conventional methods for patent monetization include selling patents to third parties and asserting

⁶⁶ CB INSIGHTS, *supra* note 2.

⁶⁷ Jason D. Rowley, *Inside The Global Q2 2018 Venture Market: New Records and Titanic Late-Stage Rounds*, CRUNCHBASE NEWS (July 9, 2018), <https://news.crunchbase.com/news/inside-the-global-q2-2018-venture-market-new-records-and-titanic-late-stage-rounds/> [https://perma.cc/NGM5-7ADE].

⁶⁸ This analysis uses litigation and settlement costs from 2014, so the results are likely conservative given that it is likely these costs have increased since 2014.

⁶⁹ Chien, *Startups and Patent Trolls*, *supra* note 56, at 474.

⁷⁰ Feldman, *supra* note 4, at 243.

⁷¹ *Id.*

⁷² Chien, *Startups and Patent Trolls*, *supra* note 56, at 474.

⁷³ *See id.*

patents against other practicing entities (or, in other words, behaving as a “patent troll”). In either scenario, patents which were initially acquired for signaling purposes later become weapons used offensively against other practicing entities.⁷⁴

Startups, like their more-established counterparts, are active in secondary markets.⁷⁵ Secondary markets offer small and medium-sized companies the ability to “license, license and sell back, securitize or sell their patents” when no other options for liquidity are available.⁷⁶ According to Chien’s survey of Acacia and Intellectual Ventures, less than 15% of the patentees profiled on their websites were connected to practicing entities.⁷⁷ This finding suggests that a significant portion of PAE patent portfolios were acquired from “distressed corporations” and “failed corporations.”⁷⁸ For a failed startup, a patent asset may offer residual value to investors and a means through which they can recoup their investment.⁷⁹ A study of 285 failed startups in the software, semiconductor, and medical device industries between 1998 and 2008 revealed that nearly 70% of the issued patents were sold on secondary markets within five years of an exit.⁸⁰ A large majority of the 1,766 total patents sold were acquired by operating companies and approximately 10% were bought by non-practicing entities.⁸¹ Recent data revealed that among the top ten buyers, NPEs bought nearly 75% of the 2,810 patents sold during the third-quarter of 2018.⁸²

A once hopeful startup may, for a multitude of reasons, forego its original plan to commercialize a product and instead behave like a patent

⁷⁴ Chien, *From Arms Race*, *supra* note 7, at 313–15; *see also* Colleen Chien, *Patent Assertion and Startup Innovation*, NEW AM. 47–48 (Sept. 5, 2013), [hereinafter Chien, *Patent Assertion*] https://static.newamerica.org/attachments/3894-patent-assertion-and-startup-innovation/Patent%20Assertion%20and%20Startup%20Innovation_updated.62ca39039688474e9a588fc7019b0dde.pdf [https://perma.cc/P9WR-FKGG]. In an interview, an anonymous private equity investor stated that two of his companies sold patents to PAEs, with one of them being on the receiving end of three lawsuits from PAEs. Chien, *Patent Assertion*, *supra*. Realizing the opportunity to bring in resources to the company, he periodically sold or licensed patents to different litigation entities. *Id.* Ironically, one of the litigations his company faced was from a PAE that acquired a patent from one of his other portfolio companies. *Id.*

⁷⁵ Chien, *From Arms Race*, *supra* note 7, at 314.

⁷⁶ Chien, *Startups and Patent Trolls*, *supra* note 56, at 468.

⁷⁷ *Id.* at 480.

⁷⁸ *Id.*

⁷⁹ *Id.* at 466.

⁸⁰ Carlos J. Serrano & Rosemarie Ziedonis, *How Redeployable Are Patent Assets? Evidence from Failed Startups* 22–23 (Nat’l Bureau of Econ. Research, Working Paper No. 24526, 2018).

⁸¹ *Id.* at 24–25 (NPEs acquired 17% and 18% for patents in the software and semiconductor industry, respectively).

