

**THE PATENT SYSTEM IS UNDER ASSAULT –
STARTUPS, SHOULD YOU CARE?
TEN THINGS ABOUT PATENTS THAT STARTUPS NEED TO CONSIDER**

*John R. Harris**

I.	INTRODUCTION	28
II.	THE NATURE OF THE ASSAULTS.....	29
III.	THE PATENT SYSTEM AND INNOVATION	32
IV.	TIME TO RETHINK PATENT STRATEGIES?.....	37
V.	TEN THINGS TO CONSIDER ABOUT PATENTS, DESPITE THE ASSAULTS	40
	A. <i>Enterprise Value Enhancement</i>	40
	B. <i>Signaling Quality to Investors and the Investment Community</i>	43
	C. <i>Establishing Ownership of Technology and Inventions</i>	44
	D. <i>Assertion Against Competitors</i>	46
	E. <i>Avoiding the IP of Competitors and Others</i>	47
	F. <i>Revenue Generation/Licensing/Monetization of IP</i>	47
	G. <i>Facilitating Collaborative Research</i>	49
	H. <i>If You Get the Patent, You Block the Competitors</i>	51
	I. <i>The Laws Will Change . . . Again</i>	53
	J. <i>Although Trade Secrecy and Copyright Offer Some Protection, There Is No Viable Alternative to Patents</i>	57
VI.	CONCLUSION	61

* © 2016 John R. Harris. John Harris is a Partner in the Technology/IP Group at Morris, Manning & Martin, LLP (Atlanta, GA) and a Registered Patent Attorney. John has a JD/MBA from Emory University 1979, and a BEE from Georgia Institute of Technology 1973. *The information presented in this article is for educational and informational purposes and is not intended to constitute legal advice. Readers should consult their professional advisor. Any opinions expressed within this article are solely the opinion of the author and not of Morris, Manning & Martin, LLP.*

I. INTRODUCTION

The U.S. patent system is under extreme assault. The emergence of “patent trolls” has brought attention to issues in the patent system from sectors of the economy that have rarely, if ever, dealt with patents.¹ The U.S. Supreme Court has muddied the waters on the patentability of computer-implemented and medical diagnostic method inventions, barring patents in entire industry sectors and increasing uncertainty about patents.² Congress passed a comprehensive patent reform bill in 2011—the America Invents Act (“AIA”)³—that was supposed to improve the U.S. patent system in a number of respects, yet only added complexity and uncertainty.⁴ The United States Patent and Trademark Office’s (“USPTO”) Patent Trial and Appeal Board (“PTAB”) has invalidated roughly 80% of patent claims⁵ in instituted proceedings known as *inter partes* reviews (“IPRs”), giving rise to the PTAB’s reputation as a patent “death squad.”⁶ And while the USPTO still receives record numbers of patent

¹ See MORGAN LEWIS & BOCKIUS LLP, ARE PATENT TROLLS NOW TARGETING THE ENERGY INDUSTRY? 2 (2014).

² See Rebecca S. Eisenberg, *Diagnostics Need Not Apply*, 21 J. SCI. & TECH. L. 1 (forthcoming 2015).

³ Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (codified as amended in scattered sections of 35 U.S.C.) (2011).

⁴ See, e.g., Donald Zuhn, *Legislation Introduced in House to Eliminate Uncertainty Regarding AIA Grace Period*, PATENT DOCS (Apr. 20, 2015), <http://www.patentdocs.org/2015/04/legislation-introduced-in-house-to-eliminate-uncertainty-regarding-aia-grace-period.html>.

⁵ See Theodore G. Baroody, *IPR’s Approaching Third Birthday*, CARSTENS & CAHOON, LLP (June 12, 2015), www.cclaw.com/blog/iprs-approaching-third-birthday/.

⁶ See Ashby Jones, *A New Weapon in Corporate Patent Wars*, WALL ST. J. (Mar. 10, 2014, 7:25 PM), <http://www.wsj.com/articles/SB10001424052702304020104579431393308282698> (“Randall Rader, [former] chief judge of the Federal Circuit, has been one of the [PTAB’s] most outspoken critics. At a conference of intellectual-property lawyers last fall [2013], the judge called the board’s panels ‘death squads . . . killing property rights.’”).

applications,⁷ it increasingly refuses to grant patents in certain industry sectors by relying on the AIA and recent Supreme Court decisions.⁸

II. THE NATURE OF THE ASSAULTS

Some of the major recent assaults⁹ on the patent system include:

Patent assertion entities (“PAEs”), also called “non-practicing entities” (“NPEs”), and pejoratively called “patent trolls,” have attracted widespread media attention for their perceived behavior of asserting overbroad patents of questionable validity against wide swaths of the economy, from retail to industrial, pressing for cash settlements that are less than the cost of litigation but considered vexatious nonetheless.¹⁰ President Obama has compared PAEs/NPEs/patent trolls to extortionists¹¹ and issued a policy report asserting that such PAEs/NPEs/patent

⁷ See *U.S. Patent Statistics Chart Calendar Years 1963–2014*, PATENT & TRADEMARK OFFICE, http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm (last visited Dec. 5, 2015).

⁸ See, e.g., Eisenberg, *supra* note 2, at 1.

⁹ For another view on the notion of assault, see, e.g., Peter J. Toren, *The Assault on Patents*, THE HILL (Aug. 13, 2014, 10:00 AM), <http://thehill.com/blogs/congress-blog/judicial/214943-the-assault-on-patents>.

¹⁰ See, e.g., Michael Gulliford, *Why the Fight Against Patent Trolls Could Hurt Innovative Companies Everywhere*, FORBES (June 12, 2015, 8:54 AM), <http://www.forbes.com/sites/groupthink/2015/06/12/why-the-fight-against-patent-trolls-could-hurt-innovative-companies-everywhere/>; Laura Sydell, *Taking the Battle Against Patent Trolls to the Public*, NPR: ALL TECH CONSIDERED (Aug. 30, 2013, 5:21 PM), <http://www.npr.org/sections/alltechconsidered/2013/08/30/217272814/taking-the-battle-against-patent-trolls-to-the-public>.

¹¹ See Ali Sternburg, *Obama Acknowledges Patent Troll Problem*, PATENT PROGRESS (Feb. 14, 2013), <http://www.patentprogress.org/2013/02/14/obama-acknowledges-patent-troll-problem>. When talking with an entrepreneur in February 2013 who had experience with a patent troll, President Obama said, “The folks that you’re talking about are a classic example; they don’t actually produce anything themselves. They’re just trying to essentially leverage and hijack somebody else’s idea and see if they can extort some money out of them.” *Id.*

trolls do not play an important role in the U.S. innovation ecosystem.¹²

The Obama Administration backed and signed off on the AIA in 2011,¹³ which completely failed to address issues of patent quality on the *front end* in patent prosecution, and focused almost exclusively on the *back end* of litigation and post-grant challenge procedures.¹⁴

Since 2010, the U.S. Supreme Court has handed down a series of patent-curtailing decisions¹⁵ finding many things un-patentable, including business methods (whether or not computer-implemented), certain computer-implemented e-commerce platforms, medical diagnostics, and certain isolated genetic compounds. None of these decisions provided helpful guidance on what might be considered patentable (or patent-eligible) and none pressed Congress to pass meaningful legislation or consider the public policy effects of their decisions.¹⁶

The PTAB¹⁷, a USPTO administrative court that hears patent appeals and certain out-of-court patent challenges, has confirmed scholars' worries that it would be a "patent death squad."¹⁸ While it was supposed to make it easier for accused patent infringers to challenge patents in a lower cost setting (instead of Federal court), the PTAB has invalidated 80% of patents coming before it in instituted IPR proceedings, and 95% of claims in covered business method

¹² See Exec. Office of the President, Patent Assertion and U.S. Innovation 1 (2013).

¹³ See Leahy-Smith America Invents Act §§ 6, 34 (2011).

¹⁴ See Rich Steves, *Has the Patent System Been Weaponized?*, INSIDE COUNSEL (Jan. 14, 2015), <http://www.insidecounsel.com/2015/01/14/has-the-patent-system-been-weaponized>.

¹⁵ See, e.g., *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014); *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107 (2013); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289 (2012); *Bilski v. Kappos*, 130 S. Ct. 3218 (2010).

¹⁶ See Toren, *supra* note 9.

¹⁷ The PTAB was formerly known as the Board of Patent Appeals and Interferences ("BPAI") but renamed by the Leahy-Smith America Invents Act, § 7.

¹⁸ See Jones, *supra* note 6.

("CBM") proceedings.¹⁹ Such a high rate of invalidation suggests that the USPTO is doing a poor job of granting patents in the first place.

