

# **Transformation of the American Patent System: 2006 to 2016**

by Neal Solomon

## **Abstract**

The U.S. patent system, which functioned well for over two hundred years, has been eroded in the period from 2006 to 2016. Patent critics from the left and the right have attacked the patent system. Patentability tests, patent validity reviews and reduction of remedies have combined to narrow the scope of patent rights and to dramatically increase transaction costs for patent holders. When combined with reduced rewards, increased costs show that patent holders are caught in an economic squeeze. The combination of these changes to U.S. patent law has markedly decreased incentives to innovate.

Activist Supreme Court decisions in the last decade have been principally responsible for these changes, stimulated by aggressive technology company incumbent lobbying. The combination of these decisions has had a far greater effect on the patent system and the economy than the Court originally intended.

The U.S. is now in a compulsory licensing regime in which large technology incumbents that control at least 80% of collective market share employ an “efficient infringement” model of ignoring patents and forcing patent holders to enforce patent rights in the courts.

The weakening of patent rights is coupled with a weakening of antitrust enforcement that limits control of market leaders. This combination of weaker patent rights for market entrants and limited antitrust enforcement has uniformly benefitted large technology corporations and has served to distort market efficiencies.

The consequences of a weakened patent system are increased inequality, a higher competitive bar for market entrants, protection of incumbent monopoly profits, decreased competition, disincentive to invest in innovation by both small entities that have higher costs and large companies that can free ride, declining productivity growth, slower employment and wage growth and economic malaise.

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### **PART I: Disintegration of the American Patent System**

The American patent system represents a delicate balance. On the one hand, the patent system provides an incentive to invest in risky technical problem solving by giving an inventor an “exclusive right” for a limited time. On the other hand, from the time of the first Patent Act in 1790, patent critics have argued that patents block competition with a temporary monopoly. This tension has, nevertheless, enabled the rise of the U.S. as a major industrial economy, particularly after the Civil War. Optimally, the patent system encourages inventors to take risks to invent and disclose new and useful things by investing in *ex ante* costs before a later payoff. After a limited time of exclusivity rights, a patented invention falls into the public sphere, thereby providing a public interest in the long run. Economic and technological progress proceeds by building on previous inventions. Until about 2006, the U.S. patent system worked well, as evident in the development of the largest and strongest economy in the world.

It is indisputable that the U.S. patent system has been substantially eroded since 2006. The delicate equilibrium that had been maintained for over two centuries has become destabilized. Making sweeping changes to the patent system, Congress was motivated to pass the America Invents Act (AIA), by calls from large technology companies that the patent system was unfair. In addition, an activist U.S. Supreme Court supplied a series of decisions from 2006 to 2016 that substantially eroded patent rights. The sources of criticism in the patent system were generated from the margins on both the far left and the far right. Critics of patents generally ignore the *ex-ante* costs and risks of invention and instead focus on the intensity of property rights with which the system was intentionally endowed. These policy changes have disintegrated patent rights from property rules to liability rules. The effects of these changes have raised transaction costs, increased inequality with higher burdens to market entrants,

decreased investment in innovation and provided a key source of declines of productivity growth and aggregate economic growth.

In a sense, the U.S. patent system is the economy's immune system; when it is weakened, opportunistic viruses invade the economy. The patent system is crucial mainly to small entities that require property rights in new inventions to enter markets and compete with larger rivals. Since incumbents have large market share, the only way to compete is to maintain strong rights for novel innovations. Without this critical mechanism of instilling property rights in a new invention, small technology companies have impossibly high barriers to entry in markets that are protected by incumbent advantages. Consequently, when the patent system is destabilized, market competition is affected, with inherent advantages moving away from market entrants and towards market incumbents.

In the present market, there is a *de facto* three-tier patent system. On the top tier are operating companies that compete and are able to protect their intellectual property rights with remedies that include injunctions and damages for lost profits. In the middle tier are original inventors, small companies and university researchers that may not receive an injunction but may receive a reasonable royalty. At the bottom tier are companies that acquire patents and receive limited remedies. Patent rights are now allocated based on the identity of the inventor, with increased legitimacy provided not to the original inventor but to a mythical manufacturing nexus.

Market incumbents, typically large technology multinational corporations, could not be happier with the disintegration of U.S. patent law in the last decade since it enables them to free ride and to preserve extraordinary monopoly profits of typically \$10B to \$40B a year.

