FROM A STRONG PROPERTY RIGHT TO A FICKLE GOVERNMENT FRANCHISE:  
THE TRANSFORMATION OF THE U.S. PATENT SYSTEM IN 15 YEARS

Hon. Paul R. Michel & Matthew J. Dowd*

ABSTRACT

Congress created the Federal Circuit almost 40 years ago. When Congress established the Federal Circuit, Congress wanted it to improve the state of affairs on patent law. For many years, through the 1980s and 1990s, the Federal Circuit achieved Congress’s goal and ushered in an era of confidence in U.S. patents. The ultimate goal was to improve the nation’s “innovation certainty.”

Winds of change began to blow in the mid-2000s. The U.S. Supreme Court became re-interested in substantive patent law. From 2006 to 2008, the Supreme Court issued a string of decisions weakening the patent system. One decision was eBay Inc. v. MercExchange, L.L.C., which rejected the Federal Circuit’s approach to issuing injunctions once a patent was found valid and infringed. Additionally, a concerted lobbying effort got underway to enact so-called “patent reform”—much of which was supported by major Silicon Valley corporations. The Supreme Court then entered the emerging fray of patent-eligibility and issued four decisions on patent eligibility that created a novel two-part, formalistic test (the Alice-Mayo test) that had no connection to the statutory categories set forth in § 101. Along the way, and in response to the powerful lobbying efforts of Silicon Valley behemoths and large financial institutions, Congress passed the America Invents Act (AIA). The most significant reworking of the Patent Act in 60 years, the AIA radically altered the way patent rights are adjudicated and enforced—and mostly to the detriment of patent owners. The Patent Trial and Appeal Board (PTAB) became the largest body of administrative adjudicators deciding the validity of patent rights. Additionally, the Supreme Court completely redefined a

*Matthew J. Dowd is a partner and founder of Dowd Scheffel, PLLC. He is a graduate of the George Washington University Law School and of the College of William and Mary. He is a former clerk for Chief Judge Paul R. Michel (ret.) of the U.S. Court of Appeals for the Federal Circuit. The Authors would like to give special thanks to John Wheaton, Gregory Dolin, Dmitry Karshetdt, Robert Scheffel, William Jenks, Jonathan Stroud, and the many other colleagues who have made the practice of patent law so engaging. Our discussions over the years have contributed and influenced thought that have ended up in this Article. Thank you as well to Kisa Motiwala and Elliot Gee for their assistance in reviewing this Article.
U.S. patent as a mere “public franchise,” instead of the traditional understanding of the patent as a private property right.

The overall result is a diminished U.S. patent system and decreased innovation certainty. In the matter of 15 years, Congress’s original goal to create a uniform and stable body of national patent law through the Federal Circuit was undermined. The current result is increased unreliability in patent rights and decreased innovation certainty.

Notwithstanding the current state of affairs and how the U.S. patent system got to where it is, perhaps the more important question is how the system can be improved. To do that, we must be vigilantly cognizant of the key attributes of a productive U.S. patent system. First, the U.S. patent system must improve U.S. innovation certainty—meaning improving the legal, economic, and regulatory ecosystem that provides the optimal level of patent protection to reward innovators and investors. Without a reasonable degree of confidence, investors will put their funds elsewhere, and there will be less capital for continued research and development.

Second, the United States must stay ahead of its global innovation competitors, and it can do so by ensuring the U.S. patent system continues its constitutional objective of promoting the useful arts. Some changes will be necessary through legislation, and various bills have proposed a number of preferred amendments. Other changes may occur at the U.S. Patent and Trademark Office (PTO) level.

Ensuring global competitiveness in cutting-edge technology will require efforts beyond patent law, however. The nation will need to ensure substantial funding for the leading twenty-first century technologies, including artificial intelligence, 5G telecommunications, advanced aerospace technologies, and others. We explore some legislative options for fostering the proper environment for continued U.S. innovation leadership.

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I. INTRODUCTION

Almost 40 years ago, Congress created the U.S. Court of Appeals for the Federal Circuit. The court was granted a wide-ranging jurisdiction—including cases from the Merit Systems Protection Board, the Court of Federal Claims, the Boards of Contract Appeals, and the Court of International Trade. Also placed within the new court’s jurisdiction were patent-related appeals, including cases from the U.S. Patent and Trademark Office (PTO), federal district courts, and the U.S. International Trade Commission. The new court’s patent decisions became a centerpiece of its varied judicial caseload, as Congress intended.