Despite the fact that the AIA has only been in full force for two years—arguably not enough time for its effects to be felt and meaningfully measured—Congress is considering new rounds of amendments to the patent laws, primarily to curtail litigation by PAEs/NPEs/patent trolls.²⁰

Certain economists, law professors and public interest groups continue to rail against the patent system, arguing that patents actually hinder innovation, and that the patent system is broken.²¹ For example, Professors Michele Boldrin and David Levine have argued that historical and international evidence suggests that while weak patent systems may mildly increase innovation with negative side effects, strong patent systems retard innovation with many negative side effects.²² These professors stop short of an immediate abolishment

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- ¹⁹ See *Just the Stats: Statistics-at-a-Glance*, POST GRANT HQ, <http://www.postgranthq.com/statistics/> (last visited Dec. 5, 2015). The HQ Dashboard is a private law firm website dedicated to information about IPRs, post-grant reviews ("PGRs"), and CBM proceedings held at the USPTO's PTAB. Certain statistics at the HQ Dashboard through 2014 indicate that 73% of claims initially challenged in an IPR were invalidated, and 81% of claims in instituted IPRs were invalidated; 91% of initially challenged claims in CBMs were invalidated, and 95% of claims in instituted CBMs were invalidated. The moniker "death squad" appears somewhat deserving, as predicted by Judge Rader.
- ²⁰ See, e.g., PATENT Act, S. 1137, 114th Cong. (2015); STRONG Patents Act, S. 632, 114th Cong. (2015); and Innovation Act, H.R. 9, 114th Cong. (2015).
- ²¹ JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK (2008); ADAM B. JAFFE & JOSH LERNER, INNOVATION & ITS DISCONTENTS: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION & PROGRESS, AND WHAT TO DO ABOUT IT (2004); Michele Boldrin & David K. Levine, *The Case Against Patents*, 27 J. ECON. PERSPS. 3, 3–22 (2013); Stephan Kinsella, *The Literature on the Impact of Patents on Innovation Must Be Considered Emergent*, CTR. FOR STUDY INNOVATIVE FREEDOM (May 15, 2015), <http://c4sif.org/2015/05/the-literature-on-the-impact-of-patents-on-innovation-must-be-considered-emergent>; *Patent Fail: In Defense of Innovation*, ELEC. FRONTIER FOUND., <https://www.eff.org/patent> (last visited Dec. 5, 2015).
- ²² Boldrin & Levine, *supra* note 21, at 3.

of the patent system, but they call for the system to be phased out over time.²³ The popular media²⁴ has seized on the anti-patent hysteria, and all the other assaults, which is leading to the current efforts at patent reform.

III. THE PATENT SYSTEM AND INNOVATION

Does this hostile and uncertain environment for patents matter? Is innovation truly hindered or helped by patents? Larger and more established companies, some of which have already amassed collections of patents, seem more concerned about protecting themselves from patent trolls and competitors' patents²⁵ than truly improving the patent system. Given that many larger companies have significant market power, their need for patents is very different from smaller companies and startups.²⁶ Some larger companies even utilize patents as a weapon to fight back against competitors who have portfolios of

²³ *Id.*, at 18. The article's conclusion has an interesting comment from the distinguished economist Fritz Machlup in testimony before Congress in 1958: "If we did not have a patent system, it would be irresponsible, on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it." *Id.*

²⁴ See, e.g., Charles Kenny, *The U.S. Can't Fix a Broken Patent System Alone*, BLOOMBERGBUSINESS (Mar. 3, 2015, 9:38 AM), <http://www.bloomberg.com/news/articles/2015-03-03/the-u-s-can-t-fix-a-broken-patent-system-alone>; Nilay Patel, *The 'Broken Patent System': How We Got Here and How To Fix It*, THE VERGE (Jul. 10, 2012, 2:59 PM), <http://www.theverge.com/2011/08/11/broken-patent-system>; Jay Walker, *Our System Is So Broken, Almost No Patented Discoveries Ever Get Used*, WIRED (Jan. 15, 2015, 6:25 AM), <http://www.wired.com/2015/01/fixing-broken-patent-system>.

²⁵ See, e.g., Nicole Arce, *Google Fights Patent Trolls By Giving Away Patents: Want One?*, TECH TIMES (July 25, 2015, 9:28 AM), <http://www.techtimes.com/articles/71550/20150725/google-fights-patent-trolls-by-giving-away-patents-want-one.htm>.

²⁶ See Gina Hall, *Tech Companies Draw Large Amount of Attention from Patent Trolls*, SILICON VALLEY BUS. J. (July 13, 2015, 7:37 AM), <http://www.bizjournals.com/sanjose/news/2015/07/13/tech-companies-draw-large-amount-of-attention-from.html>.

competing patents,²⁷ or as this author has heard, have intimated that they do not want or need patents.

Startups and smaller companies, on the other hand, can perhaps benefit most from having valid, enforceable patents. Having a solid patent at least provides the *opportunity* and *capability* of fighting back against competitors and PAEs/NPEs/patent trolls.²⁸ Furthermore, many of the more solid, promising, and useful inventions come out of university research; unwise further patent reform could hinder universities' ability to bring promising new technologies to market.²⁹

The patent system is supposed to encourage innovation in the form of inventions.³⁰ The basic theory of patents, long enshrined in federal patent law and Supreme Court decisions, is derived from Article I, Section 8 of the U.S. Constitution, which states that Congress shall have the power, "To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."³¹

²⁷ See, e.g., Timothy B. Lee, *How Big Companies Are Stopping Congress from Fixing the Patent System*, VOX (Apr. 30, 2015, 11:20 AM), <http://www.vox.com/2015/4/30/8521263/patent-reform-trolls-quality>.

²⁸ See James Klobucar, *A Way to Defeat a Troll Inter Partes Review*, PATENT PUZZLE (Sept. 8, 2014, 12:54 PM), <http://www.patentpuzzle.com/2014/09/articles/patent-basics/a-way-to-defeat-a-troll-inter-partes-review/>.

²⁹ See Robert A. Brown & James P. Clements, *A Patent-Troll Bill with Bad College Grades*, WALL ST. J. (Apr. 14, 2015, 6:48 PM), <http://www.wsj.com/articles/a-patent-troll-bill-with-bad-college-grades-1429051694>. According to the article, many university technology-transfer operations do not receive significant royalties from their patent filings. Undercutting the enforceability of patents by curtailing the rent-seeking activities of patent trolls would negatively affect the ability of many universities to derive revenue from their patents in tech transfer: "If universities were to forego enforcing their patents, that would send a signal that those patents could be infringed at little or no cost." *Id.*

³⁰ See *General Information Concerning Patents*, U.S. PATENT & TRADEMARK OFFICE (Oct. 2014), <http://www.uspto.gov/patents-getting-started/general-information-concerning-patents#heading-1>.

³¹ U.S. Const. art. I, § 8, cl. 8.

This clause is the constitutional underpinning of both the U.S. patent and copyright systems.³²

There are several inherent limitations created by these words. The stated purpose is to *promote progress* of science and useful arts.³³ These are broad terms, but Congress has elected not to enact a patent law granting protections at this breadth; the current patent statute does not even mention “promoting progress” as a goal,³⁴ beginning instead by defining what kinds of “inventions” are patentable.³⁵ In numerous decisions over the years, the U.S. Supreme Court has ruled that patent protections are limited in a number of respects—for example by excluding laws of nature, natural phenomena, and abstract ideas³⁶—without regard to whether such limitations might actually promote progress.³⁷ Some academics argue that the current patent system does not promote progress.³⁸

³² See *Intellectual Property Clause*, WEX LEGAL DICTIONARY, https://www.law.cornell.edu/wex/intellectual_property_clause (last visited Dec. 5, 2015).

³³ See *id.*

³⁴ 35 U.S.C. §§ 1–390 (2013).

³⁵ See *id.* § 100(a) (“The term ‘invention’ means invention or discovery.”); *id.* § 101 (“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 the conditions and requirements of this title.”).

³⁶ See *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2350 (2014) (citing *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107 (2013)); *Diamond v. Diehr*, 450 U. S. 175, 185 (1981).

³⁷ The Supreme Court has asserted in the past that patents may impede innovation, without citing authority for the proposition. See, e.g., *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012) (“‘Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.’ And monopolization of those tools through the grant of a patent *might tend to impede innovation* more than it would tend to promote it.”) (emphasis added) (citations omitted) (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)).

³⁸ JAFFE & LERNER, *supra* note 21, at 13.

Intellectual property protections are for *limited times*.³⁹ Congress has determined that 20 years is a sufficient term for a patent, but has provided much longer terms for copyrights; in certain cases, copyright can last for the life of the author plus 70 years, or 95 years for works made for hire.⁴⁰

Further, intellectual property protection is in the form of “exclusive rights.”⁴¹ This exclusive right has been deemed a *property right* by the Supreme Court.⁴² The question of whether a patent helps or hinders innovation is arguably irrelevant to the fact that inventors are entitled to ownership of their inventions as property.

Finally, intellectual property protection is for *writings and discoveries*.⁴³ Congress determined that “writing” means creative expressions such as literary works (books, poems, articles), music, paintings, photographs, sculptures, motion pictures, TV programs, choreographic works, sound recordings, architectural works, computer software and more, which are protected by copyright.⁴⁴ Congress limited the meaning of “discovery” in the patent laws to any new and useful process, machine, manufacture (e.g., manufactured articles), or compositions of matter.⁴⁵ Arguably, Congress has the authority to broaden the

³⁹ 35 U.S.C. § 154(a)(2) (“Subject to the payment of fees under this title, such [patent] grant shall be for a term beginning on the date on which the patent issues and ending 20 years from the date on which the application for the patent was filed in the United States . . .”).

⁴⁰ U.S. COPYRIGHT OFFICE, CIRCULAR 15A: DURATION OF COPYRIGHT 1 (2011).

⁴¹ 35 U.S.C. § 271(a) (“Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent.”). Remedies for infringement include injunctions, *see id.* § 283, and damages, *see id.* § 284.

⁴² *See James v. Campbell*, 104 U.S. 356, 358 (1881) (“[A patent] confers upon the patentee an exclusive property in the patented invention which cannot be appropriated or used by the government itself, without just compensation, any more than it can appropriate or use without compensation land which has been patented to a private purchaser . . .”).

⁴³ *See* U.S. Const., art. I, § 8, cl. 8.

⁴⁴ *See* 17 U.S.C. § 102 (2012).

⁴⁵ 35 U.S.C. § 101.

definition of “discoveries,” but it has not done so, and the Supreme Court has imposed significant limits on breadth in recent years.⁴⁶

The modern theory of patents states that inventors should be entitled to receive some reward for their creative efforts—a patent grants the inventor a property right in her creative work, as well as lost profits or a reasonable royalty in cases of infringement.⁴⁷ That patent, being a property right, may be sold, licensed, offered as collateral, enforced to stop others, or even just ignored.⁴⁸ That property right can be used defensively, to fight back against others with similar property rights, or offensively in the form of lawsuits against competitors or others who may profit from use of the invention.⁴⁹

But most significantly for startups, that property right can represent *enhanced value* for investors and improve the prospects for obtaining early stage financing.⁵⁰ A well-crafted patent—or even better, a collection of patents in a portfolio that forms a patent “thicket”⁵¹—reveals and represents the fruits of product or service development, helping form a protective barrier against theft. If that product or service requires capital to come to market, investors draw some comfort from the patents’ protection of the investment while the product is commercialized.⁵² This early protection is vital because, in this author’s experience, it often takes companies years to go from “maybe a good idea,” to a prototype, to a testing environment, to a sold product, to market acceptance, to profitability, and finally, to investment realization.