The technology market incumbents have invested heavily in lobbying to constrain patent rights in recent years with sophomoric, unilateral and unreflective arguments. They have

persuaded Congress to pass the AIA, a one-way redistribution of rights from small entities to large entities. In addition, they have persuaded the U.S. Supreme Court to interpret statutes involving patents that, collectively, supply a sea change in patent jurisprudence. An activist Roberts Court has sought to micromanage patent law to correspond to the technology incumbent narrative, often in contradistinction with the facts and in complete ignorance of the aggregate consequences of its decisions. In effect, the activist Supreme Court is enabling and emboldening extreme marginal critics of the patent system by rewriting patent law.

On the left side of the Court, justices are motivated by naïve arguments about non-practicing entities and patents blocking innovation. On the right side of the Court, justices are concerned about an abuse of enforcement transaction costs to force unfair settlements by “undeserving” patent holders. Both sides, however, are patsies to the large technology incumbents that preserve enormous market power and monopoly profits from a compromised patent system. To apply an analogy, the Supreme Court is recommending the killing of the dog to solve the problem of a few fleas.

This is in contrast with the long history of strong patent rights. Historically, Republicans ought to prefer responsible agency, efficient markets and law and order that are optimized with a strong patent system. Democrats should want to help entrepreneurs by supplying strong patent property rights that level the playing field, reward hard work and ingenuity and promote democratization of patent opportunities. In the last decade, however, both sides have drunk the Kool-Aid of the incumbent anti-patent sophistry, yet without adequate evidence, which exposes a narrow and self-interested agenda. Multinational corporations have an incentive to protect their monopoly profits by constraining competition, while the political left demands patents are supplied to the public for free since they presumably adversely increase costs in the short-run.

Consequently, both sides are left with irreconcilable contradictions. Ultimately, the political center was sacrificed by narrow arguments on the margins.

Market incumbents paint themselves as victims when in fact they are exploiting the transformed patent system for competitive advantage. Their hidden agenda is to attack the patent system itself, not the marginal problem of frivolous litigation, with an aim to limit patent eligibility, increase patent validity tests, constrain patent enforcement access, weaken remedies and drive up costs beyond a reasonable level to constrain competition from all but the largest rivals. For example, by apply the manufacturing nexus to patent enforcement, inventors are attacked for not making things themselves, despite the fact that ninety percent of the economy is non-manufacturing, thereby driving higher capital barriers. Thus, tragically, Asian manufacturers are tremendously benefited at the expense of original American innovators.

The consequences of a diminished patent system from the disintegration of patent rights have been profound, with dramatically reduced investment in innovation, particularly by small entities, free riding by large companies with a reduced incentive to invest in innovation, preservation of incumbents' historic monopoly profits, wage growth stagnation, productivity growth declines, asymmetric trade with more productive trading partners and reduced aggregate economic growth.

### **Death by a Thousand Cuts**

While the Supreme Court has reviewed dozens of patent cases since its 2006 term, about 18 cases are prominent. In 15 of these cases, the Court narrowed patent rights. When taken alone, these cases severely cabin patent eligibility, enforcement, validity and remedies.

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However, when taken together, the sum of these decisions represent a sea change in patent law that dramatically transforms the patent system.

The general consensus is that *eBay v MercExchange* (2006) was the case that started the trend to reduced patent rights. The decision instituted a “four-factor test” for eligibility of an injunction (35 USC § 283) to protect the exclusive right in a patent, with an implied emphasis on practicing (i.e., manufacturing) the invention. After this landmark decision, a number of seminal decisions flowed from the Court in the last decade, deciding a broad range of issues ranging from patentability (35 USC § 101), obviousness (35 USC § 103), indefiniteness (35 USC § 112), induced infringement (35 USC § 271), presumption of validity (35 USC § 282), enhanced damages (35 USC § 284), attorney fee awards (35 USC § 285), right to challenge validity (28 USC § 151) and patent exhaustion. Please refer to the chart for a review of these cases.

### U.S. Supreme Court Patent Cases: 2006 to 2016

Year	Case	Issue	Issues	Comments
2006	<i>eBay v. MercExchange</i>	Should an injunction automatically issue upon a finding of infringement of a valid patent? [35 USC § 283]	Court imposes “four-factor test” to determine eligibility for injunctive relief in patent infringement cases	case restricts remedy to promote patent’s exclusive right, with effect of compulsory license
2007	<i>Medimmune v. Genentech</i>	Does an alleged infringer have a priority right to challenge the validity of a patent upon acceptance of a letter alleging patent infringement? [28 USC § 151]	Defendant has right to challenge a patent’s validity by seeking a declarative judgment (DJ) at any time in the patent’s life	case severely restricts voluntary licensing market by exposing patent holder to validity challenge upon sending infringement letter to company
2007	<i>KSR v. Teleflex</i>	Is the TSM test inflexible in assessing patent obviousness [35 USC § 103]	Overturning the “teaching-suggestion-motivation” test as the exclusive test to establish patent	Decision enables lowering of bar to challenge patents as obvious principally by delinking field