When Congress established the Federal Circuit, U.S. lawmakers were clear. Congress wanted the Federal Circuit to improve the state of affairs on patent law. The nation needed better decisions for intellectual property rights and more uniformity in patent law. The nation also needed more certainty in patent rights. For many years, through the 1980s and 1990s, the Federal Circuit achieved Congress’s goal and ushered in an era of confidence.
in U.S. patents.\textsuperscript{5} That confidence allowed inventors and investors alike to reap the rewards of their work. The ultimate goal was to improve the nation’s “innovation certainty.”\textsuperscript{6}

More recently, however, the U.S. patent system and the nation’s innovation ecosystem have been fundamentally transformed. This Article seeks to provide a high-level overview of how this fundamental transformation has come about—almost in a blink of an eye. In the course of about 15 years, the U.S. patent system has gone from one of granting strong property rights with reliable injunctive relief to the current status in which a patent is a mere government franchise with limited rights to an injunction.

While the Federal Circuit largely achieved Congress’s goal of reinvigorating the U.S. patent system through the 1980s and 1990s, winds of change began to blow in the mid-2000s.\textsuperscript{7} The U.S. Supreme Court again became interested in substantive patent law, after having let the Federal Circuit do the heavy lifting for years. From 2006 to 2008, the Supreme Court issued a string of decisions that led to an overall weakening of the patent system and a decrease in certainty in patent law.\textsuperscript{8} One of those decisions was \textit{eBay Inc. v. MercExchange, L.L.C.}, which rejected the Federal Circuit’s approach to issuing injunctions once a patent was found valid and infringed.\textsuperscript{9} In view of \textit{eBay}, no longer could many patent owners have a reasonable expectation of an injunction once their valid patents were found to have been infringed.\textsuperscript{10}

After the Supreme Court’s renewed interest in patent law, the concerted lobby effort got underway to enact so-called “patent reform.” Much of the legislation was supported by very discrete interest groups, some of which were well-funded by the major Silicon Valley corporations. The rallying cry was that business method patents and patent trolls were a multi-billion-dollar drain on the economy, even though little economic evidence supported such broad-brush claims.

\textsuperscript{5} See id.
\textsuperscript{7} See id.
\textsuperscript{8} See, \textit{e.g.}, \textit{eBay Inc. v. MercExchange, L.L.C.}, 547 U.S. 388 (2006).
\textsuperscript{9} \textit{Id.} at 392–95.
\textsuperscript{10} See, \textit{e.g.}, \textit{ActiveVideo Networks, Inc. v. Verizon Commc’ns, Inc.}, 694 F.3d 1312 (Fed. Cir. 2012).
The Supreme Court continued its renewed interest in patent law. The Court entered the emerging fray of patent eligibility. Over the course of four years, the Court issued four decisions on patent eligibility that created a novel two-part, formalistic test (the Alice-Mayo test) that had no connection to the statutory categories set forth in § 101.11 While competing factions fight about the “correctness” of the Alice-Mayo test, perhaps the worst result is the wake of confusion in patent eligibility. And with that wake, the Supreme Court now seems to have no interest in wading back into patent eligibility, despite uniform calls to do so, even from the Solicitor General.12

Along the way, and in response to the powerful lobbying efforts of Silicon Valley behemoths and large financial institutions, Congress passed the America Invents Act (AIA).13 The most significant reworking of the Patent Act in 60 years, the AIA radically altered the way patent rights are adjudicated and enforced—mostly to the detriment of patent owners. The Patent Trial and Appeal Board (PTAB) within the PTO has now become the largest body of administrative adjudicators deciding the validity of patent rights. Additionally, in a dispute stemming from the AIA, the Supreme Court completely redefined a U.S. patent as a mere “public franchise,” instead of the traditional understanding of the patent as a private property right.14

The overall result is a diminished U.S. patent system. The Federal Circuit has a much-diminished role in ensuring uniformity in the law. In the matter of 15 years, a series of judicial decisions—coupled with the AIA and concerted lobbying efforts—have overruled Congress’s original goal to create a uniform and stable body of national patent law through the Federal Circuit.15 The current result is increased unreliability in patent rights and decreased innovation certainty.