⁴⁶ See Toren, *supra* note 9.

⁴⁷ 35 U.S.C. § 284 (“Upon finding for the claimant [patentee] the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.”).

⁴⁸ See *General Information Concerning Patents*, U.S. PATENT & TRADEMARK OFFICE (Oct. 2014), <http://www.uspto.gov/patents-getting-started/general-information-concerning-patents#heading-1> (last visited Dec. 5, 2015).

⁴⁹ See *id.*

⁵⁰ Iain M. Cockburn & Megan MacGarvie, *Patents, Thickets, and the Financing of Early-Stage Firms: Evidence from the Software Industry* 1, 4, 42 (Nat’l Bureau of Econ. Research, Working Paper No. W13644, 2007), <http://www.nber.org/papers/w13644.pdf>.

⁵¹ *Id.* at 1–2, 18–19.

⁵² See *id.* at 1, 4, 42.

Given this timeline, investors in products subject to patent protection must have a relatively long-term view (often at least 3–5 years). They must look down the investment road and think:

I know it will take time for this company to get on the market and make a profit; I can wait for the value to materialize because the company's patents will discourage outright copyists, slow down determined competitors, create a business risk to those copyists and competitors, and allow time to recoup my investment.⁵³

IV. TIME TO RETHINK PATENT STRATEGIES?

After the recent assaults on the patent system, startup technology companies, their attorneys, and their investors might rethink their patent and IP strategies. Should they still file patents? What can they do to get good patents given the recent attacks? What areas of business are most vulnerable?

As to the last question, patents for software startups are perhaps under the heaviest attack recently. There is a great deal of uncertainty whether software is patentable at all—and if so to what extent—after the Supreme Court's 2014 decision in *Alice Corp. v. CLS Bank*.⁵⁴ The patent in this case related to a scheme (as the Court described it) for mitigating settlement risk of financial transactions.⁵⁵ The claims in the patent at issue were directed to a computerized implementation of a method for exchanging transactions in a manner so as to mitigate certain financial risks of the transactions.⁵⁶ According to the Court, the “computer components of petitioner's method ‘ad[d] nothing . . . that is not already present when the steps are considered separately’ . . . [A]s a whole, petitioner's method claims simply recite the concept of intermediated settlement

⁵³ See Alexander Tabarrok, *Patent Theory Versus Patent Law*, 1 CONTRIBUTIONS TO ECON. ANALYSIS & POL'Y 1, 21 (2002). (“Original research and development is usually more costly than imitation. A firm will not be able to recoup its sunk costs if the results of its research are quickly imitated by rivals. Recognizing this, firms will have little incentive to invest in innovation. Patents and other forms of intellectual property increase the incentive to innovate by delaying the arrival of imitators thus giving pioneer firms time to recoup their sunk costs through monopoly pricing.”).

⁵⁴ 134 S. Ct. 2347 (2014).

⁵⁵ *Id.* at 2351–52.

⁵⁶ *Id.* at 2352.

as performed by a generic computer.”⁵⁷ The Court found that, “[t]aking the claim elements separately, the function performed by the computer at each step of the process is ‘[p]urely conventional,’” and “[t]he method claims do not . . . purport to improve the functioning of the computer itself[. . .] [nor] effect an improvement in any other technology or technical field.”⁵⁸ As such, the Court concluded that “the claims at issue amount to nothing significantly more than an instruction to apply the abstract idea of intermediated settlement using some unspecified, generic computer” and were therefore “not ‘enough’ to transform an abstract idea into a patent-eligible invention.”⁵⁹

It is intriguing to some, maddening to others, that the Supreme Court believes that it has the right to dictate that “improving the function of a computer” or avoiding use of some “unspecified, generic computer” is required for patent-eligibility, when § 101 of the patent law contains nothing remotely suggestive of such a right.⁶⁰

The decision casts doubt as to the validity of almost any patent on most computer-implemented inventions. Patent practitioners immediately began trying to figure out: What is an “abstract idea?” What is an “unspecified, generic computer?” What is “enough?” What is another area of technology that is improved by this software? What is another technical field that is affected by the software? Can we say that a given piece of software improves the function of the computer itself? These and many other questions are percolating throughout the patent prosecution community after the decision.⁶¹ Some companies have begun to doubt the strengths of their portfolios, and are questioning whether it is still worthwhile to seek patents for software-implemented technologies.⁶²

⁵⁷ *Id.* (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1298 (2012)).

⁵⁸ *Id.*

⁵⁹ *Alice Corp.*, 134 S. Ct. at 2352.

⁶⁰ *Id.* at 2369–60.

⁶¹ See, e.g., Gene Quinn, *A Software Patent Setback: Alice v. CLS Bank*, IPWATCHDOG (Jan. 9, 2015), <http://www.ipwatchdog.com/2015/01/09/a-software-patent-setback-alice-v-cls-bank/id=53460/>.

⁶² See Steven Seidenberg, *Business-Method and Software Patents May Go Through the Looking Glass After Alice Decision*, ABA J. (Feb. 1, 2015, 2:40 AM), http://www.abajournal.com/magazine/article/business_method_and_software_patents_may_go_through_the_looking_glass_after.

Among the causes of the uncertainty were the Supreme Court's generalized statements in *Alice Corp.* that abstract ideas, implemented with generic computers, are patent-ineligible,⁶³ unless the claims directed to those ideas express "an 'inventive concept'—i.e., an element or combination of elements that is sufficient to ensure that the patent in practice amounts to *significantly more* than a patent on the [ineligible concept] itself."⁶⁴ Although the claims in *Alice* were fairly general and high level, there was not much help from the Court in deciding what exactly is meant by an abstract idea (all patent claims are to some degree, an abstraction), and what is meant by "significantly more" than an "ineligible concept itself."

Startups in the medical diagnostics area share similar concerns after the Supreme Court's 2012 decision in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*⁶⁵ *Mayo* concerned patent claims covering processes that help doctors who use certain compounds (thiopurine drugs, in this case) to treat patients with autoimmune diseases determine whether a given dosage level is too low or too high.⁶⁶ The claims "purport[ed] to apply natural laws describing the relationships between the concentration in the blood of certain thiopurine metabolites and the likelihood that the drug dosage will be ineffective or induce harmful side-effects."⁶⁷ In other words, the claim was for medical diagnostic testing of the efficacy of a treatment regimen. The Court had to determine

⁶³ *Alice Corp.*, 134 S. Ct. at 2355. There is potential confusion between the notions of patent-eligible criteria for receiving a patent, and patent-qualifying criteria. Patent eligibility is a threshold consideration under 35 U.S.C. § 101 (2013) (is it "patentable subject matter?"). Patent qualification includes questions of whether the claimed invention is novel under § 102, nonobvious under § 103, and has been adequately disclosed under § 112. Any of these criteria can be used to invalidate (or reject) a patent, but most of the recent Supreme Court decisions such as *Alice* have focused on patent-eligibility. In this author's view, it is odd that the Supreme Court has obsessed so intently on § 101 patent-eligibility, when many of the questions could be more readily and satisfactorily answered with the patent-qualifying criteria, which the USPTO has systemized in the examination process. See generally MPEP § 700 (9th ed., Mar. 2014) (detailing the standards of patentability applied during examination).

⁶⁴ *Alice Corp.*, 134 S. Ct. at 2355 (emphasis added).

⁶⁵ 132 S. Ct. 1289 (2012).

⁶⁶ *Id.* at 1294.

⁶⁷ *Id.*

“whether the claimed processes transformed unpatentable natural laws into patent-eligible applications of those laws.”⁶⁸ The Court concluded that, “they ha[d] not done so and that therefore the processes [were] not patentable” (i.e., patent-eligible).⁶⁹

Under this rationale, testing kits that carry out medical diagnostics might not be considered patentable subject matter, though the underlying science is certainly not. But the decision went broader than simply diagnostic testing—the Supreme Court went to lengths to explain their view that something “significantly more” than an application of natural laws is required for patent eligibility:

The question before us is whether the claims do *significantly more* than simply describe these natural relations [of metabolite concentrations resulting from drug administration]. To put the matter more precisely, do the patent claims add *enough* to their statements of the correlations to allow the processes they describe to qualify as patent eligible processes that *apply* natural laws? We believe that the answer to this question is no.⁷⁰

V. TEN THINGS TO CONSIDER ABOUT PATENTS, DESPITE THE ASSAULTS

Given these assaults, is it time to give up on patents? Certainly not for some industries, and probably not for others. Still, patent system stakeholders are facing harder decisions than they have in the past. There are still good reasons to play the patent game, even in heavily assaulted industries such as software and IT, but the rules are different now and will continue to change. Many companies—from large ones managing established patent portfolios to startups seeking to enhance valuation, to those seeking competitive advantage, to those protecting themselves against rote copying (or a clever design-around that amounts to “not quite” copying)—will want to consider the following ten points about patents, outlined below.