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			obviousness	of patent
2008	<i>Quanta Computer v. LG Electronics</i>	What are the boundaries of doctrine of patent exhaustion?	Patent exhaustion limits a patent holder's rights for downstream users	Case enables downstream users to get free ride
2011	<i>Global-Tech Appliances Inc. v. SEB</i>	What is the intent requirement for induced infringement? [35 USC § 271]	Willful ignorance is not a defense against patent infringement	Infringer cannot ignore patents without willful infringement risk
2011	<i>i4i v. Microsoft</i>	What are the boundaries for the presumption of patent validity? [35 USC § 282]	Patent are presumed to be valid. Case overturned by AIA and institution of second window of patent review in IPRs/PGRs/CBMs	150 years of patent validity presumption support view of strong validity test to challenge patent
2013	<i>Association for Molecular Pathology v. Myriad Genetics, Inc.</i>	Are naturally occurring DNA patent eligible when applied in novel medical diagnostics? [35 USC § 101]	Naturally occurring DNA are not patent eligible	Case overturns <i>Diamond v. Chakrabarty</i> enabling emergence of biotech industry
2014	<i>Biosig v. Nautilus</i>	Review of patent indefiniteness [35 USC § 112]	Patent claims must not be indefinite but must precisely claim the invention	Case narrows patent eligibility standard of patent written description
2014	<i>Octane Fitness v. Icon Health</i>	What are the conditions for fee shifting in patent infringement cases? [35 USC § 285]	Judges have discretion in awarding attorney fees to opposing party	Case intended to constrain alleged frivolous patent infringement litigation
2010-2012-2014	<i>Bilski v. Kappos</i> ; <i>Mayo v. Prometheus</i> ; <i>Alice v. CLS</i>	What are the limits of an "abstract idea" for patentability? [35 USC § 101]	Addressing the abstract ideas exception to patentability, Court creates two-part test of patentability to link eligibility to machine	Cases narrow eligibility for patent, particularly in software and medical device industries
2015	<i>Commil v. Cisco</i>	Is a defendant's good faith belief in a patent's invalidity a defense of induced infringement?	Defendant belief in patent validity is not a defense of induced infringement	Simply challenging validity of patent is not legitimate defense of patent infringement
2016	<i>Cuozzo Speed Technologies v. Lee</i>	Does the PTO's Inter Partes Review broadest reasonable interpretation standard conform to the America Invents Act?	Administrative agencies have a right to interpret rules in the absence of clear congressional specificity	Court imposes <i>Chevron</i> (1984) again as most cited case to ignore substantive issues in critical case
2016	<i>Sequenom</i>	Do the PTO's IPR	Court refuses to accept	Court continues to

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	<i>Laboratories v. Ariosa Diagnostics</i>	procedures deny patent applicants due process?	case	ignore critical issue of patent validity challenges in PTO in contradiction to <i>i4i v. MS</i> decision
2016	<i>Halo Electronics v. Pulse Electronics</i>	Is the CAFC's two-part test in Seagate determining eligibility for willful infringement damages unduly inflexible? (35 USC § 284)	Court overturns inflexible two-part test in Seagate for eligibility for willful damages in patent infringement cases	Court lowers bar for enhanced damages eligibility in willful infringement cases
2016	<i>Samsung v. Apple</i>	Are lost profits in design patent infringement applicable to entire device?	Lost profits in design patent infringement are applied to an article of a device and not necessarily to the whole device	Court imposes apportionment of damages to a part of a larger device
2016	<i>TC Heartland v. Kraft Foods Group</i>	What are the limits of venue selection in patent infringement cases?	Court accepts case for review of patent venue statute [28 USC § 1400]	Court may apply higher standard for venue selection, with bias to defendant

There are a number of unexpected effects of the *combination* of these court decisions.

First, there is effectively now no voluntary licensing market after *MedImmune* and *Cuozzo*. If there is a high probability of an *Inter Partes* review (IPR) [or post-grant review (PGR) or covered business method (CBM) review] in the Patent Trial and Appeal Board (PTAB) at the PTO with a low bar for institution of a patent validity review, why send a letter to an alleged infringer to plan to discuss a license since the alleged infringer will simply seek declaratory relief or a patent review in the PTO? Patent reviews impose a one-way burden on patent holders that attack their property rights. Consequently, without a voluntary licensing market, more cases are driven to the courts for enforcement, which substantially increase costs for all parties.