Notwithstanding the current state of affairs and how the U.S. patent system got to where it is, perhaps the more important question is how the system can be improved. To do that, we must be vigilantly cognizant of the

key attributes of a productive U.S. patent system. First, the U.S. patent system must improve U.S. innovation certainty. By innovation certainty, we mean a legal, economic, and regulatory ecosystem that provides the optimal level of patent protection to reward innovators and investors. Those innovators and investors must have a reasonable degree of confidence that a duly issued U.S. patent grants an enforceable right based on innovation. Without a reasonable degree of confidence, investors will put their funds elsewhere, and there will be less capital for continued research and development.16

Second, the United States must stay ahead of its global innovation competitors, and it can do so by ensuring that the U.S. patent system continues its constitutional objective of promoting the useful arts.17 Some changes will be necessary through legislation, and various bills have proposed a number of preferred amendments.18 Other changes may occur at the PTO level. The Director of the PTO, Andrei Iancu, has already implemented a number of changes.19

Ensuring global competitiveness in cutting-edge technologies will require efforts beyond patent law, however. The nation will need to ensure substantial funding for the leading twenty-first century technologies, including artificial intelligence, 5G telecommunications, advanced aerospace technologies, and others. We explore some legislative options for fostering the proper environment for continued U.S. innovation leadership.

II. A BRIEF HISTORY OF THE U.S. PATENT SYSTEM

To fully understand how significantly the U.S. patent system has been changed, one needs a brief history of the U.S. patent system, including prior to the creation of the Federal Circuit. Whenever one discusses law and policy, it is all too easy to forget the history, and we must recall this to elucidate the best path forward. And "brief history" is perhaps too much, as

no complete summary can, by itself, be brief. Most readers of this Article will have at least a fair working knowledge of the relevant history, so we highlight the most important and relevant points.

A. Before the Creation of the Federal Circuit

For almost 230 years after the First Congress enacted the first Patent Act, strong intellectual property rights largely drove U.S. economic growth, converting the United States from a poor, agrarian, backward, and weak nation to the wealthiest, most industrialized, and most technologically advanced and powerful nation on Earth.20 Some of the nation’s most iconic nineteenth century inventions were protected by U.S. patents.21 Innovation continued into the twentieth century, as the country moved into the Industrial Age.

For a substantial portion of the twentieth century, however, patent owners faced numerous obstacles to enforcing their rights. Forum shopping was a particular problem due to non-uniformity in patent law interpretation and application. Some courts were particularly antagonistic to patent rights,22 The Supreme Court’s historic antipathy to patents over many decades was well known and well documented.23 Antitrust fervor and


22. COMM’N ON REVISION OF THE FED. CT. APP. SYS., STRUCTURE AND INTERNAL PROCEDURES: RECOMMENDATIONS FOR CHANGE (1975), reprinted in 67 F.R.D. 195, 370 (1975) (noting “patent owners and alleged infringers spend inordinate amounts of time, effort and money jockeying for a post position in the right court for the right issues. Nowhere is this quest more vigorously pursued than for the right forum to rule on validity”).

23. See, e.g., Donald S. Chishum, The Supreme Court and Patent Law: Does Shallow Reasoning Lead to Thin Law?, 3 MARQ. INT’L L. REV. 1, 3 (1999) (“In many of these cases you will find phrases and statements by the Supreme Court, and individual
aggressive suits against patent owners were also problematic, as the antitrust pendulum had swung far to the extreme for many years.

In 1952, Congress fundamentally amended the Patent Act to overcome some of these decisions by enacting 35 U.S.C. § 103, which was intended to retire the high court’s judge-made requirements for “flash of creative genius” and synergy.24 Those requirements from earlier Supreme Court cases were not reconcilable with § 101, which expressly authorized patents on “improvements.”25 Even so, in Graham v. John Deere Co. of Kansas City, the Court insisted that the 1952 Act was merely a codification of its decisions and returned to its old anti-patent bent.26

By the 1970s, however, the mounting evidence of U.S. industrial decline became too apparent to ignore. The United States also faced increasing economic competition from Japan, which was poised to dominate many U.S. markets, including automobile and consumer electronics sectors—and perhaps dominate much of the globe economically. Leaders in both industry and government expressed alarm and suggested strengthening patents as a means for reviving U.S. manufacturing.