A. *Enterprise Value Enhancement*

This is perhaps the most compelling reason for startups to have a patent or patents. Venture capitalists expect to recover their investment in a startup at a

⁶⁸ *Id.*

⁶⁹ *Id.*

⁷⁰ *Mayo*, 132 S. Ct. at 1297 (first emphasis added).

multiple; preferably, a 5x return over 3–5 years is expected at a minimum.⁷¹ But 5x is not considered ideal—for example, many expect annualized returns that are at least 5% greater than market returns.⁷² It appears that a 10x or 20x multiple is the goal in reality, so as to compensate for previous investments that did not pay off at all.⁷³

Having patents has historically and empirically been shown to increase the value of the enterprise over the longer term,⁷⁴ and improve the ability to obtain debt financing.⁷⁵ Because there are no regulatory reporting requirements for private investments, there are no reported statistics on returns on research and development (“R&D”) and patent investments by private companies. Anecdotally, some entrepreneur CEOs have expressed that they have received as much as 100x their investment in patent filings, because of their estimation that

⁷¹ Guy Kawasaki, *What to Expect from a Venture Capitalist*, FORBES (Jan. 27, 2004, 3:56 PM), <http://www.forbes.com/2004/01/27/0127artofstartmidas04.html>.

⁷² See, e.g., Andy Rachleff, *Demystifying Venture Capital Economics, Part 1*, WEALTHFRONT KNOWLEDGE CTR. (June 19, 2014), <https://blog.wealthfront.com/venture-capital-economics> (“I have heard institutions express their required return from venture capital necessary to compensate them for taking the additional risk (i.e. the risk premium) in two ways:

The S&P 500® return plus 500 basis points (5%) or

The S&P 500 return times 1.5

These expectations were created when the S&P 500 was expected to return on the order of 12% annually.”).

⁷³ See, e.g., *Venture Capital Method*, THE BUS. PROFESSOR (Mar. 10, 2015, 8:38 PM), <http://thebusinessprofessor.com/venture-capital-method/>.

⁷⁴ See Peter Neuhäusler, Rainer Frietsch, Torben Schubert & Knut Blind, *Patents and the Financial Performance of Firms—An Analysis Based on Stock Market Data 1* (Fraunhofer Inst. for Sys. and Innovation Research ISI, Discussion Paper No. 28, 2011), http://www.isi.fraunhofer.de/isi-wAssets/docs/p/de/diskpap_innosysteme_policyanalyse/discussionpaper_28_2011.pdf (“Large and highly valuable patent portfolios of firms have significant effects on [technology firm’s] competitiveness in the long run.”).

⁷⁵ Yael V. Hochberg, Carlos J. Serrano & Rosemarie H. Ziedonis, *Patent Collateral, Investor Commitment, and the Market for Venture Lending* (Nat’l Bureau of Econ. Res., Working Paper No. W20587, 2015), http://www.econ.upf.edu/~cserrano/papers/HSZ_paper.pdf (“We find that intensified trading in the secondary market for patent assets increases the annual rate of startup lending, particularly for startups with more redeployable patent assets.”).

the patents increased the value of their company by roughly 20%.⁷⁶ If one assumes that a \$220 million merger deal would have only brought \$200 million without the patents, and that the company spent \$200,000 building its patent portfolio over about three years prior to acquisition, the extra \$20 million represents a 100x valuation increase return on the \$200K patent investment to the initial investors.

Furthermore, patents themselves can have intrinsic, tangible value that can add to overall enterprise value. Numerous IP valuation analysts profess the ability to place a meaningful value on a patent or a portfolio.⁷⁷ Yes, some small companies and universities sell their patents to third parties for monetization purposes.⁷⁸ Admittedly, some of these sales are to PAEs/NPEs/patent trolls, but the fact remains that the original innovator and patent owner receive some economic benefit from this sale. Even in the software industry, software and business method patents can be extremely valuable.⁷⁹

⁷⁶ DAVID HSU & ROSEMARIE H. ZIEDONIS, PATENTS AS QUALITY SIGNALS FOR ENTREPRENEURIAL VENTURES (2007), <http://www2.druid.dk/conferences/viewpaper.php?id=1717&cf=9>.

⁷⁷ Google Search for “Patent Valuation,” Google, <http://www.google.com> (type “Patent Valuation” in search bar and follow hyperlink) (A simple Google search on “patent valuation” returns a number of hits of firms and individuals who profess to provide patent valuation services. This article does not endorse any particular firm or individual. Some commonly touted valuation methodologies are of questionable validity, in this author’s opinion; valuation is often a subjective exercise due to the lack of publicly available comparative value information and use of valuation discount rates that are derived from ethically questionable sources.).

⁷⁸ See Heidi Ledford, *Universities Struggle to Make Patents Pay*, NATURE 1, 2–3 (Sept. 24, 2013), <http://www.nature.com/news/universities-struggle-to-make-patents-pay-1.13811> (“As universities struggle to find revenue sources, one might worry that the monetization industry will be very tempting,” says Robin Feldman, director of the Institute for Innovation Law at the University of California Hastings College of the Law in San Francisco. There are already signs that this is happening, she adds. Last year, she published evidence that 45 universities around the world licensed or sold patents to Intellectual Ventures shell companies.”). For this research and discussion of university patent aggregation, see Tom Ewing & Robin Feldman, *The Giants Among Us*, STAN. TECH. L. REV., Jan. 9, 2012, at 4, 8.

⁷⁹ Bronwyn H. Hall, Grid Thoma & Salvatore Torrisi, *The Market Value of Patents and R&D: Evidence from European Firms* (Nat’l Bureau of Econ. Res.,

Although patent and enterprise values may be experiencing downward pressure due to the patent system assaults discussed, good-quality patents can still have value in the computer industries.

B. *Signaling Quality to Investors and the Investment Community*

Some researchers view patents as a vehicle for signaling the quality of an entrepreneurial venture.⁸⁰ Patents also help signal the ability of a firm to transform R&D into new and valuable knowledge, and moderate financial analysts' earnings forecast errors.⁸¹

Some research indicates that the signaling value of patents is greater in earlier financing rounds when funds are secured from prominent investors,⁸² presumably those who may already be familiar with the particular industry. Small firms that seek patents have been found to attract capital more easily compared to non-patenting firms.⁸³

Working Paper No. W13426 1, 2007), <http://www.nber.org/papers/w13426.pdf> ("Software patents account for a rising share of total patents in the USPTO and EPO. Moreover, some scholars of innovation and intellectual property rights argue that software and business methods patents on average are of poor quality and that these patents are applied for merely to build portfolios rather than for protection of real inventions. We found that such patents are *considerably more valuable than ordinary patents*, especially if they are taken out in the U.S.") (emphasis added).

⁸⁰ HSU & ZIEDONIS, *supra* note 76, at 1, 3, 4, 25.

⁸¹ Ali Mohammadi, Nada O. Basir, & Mehdi Beyhaghi, *Research Intensity and Financial Analysts Earnings Forecast: Signaling Effects of Patents* (Ctr. of Excellence for Sci. and Innovation Studies, Working Paper No. 397 1, 2015), <https://static.sys.kth.se/itm/wp/cesis/cesiswp397.pdf> ("We argue that high information asymmetry and uncertainty associated with R&D investment increase a financial analysts' earnings forecast error. Patents can remedy this relationship by signaling the ability of a firm in transforming research investments into new and valuable knowledge. Using a panel of 2,253 publicly listed U.S. firms, we find that higher R&D intensity is positively correlated with financial analysts' earnings forecast error. The endowment of intellectual capital (i.e. patents) moderates this relationship negatively.").

⁸² HSU & ZIEDONIS, *supra* note 76, at 3, 4, 13.

⁸³ HANNA HOTTENROTT, BRONWYN H. HALL & DIRK CZARNITZKI, PATENTS AS QUALITY SIGNALS? THE IMPLICATIONS FOR FINANCING CONSTRAINTS ON R&D 1, 27 (2014), <http://eml.berkeley.edu/~bhhall/papers/HottenrottHallCzarnitzki>

Other researchers have empirically corroborated these theoretical expectations that patent activity before the first round of financing increases the capital invested in a firm.⁸⁴ Oddly, pending patent applications may have a more significant signaling role than issued patents,⁸⁵ suggesting that a portfolio of issued patents for a “new” venture indicates that the venture is not really new and that the technology has been attempted before without remarkable success.

Based on this research, it seems reasonable to conclude that patents enable entrepreneurs to acquire capital under more favorable terms across the venture life cycle. Investors who specialize in certain industry areas will know that some areas are more patent-intensive than others, and likely impose lower valuations when the patent filings are missing or seem inadequate. By the same token, investors may be willing to accept higher valuations if they feel that the quality of the entrepreneur, the business, and the patent protection reflect careful thought and planning. It also seems reasonable to conclude that a startup is more likely to attract capital in its early stages if it invests its own (perhaps angel) funds in filing patent applications on its proposed products or services, especially if those filings are of good quality.

C. *Establishing Ownership of Technology and Inventions*

Both equity and debt investors want some comfort that the company actually owns the technology it has developed. In order to own the technology and inventions, the ownership rights must be assigned to the company.⁸⁶ Under U.S. law,⁸⁷ inventions (and copyrightable works such as computer software) are initially owned by the inventor—oftentimes, the engineers and the coders who are authorized to make the patent application.⁸⁸ If and when a patent issues, it

14_patent_quality_signal.pdf (“[Our] results showed that small firms are more likely to rely on internal liquidity to fund their R&D activities as a result of limited access to external financing. Moreover, the results showed that patenting activity may help small firms to attract external financing more easily compared to non-patenting firms.”).

⁸⁴ Sebastian Hoenen et al., *The Diminishing Signaling Value of Patents Between Early Rounds of Venture Capital Financing*, 42 RES. POL’Y 956, 959, 968, 982 (2014).

⁸⁵ *See id.* at 982.

⁸⁶ 35 U.S.C. § 261 (2013).

⁸⁷ *Id.*

⁸⁸ *Id.* § 111(a)(1).

can “be granted to the assignee of the inventor of record in the Patent and Trademark Office.”⁸⁹ Assignments are typically recorded in special records of the USPTO to make them “of record.”⁹⁰ Recording of an assignment within three months from its date allows a patent owner to void a later assignment to a subsequent purchaser or mortgagee without notice.⁹¹

Patents provide a convenient legal vehicle to define precisely what has been created, even if a patent never issues. The USPTO records also provide a vehicle for ascertaining that the so-defined subject matter is actually owned by the company. Lawyers for investors can check those records to confirm ownership in the company. Failure to have legally effective, properly executed, and recorded assignments from engineers and coders can slow down a deal, if not kill it outright in some cases.