The combination of *Alice* and *Cuozzo* enable large technology companies and small technology companies alike to attack software patents. In addition, medical diagnostics patents are difficult to support. These patents are now easily attacked in the courts (35 USC §101) and in the PTO (35 USC §103) in a second window of review.

Patents are now easier to attack in IPRs at the PTAB, since *Alice* (35 USC §101), *Myriad* (35 USC §101), *KSR* (35 USC §103) and *Nautilus* (35 USC §112) supply numerous tools for infringers. When combined with *Cuozzo*, there is a low bar to institute a patent review, with significant limits to due process.

Although *TC Heartland* is merely pending, it is clear from the trend that when combined with *MedImmune*, a defendant unilaterally controls a favorable court selection, with the power to initiate patent validity challenges at a time and place of their choosing, imposing a high burden on a patent holder.

The combination of *Alice* and *Octane Fitness* supplies primarily one-way fee shifting in cases, particularly involving software patents, when a patent is enforced, despite the presumption of validity in a patent. Since software represents a major category of the technology industry, this phenomenon of testing software patents and enabling asymmetric punishments for enforcement presents a troubling turn that suppresses innovation in a critical area.

When *Quanta* and *Samsung* are combined, it is clear that patent damages are highly restricted to both a small component that is negligible to enforce given high enforcement transaction costs and to downstream users in a complex supply chain. Representing short-term thinking, these cases ignore the entire market value rule to establish value based on the weight of a component in a larger product as well as the reality of downstream components in larger

products in a global economy. Both cases enable a free ride by infringers to cabin patent rights and narrow the boundaries of infringement.

A number of these cases are apparently intended to be narrow. For instance, in the Roberts Court's premier year, the unanimous *eBay* decision was not intended to represent a sea change. However, the Federal Circuit's inflexible application of a high standard of "irreparable harm" has restricted injunctions to almost all parties with narrow exceptions. Since ninety percent of goods are manufactured out of the U.S., enforcement of patents has shifted to the ITC to enable an exclusion order for importation of infringing products into the U.S.

Similarly, in the unanimous *Samsung* decision, the court spends pages explaining the meaning of word "article" from the Civil War to the present to justify their conclusion of implementation of patent apportionment limiting damages. The effect of this is to destroy incentives for small improvement inventions and virtually eliminate enforcement of patents in which the reward may not justify high enforcement transaction costs.

In sum, when taken together, these Court decisions represent a clear narrowing of patent rights. While taken in isolation, one or two decisions may have limited effects. However, taken as a group, these decisions have had a profound adverse effect on the economy, by substantially eroding patent rights, dramatically increasing transaction costs for market entrants that need patent rights most, harming competition and efficient markets and promoting monopoly power by market incumbents.

In Part II, I will describe the effects of Supreme Court decisions on patentability, patent validity reviews, patent remedies, compulsory licensing and the perpetuation of PAEs. These arguments

show that the aggregate Supreme Court decisions have made the problems that they sought to solve much worse.

## **PART II: Adverse Consequences of Court Decisions**

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There are several categories of change in the American patent system in the last decade, notably to patentability, patent validity reviews, patent remedies, compulsory licensing and perpetuation of PAEs. Rather than solve the problems of the patent system, judicial decisions and congressional actions have generally made the patent system worse for key stakeholders, imposing unexpected costs and risks. See the chart for a list of patent cases.

### **Patentability Restrictions**

Regarding patentability, the *Bilski-Mayo-Alice* and *Myriad* Court decisions have collectively raised barriers to patent eligibility. In the main, the *Bilski-Mayo-Alice* decisions on the abstract ideas exception to patentable subject matter have tended to affect software technologies by restricting patentability to a relatively primitive Nineteenth century test of linking an invention to a machine. Interestingly, the Court failed to define the term “abstract.” Hundreds of thousands of software patents have been effectively rendered worthless, including perhaps half of IBM’s and Microsoft’s patent portfolios. Since software is a key strategic technology, weakening patent rights is likely to adversely affect software investment as well as broader industrial growth. On the other hand, some tech incumbents will benefit from higher barriers to patentability in software. For the most part, it is far easier to free ride another’s software invention than to invent new technology. Nevertheless, the two-step test for

patentability has been reasonably salvaged by subsequent Federal Circuit decisions requiring a technical feature or inventive step to satisfy the criteria of patentability involving an abstract ideas.