⁸² Richard Lloyd, *US Patent Sales Jump, with Samsung, InterDigital and Fortress Among Those Leading the Way*, AST (Jan. 7, 2019), https://www.ast.com/news_article/us-patent-sales-jump-with-samsung-interdigital-and-fortress-among-those-leading-the-way/ [perma.cc/QSJ6-KPBQ].

troll. As discussed earlier, inventors are incentivized to file for patents early in the invention cycle, which results in uncommercializable patents. Christopher Cotropia theorizes that because the cost of commercialization is so high, and the likelihood of success is uncertain, the holder of an uncommercializable patent is likely to take the lower-cost option of asserting the patent.⁸³ There are also fewer risks with litigation, the only downsides being having to pay attorney's fees and the possibility of invalidating a patent with little commercial value to begin with.⁸⁴ The advantages with pursuing the patent troll route "prompts more patent holders to exercise their patent options by asserting the patent in litigation as opposed to commercializing."⁸⁵ In reality, only 0.1% and 0.6% of patent litigations between 2000 and 2015 were filed by pre-product startups and failed startups, respectively.⁸⁶ While this route of patent monetization appears to be less prevalent, it is nonetheless creating a tax on innovation.

IV. A SOLUTION FOR STARTUPS

In this section, I will introduce the concept of a commercialization patent, as envisioned by Ted Sichelman, and highlight its benefits to the startup industry. Then, I will propose a modified form of the commercialization patent, the small business commercialization patent (SBCP), and illustrate how it could be the ideal form of intellectual property protection for startups.

A. *The Commercialization Patent*

An issue with the current patent system is that it rewards the inventor who is quick to file but not necessarily the best commercializer. Ultimately, this leads to a reality where less than half of all patented inventions in the U.S. are commercialized.⁸⁷ If the goal of the patent system is to spur innovation and create new technologies, then there seems to be a gap

⁸³ Cotropia, *supra* note 51, at 113–14.

⁸⁴ *Id.* at 114.

⁸⁵ *Id.*

⁸⁶ Shawn Miller, *Stanford NPE Litigation Database*, STAN. L. SCH., <https://law.stanford.edu/projects/stanford-npe-litigation-dataset/#slnav-brief-dataset-methodology> [perma.cc/ZQW6-SKVS].

⁸⁷ Sichelman, *supra* note 9, at 362; *see also* Daniel Fisher, *The Real Patent Crisis is Stifling Innovation*, FORBES (June 18, 2014), <https://www.forbes.com/sites/danielfisher/2014/06/18/13633/#640dcffe6f1c> [perma.cc/ZQZ7-3RRZ] (in 2014, 95% of the 2.1 million active patents were not licensed or commercialized); Stephen Key, *In Today's Market, Do Patents Even Matter?*, FORBES (Nov. 13, 2017), <https://www.forbes.com/sites/stephenkey/2017/11/13/in-todays-market-do-patents-even-matter/#40d2eded56f3> [perma.cc/EB3E-TA7Y] (approximately 97% of all patents never recover the cost of filing them).

between acquiring patents and commercializing the technology disclosed within them. The current startup business model encourages inventors to file for patents early. As a result, an invention is usually not at a point where it is market-ready and its commercial success continues to remain highly uncertain.⁸⁸ To commercialize a product past the point of merely obtaining a patent, startups must take on additional costs and risks to transform the invention into a viable product.⁸⁹

Ted Sichelman proposed the concept of a commercialization patent, which is a patent granted in exchange for a commitment to commercialize a novel product.⁹⁰ Unlike traditional patents, commercialization patent claims are limited to the product disclosed in the specification (including substantial equivalents), which cures the issue—generally associated with traditional patents—where filing early can result in a disparity between what is disclosed in the patent and what is embodied in the final invention.⁹¹

To properly spur the productivity envisioned by Sichelman, the patent grants its holder the affirmative right to make and sell the product in addition to the “negative right to exclude others from making and selling the same” or a substantially equivalent product.⁹² The affirmative right is a key difference that distinguishes commercialization patents from traditional patents. Without the affirmative right, commercialization patents fail to offer any advantages over traditional patents. However, the affirmative right is not infinite, as it only grants immunity to injunctive relief.⁹³ Traditional patent holders can still seek remedy in the form of “low, but fairly reasonable, fixed royalt[ies].”⁹⁴ To further mitigate some of the harsh consequences of granting an affirmative right, Sichelman suggests that a commercialization patent can only be filed after a traditional patent goes uncommercialized for a period of three years after issuance.⁹⁵ This period of time, which I will refer to as the “grace period,” is intended to provide sufficient lead-time and a strong incentive for a traditional patent holder to commercialize the invention as quickly as possible.⁹⁶

Commercialization patents could be beneficial to the startup industry for two reasons. First, commercialization patents would remove the threat and uncertainty of high-cost litigation, leaving PAEs with only one remedy

⁸⁸ Sichelman, *supra* note 9, at 343.

⁸⁹ *Id.*

⁹⁰ *Id.* at 345.

⁹¹ *Id.* at 346, 350.

⁹² *Id.* at 346.