Furthermore, given that a patent is considered a form of personal property,⁹² and is an ownable asset, it is customary for lenders to obtain a pledge of patent (and trademark and copyright) assets to secure a loan.⁹³ Lenders typically obtain a security assignment of IP assets as a part of an overall lending transaction and record those security assignments so as to have a superior claim to foreclose on the assets (and perhaps sell them) in the event of a loan default.⁹⁴

⁸⁹ *Id.* § 152.

⁹⁰ *Patent Assignments: Change & Search Ownership*, U.S. PATENT & TRADEMARK OFFICE (last visited Dec. 5, 2015), <http://www.uspto.gov/patents-maintaining-patent/patents-assignments-change-search-ownership>.

⁹¹ 35 U.S.C. § 261 (“An assignment, grant, or conveyance shall be void as against any subsequent purchaser or mortgagee for valuable consideration, without notice, unless it is recorded in the Patent and Trademark Office within three months from its date or prior to the date of such subsequent purchase or mortgage.”); *see also* MPEP, *supra* note 63, §§ 301, 302.

⁹² 35 U.S.C. § 261.

⁹³ *See* Pauline Stevens, *Security Interests in Patents and Patent Applications?*, 6 PITT. J. TECH. & POL’Y 1 (2005); William Mann, *Creditor Rights and Innovation: Evidence from Patent Collateral* (Jan. 30, 2015) (unpublished manuscript).

⁹⁴ *See generally* STEPHEN L. SEPUNICK, *ADVANCED SEMINAR ON IP TRAPS IN SECURED FINANCING* (2014), <http://www.law.gonzaga.edu/files/ACCFL-Advanced-Seminar-on-IP-Traps.pdf>.

Lenders also rely on UCC filings to record their claims to collateral in patent assets as personal property.⁹⁵

It goes without saying that if a company does not have IP assets, it has fewer assets it can pledge. Having patents gives lenders something to collateralize. Better quality patents should theoretically provide greater value for collateralization.

D. *Assertion Against Competitors*

This is the classic view of patents—a weapon to brandish against a competitor who copies your product, or comes sufficiently close so as to cause loss of sales and profits. But a company must have an issued patent before it can sue for patent infringement.⁹⁶ There is no substitute for having issued patents coming online at the most vulnerable time in a company’s life—when the major product has been introduced and has gained market acceptance, and competitors are jealously eyeing the market to look for an entry point. A patent provides a true weapon for litigation. It can be used to block competitors from a market through an injunction.⁹⁷ It can also be used to seek damages from that competitor for making an infringing product.⁹⁸

For a successful assertion, a company must 1) file patents, 2) prosecute them to issue, 3) make sure that the patents are of litigation quality, and 4) bring and press the lawsuit sufficiently to obtain the desired results. The only way this works for a startup is to start filing patents of good quality as early in the life of the company as possible; waiting too long to file results in loss of patent rights.⁹⁹

⁹⁵ See *id.* at 8; U.C.C. § 9-311(a)(1) (Am. Law Inst. & Unif. Law Comm’n 2014).

⁹⁶ 35 U.S.C. § 271(a) (“Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell, or sells any *patented invention*, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent.”) (emphasis added). It is axiomatic that a patent must issue before there is a “patented invention” for purposes of bringing an infringement suit.

⁹⁷ *Id.* § 283.

⁹⁸ *Id.* § 284.

⁹⁹ The provisions of 35 U.S.C. § 102 contain numerous detailed requirements about the timing for filing patent applications, which are beyond the scope of this article. Those provisions changed under the AIA to make the timing

E. *Avoiding the IP of Competitors and Others*

Filing patents provides a mechanism to explore the patent holdings of competitors or prospective competitors and to observe the competitive landscape. By going through the patent searching process, a startup can survey the technological area it is entering and assess whether it is “patent-intensive” or not. Locating and reviewing patents of known competitors can help focus R&D efforts on the non-patented or lightly patented “white space,” where the risk is less. Patent searching can sometimes uncover patents of third parties that might not (yet) be competitors, but who have already staked out patent turf and are signaling their intention to enter the marketplace.¹⁰⁰ Without a viable patent system, this business intelligence is not available.

Although patent avoidance is not *per se* a reason to seek patents, the act of avoidance forms a part of a well-organized R&D organization. There is a certain discipline involved in preparing and filing patent applications, imposing a rigorous standard of documentation on engineers and coders, requiring documentation of a quality and thoroughness level that facilitates a good-quality patent filing, and studying the areas in which patents might be available (or unavailable). Such activity, of which patent avoidance is a part, leads to overall higher quality in R&D efforts and organization. This diligence and discipline should not be underestimated; this author has seen numerous clients’ efforts to patent seemingly promising inventions and technology hindered or thwarted outright due to a failure to properly document the technology in a form suitable for patent searching and avoidance, and subsequent quality patent filing.

F. *Revenue Generation/Licensing/Monetization of IP*

Generating revenue from patents through licensing (or outright sale) is another classical view of the use of patents. If a company has enough good patents to establish a thicket of patents in a particular technological area, it has

even more critical—the U.S. patent system is now considered a “first to file” patent system, as contrasted with its former “first to invent” patent system.

¹⁰⁰ Apple, Inc. is frequently thought of as the so-called “poster child” for such patent signaling. People started speculating years ago about features of the highly anticipated Apple Watch by monitoring patent filings, and pundits began speculating about the features of the watch long before the watch was formally announced. There is at least one website dedicated solely to watching Apple’s patenting efforts. See, e.g., PATENTLY APPLE, <http://www.patentlyapple.com/> (last visited Dec. 5, 2015).

the opportunity to control the space to some degree, at least for a while.¹⁰¹ As a venture tries to enter a market where patents may have an effect, it will have to make some basic economic decisions. Are my patents numerous and strong enough to keep competitors at bay? If so, can I keep them at bay long enough for me to establish market power, or even dominance? Or are there enough determined competitors in this market, and the market large enough, where it makes more sense for me to license the patents to others for a royalty? Can I license my patents to these competitors, as opposed to trying to keep them out of the market?

It is not easy to answer these questions. Patents are inherently monopolistic within the defined boundaries and for the limited time governed by the patent laws.¹⁰² Courts have held this is acceptable until the behavior is of a sort that constitutes patent misuse,¹⁰³ such as requiring royalty payments after a patent expires.¹⁰⁴

If the economics suggest that a licensing model can help create a rising tide of an expanding market and thereby float all boats, then it may be worthwhile to take some money off the table through licensing and allow other entrants – for a price.

In the same vein, collections of patents that relate to particular markets can have intrinsic value. Companies such as RPX Corporation,¹⁰⁵ Intellectual Ventures,¹⁰⁶ and even Google¹⁰⁷ have bought and sold patent portfolios, as widely

¹⁰¹ 35 U.S.C. § 154 (providing for a patent term of 20 years from the application date).

¹⁰² *Kimble v. Marvel Entm't, LLC*, 135 S. Ct. 2401, 2414 (2015) (finding a post-patent royalty provision “unlawful per se” because it extended the patent monopoly after the term of the patent had expired).

¹⁰³ *See, e.g., id.; Zenith Radio Corp. v. Hazeltine Research, Inc.*, 395 U.S. 100 (1969); *see also* 35 U.S.C. § 271(d) (listing acts which are not to be considered patent misuse).

¹⁰⁴ *Kimble*, 135 S. Ct. at 2414.

¹⁰⁵ RPX: RATIONAL PATENT, <http://www.rpxcorp.com/> (last visited Dec. 5, 2015).

¹⁰⁶ *See* INTELLECTUAL VENTURES, <http://www.intellectualventures.com/> (last visited Dec. 5, 2015).

¹⁰⁷ *See* Ingrid Lunden, *Google Offers To Give Away Patents To Startups In Its Push Against Patent Trolls*, TECH CRUNCH (July 23, 2015), <http://techcrunch>

reported. Some patent portfolio acquisitions are in the multiple millions of dollars.¹⁰⁸ Some of these sales have been to companies such as RPX, for the express purpose of keeping the patents away from trolls.¹⁰⁹ Although there is downward pressure on licensing revenue because of the patent assaults, there is still a widespread belief that patent licensing is a fundamental economic and business activity for technology companies that will persist to some degree, despite the assault, provided that the patenting is of sufficient quality and portfolio size.¹¹⁰

But as before, unless a venture has begun the process of filing and prosecuting patents to issue, there is little or nothing to license or sell. Issued or likely-to-issue patents are a fundamental vehicle on which to base a license.

G. *Facilitating Collaborative Research*

Companies developing new products, especially startups, may not have the technical expertise in-house to develop all the components it needs for the end product. For example, suppose a new venture in the “Internet of Things” space (“IoT”) involving location-based information obtained by global positioning satellites and wireless communications in challenging environments needs assistance with antenna design, or cloud-based data storage, or incorporation of GPS technologies. While some components like GPS chips are available off-the-shelf, other components may need to be customized or inventively modified. An R&D collaboration may be in order. Patents can be used to define the respective spaces of each party, as well as form the basis for defining joint development, its ownership, and exploitation.

Furthermore, patents can help collaborative researchers keep their space from each other, but mutually profit from the joint developments. Many new

.com/2015/07/23/google-offers-to-sell-patents-to-startups-to-boost-its-wider-cross-licensing-initiative/.

¹⁰⁸ See, e.g., RON LAURIE, INFLEXION POINT, WHAT’S DRIVING THE CURRENT PATENT MARKET 8–9 (2012), <http://www.slideserve.com/senona/what-s-driving-the-current-patent-market-where-are-we-and-where-a-re-we-going>.