In addition to software, the medical diagnostics industry has been affected by these patent eligibility decisions. In addition, *Myriad* limited the scope of inventions beyond natural phenomena. This has had the effect of constraining the personalized medicine revolution. Discoveries of genetic material are insufficient to justify patentability in medicine, with an artificial man-made inventive step required. In addition, the *Bilski-Mayo-Alice* abstract ideas test affects patent claims involving medical diagnostics. These changes to patent law place a higher barrier to the medical diagnostics field, effectively impeding development of medical diagnostics during a new epoch of genetic discovery.

In both the software and medical diagnostics fields, there is likely to be less investment in new technologies, with substantially higher costs, since patents for inventions in these industries are harder to obtain and protect.

### **Patent Validity Reviews**

The AIA instituted a new regime in the PTAB for patent validity challenges in *Inter Partes* review (IPR), post-grant review (PGR) and covered business method (CBM) review. The PTO has instituted a hostile approach to post-grant patent review by refusing to equalize PTO standards with the Federal District Court standards of review, including the Phillips standard for claim language interpretation or the clear and convincing evidence standard for an institution decision. When combined with a very loose interpretation of obviousness, from an abuse of *KSR*, the majority of substantive patent claims in which reviews are instituted are discarded.

Consequently, the PTAB accepts an unusually high number of patent review institution requests and cancels an unusually high percentage of patent claims originally issued by the PTO. In effect, the AIA did an end run about the Supreme Court's *i4i* decision which clarifies standards of patent review in light of the presumption of patent validity (282).

The consequences of post-grant patent reviews in this hostile patent review regime is to impose an undue burden on patent holders, dramatically increase transaction costs on patent holders, move to a guilty-until-proven-innocent system, ignore the presumption of patent validity, eviscerate due process for patent holders, delay enforcement in the courts, reduce a patent to a liability rather than an asset, delegitimize the PTO and create different fora for adjudication of patent validity with different standards of review. The Supreme Court refusal to address any substantive issue in *Cuozzo* or to accept *Sequenom* suggests a contradiction with the Court's decision in *i4i*. Patents are now perceived by the PTO *not* as a property right but a public benefit, with a politicized administrative agency rather than an Article III court governed with adjudicating the patent right. The Court needs to sort out these contradictions and anomalies by restoring property rights and equalizing common-sense standards of review in the different fora.

### **Reduction of Remedies**

A combination of Court decisions affects patent remedies. Starting with *eBay*, the court has limited remedies by substantially raising the bar for injunctions to protect the exclusive right in a patent. The only time the term "right" is referenced in the Constitution is in the IP clause that refers to an "exclusive right" to protect intellectual property for "limited times." This limited duration feature supplies a constraint on exclusivity, suggesting that the Founders would

only tolerate a monopoly for a limited period in order to provide a strong incentive to invest in solving hard innovation problems. This exclusive right for a limited time approach thus represented a compromise and supplies a crucial tension in patent law, the balance of which is undermined by the restrictions on supporting the exclusive right with an injunction. *A patent only gives the patent holder the right to exclude by enforcing the patent in a court.* Absence of an injunction eviscerates this crucial right and undermines the patent system itself.

One of the concerns the Court addressed in *eBay* is the application of injunctions for a small invention in a larger device or system. In these cases, the application of the exclusive right tends to benefit the patent holder at the expense of the infringer, thereby supplying an unfair advantage by enabling the patent holder to hold up a larger device or system. The solution to this problem is simple. Rather than focus on an injunction for an entire device, the injunction should be narrowed to focus only on the component to which the patented invention applies. The courts need to apply imagination to develop a narrow injunction to restore the exclusive patent right.

The combination of *eBay* and *Halo* supply limited remedies with a high bar for both an injunction and enhanced monetary damages until a finding of infringement. With reduced remedies for patent infringement, infringers have reduced incentive to negotiate licenses since they can free ride and wait to be sued, with the worst case typically being settlement of a license for a reasonable royalty that the parties would have selected in a hypothetical voluntary license. *eBay*, in particular, promotes the business strategy of “efficient infringement” since there is little risk of being blocked from infringing without an injunction and, even if there is enforcement at the margins, there is little chance of enhanced damages, supplying infringers with little incentive not to continue infringing behaviors. With the recent addition of *Samsung* (apportionment),

there is even less incentive not to infringe since the monetary damages are likely to be nominal in the case of an invention on a small component of a larger system. It would appear that the courts are supplying an invitation, or a license, to steal.

In addition to *eBay*, *Samsung*, though only limited to design patents, institutes an apportionment approach to establishing patent damages. The problem with narrowing monetary damages to only a single component is that this view ignores the weight or value of the component in an overall system. Applying a narrow view of attacking patent damages to a small portion of a larger device can have substantial consequences in limiting patent damage awards. If patent awards for a small component of a device falls below enforcement transaction costs, there is no incentive to enforce the patent, which enables a free ride for infringers for patented technologies at the margins.