⁹³ *See id.*

⁹⁴ *Id.*

⁹⁵ *Id.* at 345, 406.

⁹⁶ *Id.*

in the form of a low, fixed royalty. Second, compared to traditional patents, commercialization patents would act as stronger signals of the value of a startup, which may result in more investments and higher dollar amounts per investment.

B. Commercialization Patents Would Effectively Disarm Patent Assertion Entities

Even in the post *eBay* world, the threat of litigation continues to exist, though it has been curtailed.⁹⁷ The threat of a patent demand continues to exist because permanent injunctions are not entirely off the table as courts still “may grant such relief.”⁹⁸ In 2013, two-thirds of all permanent injunction requests were granted, which was down from nearly 100% prior to *eBay*.⁹⁹ PAEs, specifically, were granted permanent injunctions 16% of the time.¹⁰⁰ While this number is lower, it proves that *eBay* was not a complete solution to the threat of PAEs. In certain industries, e.g., biotechnology, the granting of permanent injunctions is certain, which suggests that things may not have changed at all for biotechnology startups.¹⁰¹ What’s more, the Supreme Court did not offer any guidance on how to apply the four-factor test, so courts have applied it differently, leading to inconsistent results across districts.¹⁰² As a result, this could lead PAEs to forum shop for districts that are more likely to rule in their favor, which may diminish some of the good created by *eBay*.¹⁰³

As noted earlier, a commercialization patent grants its holder an affirmative right to practice the invention and immunity to permanent injunctions. With the implementation of a reasonably low, fixed royalty as the only remedy, commercialization patent holders no longer have to fear the threat of litigation. The trade-off for such immunity is losing a small percentage, e.g., 1–2%, of future revenue.¹⁰⁴ However, because of the time-bound limitations of the commercialization patent, startups will continue to be vulnerable to patent demands during the three-year grace period

⁹⁷ See *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006). The Supreme Court did away with the automatic granting of permanent injunctions in patent infringement cases, holding that a four-factor test must be applied, and the ultimate determination is based in equity. *Id.* at 391–93.

⁹⁸ *Id.* at 391.

⁹⁹ Christopher B. Seaman, *Permanent Injunctions in Patent Litigation After eBay: An Empirical Study*, 101 IOWA L. REV. 1949, 1983–84 (2016).

¹⁰⁰ *Id.* at 1988. The 16% represents four out of twenty-five cases surveyed. *Id.*

¹⁰¹ *Id.* at 1985.

¹⁰² Holly Forsberg, *Diminishing the Attractiveness of Trolling: The Impacts of Recent Judicial Activity on Non-Practicing Entities*, 12 PITT. J. TECH. L. & POL’Y 1, 18 (2011); Seaman, *supra* note 99, at 1986.

¹⁰³ Forsberg, *supra* note 102.

¹⁰⁴ Sichelman, *supra* note 9, at 346.

associated with traditional patents. Keeping in mind that the grace period starts at the point of the patent's issuance, PAEs may not have much runway to assert their patents because they acquire their patents second-hand, after the clock has started ticking.

C. Commercialization Patents Can Lead to More Investments and Larger Investment Amounts in the Startup Industry

A commercialization patent would have the added benefit of serving as a strong signal of a startup's value and potential for success. The primary reason investors decide to forego investing in novel technologies is the "high level of risk and *uncertainty* involved in developing and marketing such innovations. . . ." ¹⁰⁵ A study conducted by Stephen Kiebzak et al. estimated that VC investment in new technologies and startups would have been \$21 billion higher between the years 2008 and 2012 had it not been for patent litigation brought by frequent litigators, or in other words, PAEs. ¹⁰⁶

Furthermore, the fixed royalty proposed by Sichelman would grant a great deal of predictability. The inherent uncertainty in the current regime can lead to added transactional costs during patent disputes, such as costs associated with determining the boundaries of patent claims and the valuation of novel technologies not yet on the market. ¹⁰⁷ Furthermore, opportunistic behavior of PAEs results in higher royalties rates, which reduces the chance of startups making enough profits to attract investors. ¹⁰⁸ Commercialization patents with a pre-determined, fixed remedy would eliminate the need for strategic negotiations and the bargaining of licensing terms. Investors would be able to account for the cost of the fixed royalty and factor it into their investment decisions like any other operating expense. Thus, reducing any risks associated with the startup industry could lead to favorable outcomes during fundraising.