¹⁰⁹ See Davey Alba, *Google Wants to Buy Your Patent to Keep It Away from Trolls*, WIRED (Apr. 27, 2015, 5:57 PM), <http://www.wired.com/2015/04/google-wants-buy-patent-keep-away-trolls/>.

¹¹⁰ See TERRY LUDLOW, TRENDS IN TECHNOLOGY IP LICENSING 5 (2014), http://www.ipo.org/wp-content/uploads/2014/12/IPLicensingTrends_TerryLudlow1.pdf.

business ventures are in areas that necessarily involve early disclosure of technology to prospective customers and soliciting feedback to refine the products via “agile” development.¹¹¹ This sometimes also involves larger companies that have their own research and development personnel and facilities, such as Apple, Boeing, Cisco, Google, Microsoft, and other known technology companies.¹¹² Academic institutions such as Georgia Tech, MIT, and Stanford have technologies that they can bring to a product or service, and are willing to collaborate with others.¹¹³

Dealing with larger companies and academic institutions, however, has its risks for a new venture. Some companies and institutions are simply difficult to deal with, and involve a lot of bureaucratic red tape and assertion of financial leverage. But the risk may be worth taking, if a collaborative relationship allows receipt of useful product development feedback, or incorporation of another company’s useful technology and patents.

A Collaborative Research Agreement (CRA)¹¹⁴ that contains well-defined IP ownership provisions can help the new venture establish its initial contribution of invention, provide a vehicle for the larger company or institution to identify its prior IP rights (as well as potentially conflicting other research engagements, common at academic institutions), and provide a mechanism for

¹¹¹ Generally speaking, “agile” product development is a development methodology that originated in software development environments that involve collaboration between cross-functional teams, quick deployment of a “minimal viable product” (MVP), receipt of customer feedback, modification of the product, rapid re-deployment, “lather, rinse, repeat.” See generally Kent Beck et al., *Manifesto for Agile Software Development*, <http://www.agilemanifesto.org/> (last visited Dec. 5, 2015); *Agile Software Development*, WIKIPEDIA, https://en.wikipedia.org/wiki/Agile_software_development (last visited Dec. 5, 2015).

¹¹² See Jason P. Davis, *How Innovative Companies Collaborate*, FORBES (Jan. 8, 2014, 8:41 PM), <http://www.forbes.com/sites/insead/2014/01/08/how-innovative-companies-collaborate/>.

¹¹³ See, e.g., Press Release, Ga. Tech, Georgia Tech and Sandia Form Research Partnership (June 11, 2015), <http://www.research.gatech.edu/hg/item/413801>.

¹¹⁴ In some contexts, such an agreement is called a Collaborative (or Cooperative) Research and Development Agreement or “CRADA,” especially in the context of government-sponsored research. See Federal Technology Transfer Act of 1986, Pub. L. No. 99-502, 100 Stat. 1785 (codified as amended at 15 U.S.C. §§ 3701–14) (1986)).

joint ownership or sole ownership of jointly-developed inventions or technologies.¹¹⁵

By filing patents in connection with a well-crafted CRA, both participants can have a clearer understanding as to who contributed what at the start of the collaborative effort, who gets rights in the fruits of the joint development, and under what terms. Lacking a CRA, a new venture is in the difficult position of telling a prospective large company customer that, in effect, “Thank you for giving me helpful feedback on my new product . . . by the way, I am the sole owner of whatever it is your people contributed to improving my product, but trust me, I’ll give you a good deal when you buy my product.” This, as you might imagine, can be a hard sell.

Patent filings thus can assist in establishing a collaborative arrangement and clarifying who owns what. Without the discipline and rigor of a patent filing, a CRA runs the risk of indefiniteness as to who brings what to the table, as well as who takes what off the table at completion.

H. *If You Get the Patent, You Block the Competitors*

There is a fundamental belief that if one person files a patent, and that patent is published or issued, then by definition the patent is “prior art” to everyone else.¹¹⁶ Thus, no one else can get a valid patent on your specific product that can be used against you. This can sometimes lead to “blocking.”¹¹⁷ Filing a patent application and having it published or getting a patent issued can achieve a degree of competitive blocking.

¹¹⁵ Joint ownership of inventions and patents is almost universally problematic. It is rare that both parties to a joint ownership situation will have the same motives and goals with a technology, and one may be much more interested in taking further risks with the development than the other. One party may actually hinder the further development and commercialization of a joint invention by simply dragging their feet on joint obligations to advance the research. A full exploration of the perils of joint ownership is beyond the scope of this article. See generally Martha Bair Steinbock, *How to Draft a Collaborative Research Agreement*, IP HANDBOOK OF BEST PRACTICES (Oct. 10, 2007), <http://www.iphandbook.org/handbook/ch07/p04/>.

¹¹⁶ See 35 U.S.C. § 102(a) (2013).

¹¹⁷ See CHARLES W. ADAMS, BLOCKING PATENTS AND THE SCOPE OF CLAIMS 4–5 (2008), <https://web.stanford.edu/dept/law/ipsc/pdf/adams-charles.pdf>.

Blocking can occur in several ways. The best way to block is to actually obtain a patent with claims broad enough to cover the most likely avenues a competitor might take to closely copy or even design around your technology.¹¹⁸ Another way is to obtain a patent, perhaps narrower, that specifically covers your product. Yet another way is to allow your patent application to publish, or even to issue with narrow claims, so that the published document and its contents are findable through search engines. You can even send copies of published documents to competitors saying, “You might be interested in reviewing this document and taking it into account in your own product development.”¹¹⁹

This sounds good in theory, but in today’s patent system, it does not always work that way. There are far too many patents to search, review, understand, act on, design around, etc. with a reasonable effort. Furthermore, there is the notion of “dominant” and “subservient” patents, a concept that relates to the scope of coverage of a patent and its economic implications.¹²⁰ A dominant patent with adequate scope of coverage can block the practice of a later, even better, and more commercially viable subservient or improvement patent, under the right circumstances.¹²¹ Merely because you obtain a patent on your specific product does not mean that some other entity might not have a broader or “dominant” patent covering your improvement.

There is clearly value in obtaining a dominant patent. On the other hand, there can also be value in obtaining a subservient patent—a subservient patent can be used to block the owner of the dominant, earlier patent by keeping that patent owner from practicing the particular improved feature claimed in the

¹¹⁸ Patent practice educational institutions, such as Patent Resources Group (PRG), teach courses to patent practitioners on how to design around valid patents. See, e.g., *Designing Around Valid U.S. Patents*, PATENT RES. GRP., <http://www.patentresources.com/DesignAround> (last visited Dec. 5, 2015).

¹¹⁹ Sending patents, patent publications, and other prior art information to competitors has its risks, of course, but it generally forces the competitor to disclose that information to the USPTO via an “information disclosure statement” (IDS) in its own patent filings, as required by the rules of patent practice. See 37 C.F.R. §§ 1.56, 1.97 (2014); MPEP, *supra* note 63, § 609.

¹²⁰ See Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 860–62 (1990).

¹²¹ See *id.* at 861 n.96.

subservient patent.¹²² This gives rise to a standoff, which could possibly be resolved by a cross-license.¹²³ Cross-licensing is a tool that can be helpful in a fight with a competitor who owns competing patents.¹²⁴ However, there would be nothing to cross-license if one does not have patents in the first place.

Nevertheless, by filing a non-provisional patent application and ensuring that it is published—even if a patent cannot be obtained due to an *Alice* or *Mayo*¹²⁵ or other rejection—can ensure that a late-comer to the marketplace will not be able to get a patent quite as readily.¹²⁶ Staking out patent turf through patent filings has some value that should be considered.

I. *The Laws Will Change . . . Again*

Although the patent stakeholders' community is currently experiencing a "down time" for patents, this could change. As of this writing, additional

¹²² *Id.* at 861 n.96, 862.

¹²³ *See id.* at 861, 865.

¹²⁴ *See generally* HAEJUN JEON, PATENT LITIGATION AND CROSS LICENSING WITH CUMULATIVE INNOVATION (2015), <http://ssrn.com/abstract=2615774>.

¹²⁵ In response to the *Alice Corp. v. CLS Bank* decision, the USPTO initiated an effort to update its guidelines for determining patentable subject matter eligibility during the patent examination process. On July 30, 2015, the USPTO promulgated a Request for Comments on its 2014 Interim Patent Eligibility Guidance—which provided a number of examples of claims directed to abstract ideas and laws of nature—in anticipation of updating the 2014 guidelines. *See* July 2015 Update on Subject Matter Eligibility, 80 Fed. Reg. 45,429 (July 30, 2015); 2014 Interim Guidance on Patent Subject Matter Eligibility, 79 Fed. Reg. 74,618 (Dec. 16, 2014). Both the 2014 interim guidelines and the 2015 Request for Comments have resulted in a noticeable increase in the frequency and firmness of section 101 patentable subject matter rejections of patent applications in a number of different technical areas, typically based on the *Alice* and *Mayo* decisions. *See* Robert R. Sachs, *The One Year Anniversary: The Aftermath of #Alicestorm*, CTR. FOR PROT. INTELL. PROP. (June 27, 2015), <http://cpip.gmu.edu/2015/06/27/the-one-year-anniversary-the-aftermath-of-alicestorm/>.

¹²⁶ *See* 35 U.S.C. § 122(b) (2013) (providing that nonprovisional patent applications are published 18 months after the earliest effective filing date and become prior art to others as a printed publication, unless the applicant elects nonpublication and agrees to refrain from international filing).

patent reform bills are working their way through Congress.¹²⁷ None of the current bills seem to address the real issues with patent quality, especially on the front end of patent acquisition. They all seem to put the patent litigation cart before the patent prosecution horse, which makes no sense if patent quality is truly an issue. Few commentators (aside from this author) seem to be raising the question of why so much effort is being put into correcting bad behavior of patent trolls, or vexatious patent litigation, rather than trying to ensure that patents coming out of the USPTO are valid and enforceable from the get-go? There is no explanation for this.