The combination of IPRs, *eBay* and *Samsung* suggest that cost barriers and time to enforcement are higher thereby markedly increasing overall transaction costs for patent holders. Taken together, the Court appears to be favoring infringers over patent holders in cases involving patent remedies, with an effect of disrupting incentives to invent.

When the limits on injunctions and increasing chances of apportionment are combined with limitations on enhanced damages that are only restricted to the most egregious cases of willful infringement in *Halo*, patent holders are likely to receive reduced awards.

Reduced patent remedies enables technology company incumbents or Asian manufacturers to free ride on patent holders since the bar to enforce patents are much higher. With a higher bar to enforcement with limited remedies, the “efficient infringement” model has emerged in which infringers infringe first and then wait years for an occasional enforcement and only pay a reasonable royalty that they might have paid in a voluntary licensing negotiation.

The combination of substantially higher costs for patent validity reviews and enforcement in the courts and reduced remedies suggest that patent holders are caught in a squeeze that adversely affects incentives to invest in innovation.

### **Compulsory Licensing**

One critical effect of *eBay* was to eliminate access to injunctions to stop continued infringement of a patented invention. The imposition of a “four-factor test” was not perhaps originally intended to eliminate the vast majority of injunctions, but the Federal Circuit application of a strict interpretation of the test has had this effect since most patent holders could not establish a still undefined “irreparable harm” standard. Since an injunction is crucial to enforce an exclusive right, the property right in a patent was reduced in many cases to liability rules in which the only remedy was monetary damages. This supplies a perverse incentive for infringers to infringe, wait to be sued and then pay a nominal fee in a compulsory license. This logic leads to the phenomenon of “efficient infringement” and practically invites infringers to pirate patented technology, particularly from small entities.

The U.S. has therefore been in a compulsory licensing paradigm for the last decade. A compulsory license enables *anyone* to use a patented invention as it also blocks an inventor from licensing exclusively (or selling) a patented invention to a single party. The patent holder loses control of patent monetization. Without the ability to license exclusively, the prices for a non-exclusive license are decreased precisely because anyone can use the invention.

Compulsory licensing tends to reduce licensing rates since more than one party can use the invention. With reduced royalty rates (and high enforcement costs), only high quality

technologies or technologies that apply to large and established markets are enforceable since they justify higher awards.

When combined with a high bar to show enhanced damages from willful infringement, the lack of an injunction supplies an incentive to ignore patents altogether since the only expected penalty is a nominal license. With the expectation of only a nominal license, combined with high transaction costs to enforce a patent in the PTAB and the courts, there is no reason for companies to negotiate licenses in a voluntary licensing market. As Judge Michel, former chief judge of the CAFC, has commented, the era of the honor system between companies is long gone. All deals are now driven to the courts, leaving the pecuniary undercapitalized inventor or small business typically outgunned and reinforcing the asymmetry of economic power between the large technology companies and market entrants.

### **Perpetuating PAEs**

One of the Court's main targets are business entities that acquire and assert patents with an aim to force quick patent licensing settlements with small companies by manipulating high transaction costs of patent litigation. Ironically, however, the combination of judicial decisions in recent years inadvertently appears only to have made the problem of patent abuse much worse. First, with higher transaction costs and lower patent damages, patents have generally been devalued, particularly for those without access of capital resources to apply to patent reviews or patent enforcement in the courts. This devaluation amid increased enforcement costs have forced inventors and universities to sell to or to partner with financial partners or (gasp!) "patent trolls" in order to realize any value for their work. Weakening the patent system has thus

effectively transferred economic power from original inventors towards patent brokers and bad actors, precisely the opposite of the intended effect of judicial decisions.

By raising the bar to patentability and patent review, and limiting remedies, patent holders are put in a financial squeeze. The higher bar to enforce patents enables infringers are able to engage in efficient infringement without a risk of harm except for a few matters that meet a high threshold for enforcement. This forces matters to the courts, with high transaction costs. While large companies can bear the high transaction costs of patent infringement defense, for small entities, high enforcement costs require outside investors, which demand high returns on capital to cover their risks. In this way, the efficient market of a strong patent system and a voluntary licensing market turns into an inefficient market that benefits incumbents and harms market entrants.

Again, ironically, a limit of venue that benefits large incumbents will likely have the effect of enabling patent assertion entities to enforce patents against technology end-users, precisely the sort of behavior that further abuses the patent system. Although the FTC has sought to address these issues, there is no clear resolution to the problem.