D. The Small Business Commercialization Patent is a Tailored Solution for the Startup Industry

In this section, I will introduce the SBCP, a modified version of the commercialization patent which is tailored to the startup industry and entrepreneurs. Specifically, I will discuss the "small business" threshold, the "exclusivity period," and transferability of the SBCP. The goal of the SBCP is to further innovation, while preventing abuses of the system and the

¹⁰⁵ Camilla A. Hrdy, *Commercialization Awards*, 2015 WIS. L. REV. 13, 43 (2015) (emphasis added).

¹⁰⁶ Stephen Kiebzak, Greg Rafert & Catherine E. Tucker, *The Effect of Patent Litigation and Patent Assertion Entities on Entrepreneurial Activity*, 45 RES. POL. 218, 229 (2016).

¹⁰⁷ Hrdy, *supra* note 105, at 46.

¹⁰⁸ Kiebzak et al., *supra* note 106, at 220.

creation of negative externalities. With the right balance of parameters, SBCPs could be a viable solution.

1. *The Small Business Threshold*

First and foremost, the SBCP is intended to incentivize startups and entrepreneurs to commercialize novel inventions under the protection of a short-term duopoly. However, without limitations, large, well-established companies might take advantage of the system and eliminate its potential benefits. Thus, I propose implementing a small business threshold as a requirement for the grant of a SBCP. The guidelines for what constitutes small business should be prescribed by the USPTO and could include any of several parameters such as revenue, number of employees, number of funding rounds, value of the business, or age of the business.¹⁰⁹ Such a requirement would ensure that only startups and other small businesses are able to enjoy the benefits of the affirmative right.

2. *Re-thinking the Negative Right*

It makes sense that the SBCP should come with some form of an exclusive right because without one, there would be less of an incentive to pursue a patent in the first place. However, the negative right contemplated by Sichelman may not be the best solution if the goal is to bring more novel products to the public in the most efficient manner possible. The negative right proposed by Sichelman allows the holder of a commercialization patent to prevent others from making and selling the same or a substantially similar product.¹¹⁰ After this term expires, the patent holder loses its right to exclude others but can continue in its affirmative right to make and sell the product.¹¹¹ Even with a shorter-term negative right compared with utility patents, the commercialization patent can still lead to clogs in the innovation pipeline by rewarding the patent to an inefficient commercializer and prolonging the timeline for the product reaching the market.

Instead, I propose an exclusivity period reminiscent of the 180 days of market exclusivity given to generic drug manufacturers that succeeds in paragraph IV Hatch-Waxman litigation.¹¹² Under the Hatch-Waxman Act,

¹⁰⁹ Tom Ireland, *Welcome to the Big Leagues: At What Point Are You No Longer a Startup?*, BUSINESS.COM (Dec. 14, 2015), <https://www.business.com/articles/at-what-point-are-you-no-longer-a-startup/> [<https://perma.cc/6DUY-E8WA>].

¹¹⁰ Sichelman, *supra* note 9, at 346. Sichelman proposes a standard term of five to eight years with the potential of longer terms for certain industries known to have longer commercialization timelines, e.g., pharmaceuticals. *Id.* at 346, 408.

¹¹¹ *See id.* at 346.

¹¹² *Small Business Assistance: 180-Day Generic Drug Exclusivity*, FDA (Feb. 11, 2016), <https://www.fda.gov/drugs/cder-small-business-industry-assistance-sbia/small-business-assistance-180-day-generic-drug-exclusivity> [<https://perma.cc/2BT4-PN3E>].

the first generic drug company that succeeds in filing a paragraph IV certification, challenging the validity or claiming the non-infringement of a listed patent, is given 180 days of market exclusivity to compete with the patent holder before other generic drug companies can enter the market.¹¹³ Following on this model, the exclusivity period for SBCP would be rewarded to the first startup that files for a SBCP after the grace period for a utility patent has lapsed. If granted, the startup would be given a set period during which the USPTO would not approve follow-on SBCP applications for the same product. In effect, the exclusivity period provides the first-mover commercializer with the advantage of getting short-term exclusivity on commercialization activities before losing the ability to block direct competition from other startups.