The current USPTO Director, Michelle Lee, has vowed to improve patent quality.¹²⁸ Her predecessor David Kappos said essentially the same thing several years ago, even in the context of software patents.¹²⁹ To be fair, some things may have improved; but improving patent quality is a tricky thing. There are no agreed-upon empirical measures of patent quality.¹³⁰ What exactly does patent quality mean? No one can say for sure. One very respected patent lawyer (and mentor to this author) when asked, “What is a good patent?” replied, “A good patent is one that has not been found invalid or unenforceable and expired at the end of its term.”¹³¹

This may be true, and is certainly quote-worthy. As pithy as the quote is, and true to the speaker’s proclivities for humor and sarcasm, it is not particularly helpful. No one really wants to know how “good” a patent is at the end of its

¹²⁷ See, e.g., STRONG Patents Act, *supra* note 20.

¹²⁸ See Michelle K. Lee, Under Sec’y of Commerce for Intellectual Prop. & Dir. of the U.S. Patent & Trademark Office, Remarks at the Center for Strategic and International Studies Patent Reform Forum (July 6, 2015), <http://www.uspto.gov/about-us/news-updates/remarks-director-michelle-k-lee-center-strategic-and-international-studies>.

¹²⁹ See David Kappos, Under Sec’y of Commerce for Intellectual Prop. & Dir. of the U.S. Patent & Trademark Office, Keynote Address at the Center for American Progress: An Examination of Software Patents (Nov. 20, 2012), <http://www.uspto.gov/about-us/news-updates/examination-software-patents>.

¹³⁰ See David J. Kappos & Stuart Graham, *The Case for Standard Measures of Patent Quality*, MIT SLOAN MGMT. REV. (Mar. 20, 2012), <http://sloanreview.mit.edu/article/the-case-for-standard-measures-of-patent-quality/> (pointing out that current approaches to measuring patent quality are “balkanized”).

¹³¹ Interview with Eugene S. Zimmer, Partner, Jones & Askew, in Atlanta, Ga. (1985).

term. Everyone wants to know, is this patent “good” right now? Can it serve its *in terrorem* purpose? Can it help attract capital? Will competitors respect it? Will a court find it valid, and infringed? Will it survive a challenge at the death panel that is the PTAB?

Fundamentally, a quality patent is (or should be) one that is quick and easy to find; highly readable; understandable by all the various stakeholders (inventor, USPTO examiner, judge, jury, investors, competitors); thoroughly searched; inclusive of the “best” prior art found; fairly examined; issued quickly, and thus considered valid and enforceable; and recognized by all stakeholders as being valid and enforceable. Achieving this is a tall order, and neither Congress, nor the Administration, nor the courts seem to be realistically considering how to make it happen. The politics of patents are apparently not worthy of serious and collaborative consideration, given the more pressing problems facing society and government.

Improvement of the patent system is a tall and perhaps unfillable order. There are no clear metrics for patent quality or many other meaningful patent system attributes. Many attributes are subjective, incapable of measurement *a priori*. Only after a patent has been litigated and found either valid and infringed, or invalid or not infringed, and all appeals exhausted, can researchers go in and examine what was done to make the patent succeed or fail. The most useful quality metrics are derived from patent litigation,¹³² but by the time a patent litigation is concluded, it is too late, and (practically) nothing can be done to recover the investment in chasing what turned out to be an invalid or unenforceable patent. Additionally, there is no formal reporting of the results of patent litigation settlements.

It is possible, however, for significant improvements to be made in the patent system. Congress could come to understand that it is beneficial to the U.S. economy to “promote the progress of science and useful arts” by improving the patent system *at the front end*, not just at the back end, post-grant. They could commit more bright minds to study the problem and come up with ways to do things in a better way. Although the anti-patent crowd is loud, their evidence should be tested and the policy issues more openly debated. One particularly vocal critic asserts that the Obama administration is acting upon gross mischaracterization of issues with patent assertion entities and of certain

¹³² See, e.g., PRICEWATERHOUSECOOPERS LLP, 2015 PATENT LITIGATION STUDY: A CHANGE IN PATENTEE FORTUNES (2015), http://www.pwc.com/en_US/us/forensic-services/publications/assets/2015-pwc-patent-litigation-study.pdf.

economic analyses of flaws in the patent system.¹³³ Some of his points are well expressed and backed with evidence that seems just as compelling as that of the anti-patent professors and economists, discussed earlier. Thus, things could change.

Additionally, the courts could also come to realize that their weakly-reasoned, extra-statutory, and “abstract” meddling in the esoteric area of patent law has turned out to be economically counterproductive, if not downright disastrous to U.S. innovation. The courts could back off from anti-patent precedents such as *Alice v. CLS Bank*¹³⁴ and *Mayo v. Prometheus*.¹³⁵ Courts might, with sufficient prompting and well-reasoned and evidence-backed briefing, come to the realization that acting like Humpty Dumpty in regards to their judicial interpretations¹³⁶ is not conducive to creating a system where the rule of law prevails.

The laws could change. If they do change in favor of actually strengthening the patent system, those with the foresight and those who have made the investment to continue to seek good patents will be in a superior position to those who refrained from filing and seeking patents.

Again, patents are and have been a speculative commodity, and this will probably not change. A new venture should consider how much investment is prudent to make in its patent filings, but some anticipation of further change in the law is worth considering when deciding whether or not to file and pursue patents.

¹³³ See RON D. KATZNELSON, A FEDERAL INFORMATION QUALITY ACT CHALLENGE TO THE WHITE HOUSE 'PATENT TROLL' REPORT (2015), <http://ssrn.com/abstract=2587243>.

¹³⁴ 134 S. Ct. 2347 (2014).

¹³⁵ 132 S. Ct. 1289 (2012).

¹³⁶ In this author's opinion, the Supreme Court's use of terms like “abstract” and “sufficiently more” as guidelines for practical application in patent law are unworkable—we simply cannot know how to apply them when writing and prosecuting patent applications. Individuals cannot know what their words really mean; it is like trying to understand Humpty Dumpty: “‘When I use a word,’ Humpty Dumpty said [to Alice], in rather a scornful tone, ‘it means just what I choose it to mean—neither more nor less.’” LEWIS CARROLL, THROUGH THE LOOKING GLASS 205 (1871).

J. *Although Trade Secrecy and Copyright Offer Some Protection, There Is No Viable Alternative to Patents*

For some technologies, patents remain strong. Physical machines, medical devices, computer chips, circuits, pharmaceuticals, and chemical processes still remain patentable subject matter.¹³⁷ Thus, the recent anti-patent court cases have not (yet) significantly affected the availability of patent protection for things that people have traditionally considered “inventions.”

A huge economic contributor to the U.S. economy, however, is computer-implemented technology—software, computer-implemented business platforms, anything connected with the Internet.¹³⁸ In recent years, the U.S. software industry has contributed roughly half a trillion dollars to the U.S. economy per year, and may do the same in 2015.¹³⁹ As discussed earlier, the Supreme Court’s 2014 decision of *Alice Corp.* created significant uncertainty as to the patentability of anything deemed an “abstract idea,” and put into doubt the patent eligibility of virtually any business method, as well as computer-software implemented inventions. Another hugely important sector is medical diagnostics and genetic research. The Court’s decisions in *Mayo* and *Myriad* significantly narrowed the availability of patents on personalized medical diagnostic testing and genetic testing for treatment of diseases.¹⁴⁰

These recent decisions have puzzled patent and IP attorneys, courts, the USPTO, and the PTAB. Because of this uncertainty, courts, the USPTO, and the

¹³⁷ See Sachs, *supra* note 125.

¹³⁸ See ROBERT J. SHAPIRO, SONECON, THE U.S. SOFTWARE INDUSTRY AS AN ENGINE FOR ECONOMIC GROWTH AND EMPLOYMENT 1 (2015), http://www.sonecon.com/docs/studies/Report_for_SIIA-Impact_of_Software_on_the_Economy-Robert_Shapiro-Sept2014-Final.pdf (“From 1997 to 2012, software industry production grew from \$149 billion to \$425 billion . . . [representing a] share of U.S. GDP . . . [of] 2.6 percent . . .”).

¹³⁹ See *id.*

¹⁴⁰ See, e.g., Eisenberg, *supra* note 2, at 1; Claire Laporte, *Recent Judicial Rulemaking Leaves Life Science Patents Hanging in the Balance*, HEALTH AFFAIRS BLOG (Apr. 2, 2015), <http://healthaffairs.org/blog/2015/04/02/recent-judicial-rulemaking-leaves-life-science-patents-hanging-in-the-balance/>; Monica Heger, *Sequenom Patent Invalidation May Have Ramifications for NIPT Field, Entire MDx Industry*, GENOMEWEB (June 16, 2015), <https://www.genomeweb.com/business-news/sequenom-patent-invalidation-may-have-ramifications-nipt-field-entire-mdx-industry>.

PTAB have resorted to invalidating or rejecting just about any computer-implemented inventions on sight, or at least forcing serious patent applicants to formulate and present arguments as to why their particular computer-implemented inventions should be considered patent eligible.¹⁴¹

The spate of assaults on the patent system made many companies rethink IP protection for computer- and software-based technologies, as well as medical diagnostics. The only practical alternatives seem to be trade secrets and copyright. Trade secret protection requires actions and enforceable legal agreements designed to keep information private. Such protection may work for cloud-based platforms and software-as-a-service (“SaaS”) products, where the software owner keeps the programs running in a secure, isolated data center.¹⁴² The source code is not made available, and the executable code is simply not accessible.