The limited patent remedies and high enforcement transaction costs perversely force patent holders to partner with patent assertion entities to fund infringement enforcement despite the fact that the original inventors receive little benefits, technology end users are forced to pay for patented technologies for which large technology companies should be responsible, the funders receive the lion's share of rewards and large incumbents must pay several times more than they would under a voluntary license because of the expenditure of high enforcement and defense costs.

By promulgating a patchwork of poorly thought out judicial decisions, the courts have inadvertently instituted a perverse system that increases inefficiencies, enables large technology incumbents to pirate with impunity and harms the original inventors that the system was originally intended to benefit.

### **PART III: Economic Consequences of Judicial Decisions**

While patentability restrictions, patent validity reviews, reduction of remedies, compulsory licensing and perpetuating PAEs are logical consequences of recent judicial actions, there are numerous additional adverse consequences as well.

A weak patent regime promotes free riding by infringers, particularly technology incumbents and Asian manufacturers that use patented inventions. It is now far easier to steal patented inventions than to actually invent.

Given limited remedies, the voluntary licensing market has been effectively eliminated. Why negotiate when one can steal another's technologies and most likely only pay a small fee that would have negotiated anyway?

For the most part, in a weak patent regime, it is logical for infringers to refuse to deal with patent holders. This patent hold out is promulgated by the easy choice to asymmetrically challenge patent validity in a PTAB IPR at considerable expense, time and risk to the patent holder. This makes efficient infringement the dominant choice: infringers are practically invited to steal.

With high barriers to enforce patents, there are reduced incentives to invent or invest in risky innovation. In fact, there are disincentives to invent, in a distorted system in which patents are actually a high-cost liability with limited rewards. Recent data show a clear trend in the last

decade of reduced investment in innovation manifest in the worst productivity growth data in several generations precisely because of the misplaced incentives from a weak patent regime.

The trend of the last decade in patent law has thus been to help infringers and to hurt innovators and market entrants, precisely the opposite of a healthy patent system.

In addition to market incumbents, who are the winners in the weak patent regime? China. Manufacturers are beneficiaries and since much manufacturing has shifted to China, large state owned manufacturing companies are big winners. In fact, start-ups are beginning to shift to other nations since there are limited benefits of American entrepreneurship in a weak patent regime.

Like the Japanese patent system, the U.S. patent system has shifted towards benefiting companies that pool large patent portfolios. The trend towards large patent portfolios to capture value is capital resource intensive, which locks out small entities from the patent system and the economy.

### **Anticompetitive Features of a Weak Patent System**

Attacking the patent system is a low cost way for technology incumbents to free ride, with courts as unreflective and unwitting accomplices. But attacking the patent system is also anticompetitive.

Patents are critical tools enabling companies to compete. Not only do patents supply an incentive to invest in research to solve complex problems to develop novel and useful technologies, patents are crucial to market entrants to enable them to compete with established incumbents. In a weak patent regime, an oligopoly of incumbents and manufacturers tend to

benefit at the expense of market entrants. The courts have thus effectively protected infringers at the expense of innovators.

Market competition is disrupted since innovation costs and enforcement costs are increased. In effect, weak patents harm competition as they drive up costs. Since all matters are driven to the courts in an efficient infringement paradigm, transaction costs increase disproportionately for small entities.

Because patents have been politicized in the courts, with higher costs to defend patent validity in IPRs and for enforcement, along with reduced remedies, incumbents now typically refuse to deal with patent holders. This hold out by incumbents makes patent enforcement the only option for many patent holders.

However, the *collective* refusal to deal by a group of technology incumbents is clearly anticompetitive. When all incumbents hold out, free ride and engage in efficient infringement, there is an implication that they *fix prices* in a concerted effort to manipulate patent input prices for incumbents' goods. In the aggregate, these anticompetitive behaviors benefit from a weak patent system that rewards incumbents at the expense of market entrants. With higher barriers to entry, there are fewer market entrants and these entrants supply subsequently less market competition. With less market competition, there are fewer jobs created in smaller companies, prolongation of market competition asymmetry, perpetuation of incumbent monopoly profits, disincentives for incumbents to invest in R&D and slower aggregate economic growth. The last decade has witnessed all of these dysfunctional economic phenomena in an historically weak economic recovery.

Long-term price fixing results from the *implicit cooperation* by buyers of technology to ignore seller's rights. As there appears to be a concerted effort to drive down prices of patented inventions, along with the higher transaction costs, there is a squeeze on sellers of IP.

We have seen this movie before. In the 19<sup>th</sup> century, railroads moved into a region and hired mercenaries to swindle settlers that worked the land. How is configuring a weak patent system to enable systematic infringement of small entities innovation to benefit large incumbents any different?