However, the exclusivity period would not prevent the holder of the original patent to compete with the first-mover. In actuality, this may incentivize the original patent holder to either make efforts to commercialize the invention themselves or license their rights to someone who is committed to commercializing it. After the SBCP exclusivity period ends, other commercializers would then be able to apply for a SBCP for the same product and compete directly with the first-mover. It is reasonable and expected that multiple commercializers will hold a SBCP for the same or a substantially similar product. This would lead to the best outcome for consumers, as multiple patent holders would be racing to the market first. Ultimately, this system rewards the most efficient and committed commercializer with first-to-market competitive advantages, such as brand recognition and consumer loyalty.¹¹⁴ Follow-on commercializations would then compete with the first-mover in the open market, which would drive the demand for more innovative, higher quality, and lower cost versions of the product. The duration of the exclusivity period still needs to be defined. Too short of an exclusivity period may not incentivize startups to pursue this route of intellectual property protection in the first place. On the other hand, too long of an exclusivity period runs the risk of the situation where the SBCP is granted to an inefficient commercializer (or a bad actor), which would delay the invention's commercialization.

3. *Transferability of SBCPs During an Exit*

For the subset of startups intending to stay operational, commercialization patents would guarantee a higher rate of success as a result of having the affirmative right to practice the invention and a limited

¹¹³ *Id.*

¹¹⁴ Evan Tarver, *First Mover Definition*, INVESTOPEDIA (Jan. 15, 2020), <https://www.investopedia.com/terms/f/firstmover.asp> [<https://perma.cc/7MWZ-6PXL>].

right to exclude competitors. For those seeking an exit through acquisition or sale of the patented invention, a SBCP could be a valuable asset to potential acquirers. A large firm whose goal through acquisition is to commercialize the startup's technology, would gain the benefit of a clear path to market. However, for the acquirer to capture the full benefit of SBCPs, both the patent itself and its associated rights must be transferrable with the technology.

The affirmative right associated with the SBCP would continue indefinitely throughout the life of the invention in the hands of the acquirer. With respect to the exclusivity period, there are two possible outcomes. If the exclusivity period, at the time of transferring the patent, had already expired, then the patent in the hands of the acquirer grants no exclusivity period. However, if the exclusivity period, at the time of transferring the patent, had not expired, then the clock should continue running in the hands of the acquirer after transfer. This is a reasonable outcome because the startup had realized a marketplace advantage during the time in which it previously held the patent and excluded competition. Presumably, this marketplace advantage was transferred to the acquirer upon transfer of the patent, so it follows that the amount of time counting towards the expiry of the exclusivity period should also be transferred.

Permitting such transfer of the SBCP could lead to favorable outcomes for consumers. Large companies, which are arguably better commercializers than startups, would further accelerate the entry of new products in the marketplace.

CONCLUSION

While the small business commercialization patent has the potential to stimulate innovation in the startup industry, there are still some details that would need to be further defined. For example, the SBCP patent claims would be limited to the specific product disclosed in the specification (including substantial equivalents). In implementing the SBCP, the USPTO should consider redefining the requirement of reduction to practice. However, if the requirement only necessitates constructive reduction to practice (the current regime), the patent system could potentially reward a SBCP to a commercializer who is not quite ready for market. This would create inefficiencies by delaying the commercialization of the product. On the other hand, if the requirement calls for a working prototype, it may be too onerous for startups in the early stages to satisfy, causing them to forego the potential benefits of the commercialization patent and instead opt for a utility patent. This raises another issue: while a startup is working towards a prototype—which may take years to achieve—it remains vulnerable to PAE

demands and without a signal to investors. One possible solution to bridge the gap is to establish a provisional application which is available to startups who have received a patent demand or are engaging with investors.¹¹⁵ In this way, the provisional application would act as a temporary defense mechanism and a showing of good faith.

Another issue to consider is that the SBCP may create some administrative burdens as the USPTO would have to expend resources on additional activities, such as assessing whether applicants meet the reduction to practice requirement and monitoring the exclusivity period for all active patents. Presumably, these are issues that could be alleviated by increasing the cost of filing, as already contemplated by Sichelman.¹¹⁶ Increasing the filing fee could also have the desirable effect of screening out inventors who may not be as committed to commercializing the product, and who would otherwise create a clog in the system by taking an opportunity away from the best commercializer.

Startups are an important engine for innovation in our society, and they face unique challenges that are not being addressed by our current patent regime. For the amount of innovation and novel products startups produce, they deserve a little more attention and care when it comes to intellectual property protection. The goal of this Note is not to solve the startup industry's problem overnight, but rather to point it out and stimulate discussions for re-thinking patenting strategies and patent reform.

¹¹⁵ See John Calvert, *The Provisional Patent Application: What You Need to Know*, USPTO (Dec. 3, 2019), <https://www.uspto.gov/learning-and-resources/newsletter/inventors-eye/provisional-patent-application-what-you-need-know> [<https://perma.cc/PM5W-YBEQ>].

¹¹⁶ Sichelman, *supra* note 9, at 409.