Unfortunately, keeping computer code a trade secret does not work for embedded software, provided in the (literally) hundreds of microcontrollers, microprocessors, and microcomputers scattered throughout modern technologies including automobiles, mobile devices, drones, watches, robotics, and manufacturing equipment. Perhaps as a result of the uncertainty of protections, automotive electronics makers are increasingly relying on copyright protection for the code embedded in these products.¹⁴³ There also exists an emerging trend to reconsider trade secret protection for biotechnology inventions.¹⁴⁴

¹⁴¹ See DAVID J. KAPPOS & AARON COOPER, AT THE CORE OF AMERICA’S COMPETITIVE EDGE: WHY SOFTWARE-IMPLEMENTED INVENTIONS ARE—AND MUST REMAIN—PATENT ELIGIBLE (2015).

¹⁴² See SETH NORTHROP, IS YOUR SECRET SAFE IN THE CLOUD? TRADE SECRETS, SECURITY, AND CLOUD COMPUTING (2015).

¹⁴³ Automotive companies know that once the vehicle has left the showroom, the components can be removed, inspected, reverse-engineered, or modified. The discoverability of any secrets has led to an expanded copyright approach. See Steve Brachmann, *John Deere, GM Push Back Against Consumer Modifications of Vehicle Software*, IP WATCHDOG (July 1, 2015), <http://www.ipwatchdog.com/2015/07/01/john-deere-gm-push-back-against-consumer-modifications-of-vehicle-software/id=59014/>.

¹⁴⁴ *BIO 2015: DuPont Counsel Shares Best Practices for Protecting Trade Secrets*, WORLD IP REVIEW (June 18, 2015), <http://www.worldipreview.com/news/bio-2015-dupont-counsel-shares-best-practice-for-protecting-trade-secrets-8498>

Foundationally, copyright only protects against copying, which requires proof of “copying in fact” of elements that are protected by copyright.¹⁴⁵ U.S. Copyright law has long stated that there is no protection for the ideas underlying an expression, due to the idea/expression dichotomy in copyright law.¹⁴⁶ The Supreme Court’s decision in *Lotus Development Corp. v. Borland International, Inc.* pushed the computer industry heavily toward patenting in the mid-1990s.¹⁴⁷

Copyright law is and has been difficult and unpredictable to apply to protecting computer-implemented technologies.¹⁴⁸ The Supreme Court’s 1996 4–4 decision in *Lotus*,¹⁴⁹ for almost 20 years, stood for the proposition that certain

(“Recent patent decisions in the life sciences sector are leading biotechnology companies to seek protection for their innovations by using alternatives to patents, with trade secrets the most viable, the BIO International Convention has heard.”).

¹⁴⁵ See *Paycom Payroll, LLC v. Richison*, 758 F.3d 1198, 1204 (10th Cir. 2014) (“In order to establish copyright infringement plaintiff must prove (1) that it owns a valid copyright, and (2) that the defendant copied protectable elements of the copyrighted work. The second element requires us to consider two distinct issues. First we must determine whether, as a factual matter, the defendant copied plaintiff’s work. Second, as a mixed question of law and fact, we must evaluate whether the elements copied by the defendant are protected by copyright.”) (citations omitted) (citing *Mitel, Inc. v. Iqtel, Inc.*, 124 F.3d 1366, 1370 (10th Cir. 1997)).

¹⁴⁶ 17 U.S.C. § 102(b) (2012) (“In no case does copyright protection for an original work of authorship extend to any *idea, procedure, process, system, method of operation, concept, principle, or discovery*, regardless of the form in which it is described, explained, illustrated, or embodied in such work.”) (emphasis added).

¹⁴⁷ See 516 U.S. 233 (1996) (per curiam). Ostensibly, copyright does not extend to the text or layout of a computer program’s menus or interface. *Lotus Dev. Corp. v. Borland Int’l, Inc.*, 49 F.3d 807, 809, 819 (1st Cir. 1995), *aff’d by an equally divided court*, 516 U.S. 233 (1996). This was a 4-4 decision, but had not been seriously challenged in subsequent decisions until *Oracle Am., Inc. v. Google, Inc.*, 135 S. Ct. 2887 (2015) (No. 14-410), http://www.supremecourt.gov/orders/courtorders/062915zor_4g25.pdf.

¹⁴⁸ See, e.g., *Oracle Am., Inc. v. Google Inc.*, 750 F.3d 1339, 1354 (Fed. Cir. 2014) (“We are mindful that the application of copyright law in the computer context is often a difficult task.”); *Lotus*, 49 F.3d at 820 (Boudin, J., concurring) (“Applying copyright law to computer programs is like assembling a jigsaw puzzle whose pieces do not quite fit.”).

¹⁴⁹ *Lotus*, 516 U.S. at 233, *aff’g* 49 F.3d at 818–19.

aspects of a computer program's "interface" (the *user interface* in the form of a hierarchical menu of a spreadsheet program, Lotus 1–2–3) were not copyrightable. More recently, the Federal Circuit—mainly a patent appeals court that does not normally consider copyright issues—indicated in *Oracle American, Inc. v. Google, Inc.* that the structure, sequence, and organization of an *application programming interface* ("API") can be considered copyrightable subject matter.¹⁵⁰ This is a resurrection of a software copyright protection approach that was largely discredited in the 1992 appellate court decision, *Computer Associates International, Inc. v. Altai, Inc.*¹⁵¹

On one level, it is tricky to reconcile the Federal Circuit's opinions in *Oracle* and *Lotus*, because both involve "interfaces" to computer programs—one was a machine interface (API), and the other was a human interface (computer user menus).¹⁵² At least for the time being, in *Oracle*¹⁵³ it seems that the methodology for protecting computer software via APIs and "structure, sequence, and organization" has been resurrected.¹⁵⁴ The use of copyright protection for certain computer-implemented technologies is thus still alive and well, and seemingly a more plausible alternative to patent protection than before.

¹⁵⁰ *Oracle*, 750 F.3d at 1381 ("[W]e conclude that the declaring code and the structure, sequence, and organization of the . . . API packages [for Java computer source code] . . . are entitled to copyright protection. We therefore reverse the district court's copyrightability determination with instructions to reinstate the jury's [copyright] infringement verdict [as to the 37 Java packages].").

¹⁵¹ See 982 F.2d 693, 706 (2d Cir. 1992) (quoting *Computer Assocs. Int'l, Inc. v. Altai, Inc.*, 775 F. Supp. 544, 559–60 (E.D.N.Y. 1991)) (confirming district court's finding that the use of the terms "structure, sequence, and organization" in analyzing copyright infringement of computer program code "demonstrated a flawed understanding of a computer program's method of operation").

¹⁵² *Oracle*, 750 F.3d at 1347; *Lotus*, 49 F.3d at 809.

¹⁵³ 750 F.3d 1339 (2014). On June 29, 2015, the U.S. Supreme Court denied certiorari on the Federal Circuit's decision. This left the copyright infringement ruling standing. *Google, Inc. v. Oracle Am.*, 135 S. Ct. 2887 (2015). The Federal Circuit remanded the case to the lower court for further proceedings on Google's fair use defense. It is not possible to predict whether the case will make its way back to the Federal Circuit or Supreme Court, but the copyright infringement analysis stands. See *Oracle*, 750 F.3d at 1381.

¹⁵⁴ See *id.*

Oddly enough, *Computer Associates* was one of the primary reasons that the computer industry and its attorneys (including this author) began moving clients increasingly toward filing patents on software.¹⁵⁵ Have we come full circle, only to go back toward patents once the current anti-patent/pro-copyright movement has run around the rink again? It is too early to tell, but startups involved with computer-implemented technologies and desirous of IP protection will need to consider whether and how copyright protection under *Oracle* can be supplemental to, if not in place of, patenting.

Although copyright and trade secret protection is an option, the difficulty of keeping trade secrets and the persistent uncertainty of copyright protection for some technologies may lead back to patents. It may be difficult or impossible to get meaningful patent protection for some technologies for the time being, but the laws will probably change, and there are no good alternatives. Companies that have sufficient funds and wish to hedge their bets for IP protection will carefully consider patents, copyright, and trade secret protection, realizing that there may be no (or only limited) protection available. If there is no protection available, then the product would become a commodity that all competitors are free to copy, and the one who is the cheapest, fastest to deliver, or has the best supply chain or customer service, will have a marketplace advantage. That will be a different (non-patent-based) economic model that is not based on current constitutional or statutory authority.

VI. CONCLUSION

Yes, the patent system is under assault—from the administration, Congress, the courts, academia, and the public. But there are no appreciably better alternatives for protecting technology traditionally protected by patents. The patent system is not dead at all; it is still thriving for certain technologies—

¹⁵⁵ *Computer Assocs. Int'l*, 982 F.2d at 712 (citing *Lotus Dev. Corp. v. Borland Int'l, Inc.*, 788 F. Supp. 78, 91 (D. Mass. 1992) (discussing the potentially supplemental relationship between patent and copyright protection in the context of computer programs)). “Generally, we think that copyright registration—with its indiscriminating availability—is not ideally suited to deal with the highly dynamic technology of computer science. Thus far, many of the decisions in this area reflect the courts’ attempt to fit the proverbial square peg in a round hole. The district court, *see Computer Assocs.*, 775 F. Supp. at 560, and at least one commentator has suggested that *patent registration, with its exacting up-front novelty and non-obviousness requirements, might be the more appropriate rubric of protection for intellectual property of this kind.*” *Id.* (emphasis added).

medical devices, electronics, material science, manufacturing equipment, chemical processes, and many other areas. But patent protection for software and computer-implemented technologies, especially business methods, is less viable than before. Trade secret and copyright protections for applicable IP should be reconsidered in view of these assaults, but these too have their limits.

There are still good reasons, however, to file and seek patents—to help raise capital, represent enterprise value, signal quality to investors, establish ownership, create risks to competitors, avoid the IP of others, provide a mechanism for dispute settlement and technology turf staking, facilitate collaboration, constitute a tool to block competitors, and even monetize and generate revenue under the right circumstances. Despite the assault, the laws can and will change again. For some technologies under some circumstances, there are no good alternatives to patents. For many startups, it will still pay to play the patent game or risk having the game played against you.