Efficient infringement and compulsory licensing are amplified by these collusive behaviors. It is not controversial that large technology incumbents cooperate to ignore patent rights since they happily advertise their disdain for the patent system and the illegitimacy of patent holders (other than themselves).

When the weak patent regime in which efficient infringement thrives is combined with weak federal government or judicial antitrust enforcement, harms to patent holders are further enhanced. Weak antitrust enforcement eliminates the competition in an efficient market when incumbents are able to cooperate to ignore patents and voluntary licensing, suggesting secondary anticompetitive effects of weak patent and antitrust enforcement.

### **Market Entrants Require Patents**

The biggest shift in the last decade has been the requirement of capital-intensive resources to invest in technology research and patent enforcement. The U.S. patent system has thus become de-democratized. Whereas in the period before 2006, anyone could receive a patent for their hard work and ingenuity, now the system has been locked out for all but the most

resource rich. This is particularly ironic since patents are critical tools for market entrants that, by definition, tend to lack capital resources.

One upshot of the changes in patent law has been the effective addition of regulations and taxes to the patent system, which unduly burdens market entrants least able to function with these high taxes.

There has been a clear shift towards investors in technology sectors that require patent rights. With more risk, investors have a higher cost of capital and require higher returns. These factors reduce rewards for patent holders relative to investors and reduce inventions on the margins to unfundable ideas that cannot be monetized.

The dramatic one-way changes to patent law in the last decade have tended to completely ignore competition law. While strong patents help market entrants to compete against larger rivals, weak patents only help market incumbents and China. We have thus witnessed in the last decade the rapid destruction of competitive markets, the rise of China as the world's main manufacturer and the preservation of incumbent monopoly profits at the expense of market entrants. Furthermore, the incentive to invest in innovation has been badly disrupted, with business starts at their lowest rates ever recorded. The changes in patent law have distorted free markets, misplaced incentives for innovators and enabled perverse disincentives for incumbents to invest in innovation.

Furthermore, rather than invest in technology innovation, in a weak patent regime, venture capitalists now focus on short-term business models that avoid risky innovation. For example, the average number of patents of the top 75 U.S. "unicorns" [i.e., companies with a market valuation of \$1B or more] in 2015 stood at eight. Start-ups themselves become un-innovative since they have incentives to steal others' technologies, to complain about the

inflexibility of patent system when caught infringing and to invest in neither R&D nor patent enforcement. We can call start-ups that are discouraged to invest in innovation and would rather steal others' innovation "little free riders." Free riding becomes the norm, with small ventures becoming revenue-free service- focused levitation acts with no new technology.

With less incentive to invent or invest in innovation, it should be no surprise that in a weak patent regime, productivity growth has declined precipitously and economic growth is substantially reduced.

### **Constructive Remedies**

There is a need to restore balance, moderation and responsibility to the patent system. There are several things that should be done.

First, the Supreme Court needs to review eligibility for injunctions in patent infringement cases. In some ways, *eBay* was an unfinished work. The Court needs to craft a narrow injunction to protect a property right and promote exclusion without necessarily harming an infringer's products. The courts need to stop attacking the identity of the patent holder, particularly the original inventor, for justification of instituting an injunction.

Since incumbent hold out is promulgated with weak remedies, it is necessary to apply enhanced damages to serial infringers. Enhanced damages provide an incentive to negotiate fair patent licenses in good faith. Similarly, fee shifting should be applied to serial infringers to remove the high transaction cost bar to patent holders.

IPRs should only be instituted with a high (clear and convincing) bar to preserve the presumption of patent validity. Third parties should not be allowed to challenge a patent. Only a judge should be allowed to request a patent validity review, typically in egregious cases. The

same standards need to be applied to the patent review process in the PTAB and the federal district courts. Moreover, patents in IPRs must be amendable, as originally provided in the statute. In addition, patent obviousness must be narrowed in patent reviews, as an adjunct to novelty, so as to maintain a common sense approach to patent examinations. In sum, due process should apply to patent validity reviews in the PTO as they would in the courts.

Courts need to find logical ways to preserve software and medical diagnostic patents.

Damages need to be fair, reasonable and predictable. There is a need to restore balance to the system. Perhaps FRAND damages are a good start.

The Court in *i4i* and *Halo* upheld two hundred years of patent law, suggesting that at its best the court is able to muster some common sense.

When the patent system is strengthened, there is a responsible licensing regime, with clear boundaries for patent rights and fair prices. One goal of the patent system should be to reconstitute the voluntary licensing market. This keeps things out of the courts altogether, something that all sides should agree on.

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