Propelled by successive presidential commissions on industrial competitiveness, the last during the Carter Administration, a consensus developed to revive the U.S. patent system.27 Even then, there was a clear recognition that reliable patent protection was a vital tool for encouraging innovation and improving the general social welfare of the country.

In 1980, Congress passed the Bayh-Dole Act to allow licensing to private firms of patents resulting from government-funded research, whether conducted at federal agencies or at universities funded by

justices, that express skepticism and hostility about the patent system and about patents.”).
24. Cuno Eng’g Corp. v. Automatic Devices Corp., 314 U.S. 84, 91 (1941) (“That is to say, the new device, however useful it may be, must reveal the flash of creative genius[,] not merely the skill of the calling.”).
25. 35 U.S.C. § 101 (2018) (“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.”).
government grants.28 Previously, most patents of this kind were never developed into cures or other products that reached consumers. This change in law led to a boom in intellectual property developments and technology commercialization, particularly because U.S. universities play a key role in developing critical innovation that is later commercialized into leading consumer products and services.29

Toward the end of this period, the Supreme Court seemed to reverse its prior trend, represented by its 1978 decision in Parker v. Flook.30 The Court then applied patent-eligibility broadly and consistent with the statute in its 1980 decision, Diamond v. Chakrabarty, for genetically engineered products based on natural organisms,31 and in their 1981 decision, Diamond v. Diehr, for computerized industrial processes.32 These two decisions settled the law of § 101 in a manner lasting almost 30 years by stabilizing patent eligibility law, clarifying what kinds of inventions could be patented, and fueling research and investment in two leading areas of innovation—biotechnology and computing technology.33

B. After the Creation of the Federal Circuit Until the Early 2000s

In 1982, Congress passed the Federal Courts Improvement Act, creating the U.S. Court of Appeals for the Federal Circuit.34 The court was created to clarify and unify patent law by putting all patent appeals in the nation into one semi-specialized court. It was seen as being uniquely equipped to provide the necessary certainty and uniformity for patent law that was so needed by the nation working to recover from the economic troubles of the 1970s and early 1980s.35 Indeed, the new appeals court has

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33. See Chakrabarty, 447 U.S. 303; Diehr, 450 U.S. 175.
been seen as a vast improvement over the past situation, where a patent’s validity and enforceability were largely dependent on which appeals court heard the appeal.\textsuperscript{36}

Another major development occurred in 1984 when Congress passed the Drug Price Competition and Patent Term Restoration Act of 1984, commonly referred to as the Hatch-Waxman Act.\textsuperscript{37} With this law, “Congress struck a balance between two competing policy interests: (1) inducing pioneering research and development of new drugs; and (2) enabling competitors to bring low-cost, generic copies of those drugs to market.”\textsuperscript{38} The law enabled earlier development of and public access to generic drugs, while prohibiting the FDA from approving generic drug marketing until the expiration of any patents upheld as valid.\textsuperscript{39}

Throughout the 1980s and 1990s, patents became increasingly more readily obtainable, defendable, and enforceable.\textsuperscript{40} Their value increased significantly, as did investments in research and development (R&D) of many technologies, some newly created.\textsuperscript{41} When licensing negotiations broke down, patent owners were able to secure large damage awards and, in

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\textsuperscript{38} Andrx Pharms., Inc. v. Biovail Corp., 276 F.3d 1368, 1371 (Fed. Cir. 2002).


\textsuperscript{40} Ezell, supra note 29.

\textsuperscript{41} Id.
almost all cases, an injunction to block continuing infringement. With the resulting boost in investment incentives, investors were able to expand industry and dramatically increase technological output.

The strengthening of the U.S. patent system also coincided with several major technological developments. Biotechnology and pharmaceutical sectors continued to create life-changing inventions but with an increased incorporation of innovation based on recombinant genetic technologies. Biologics, such as antibody-based medicines, ushered in the era of personalized medicine for many ailments, particularly many cancers. The patent-based investment in these technologies stemmed directly from the Court’s decision in *Chakrabarty*.

Computer technology was likewise set to fundamentally transform all of society, with the coming computer revolution poised to explode around the time the Federal Circuit started building its body of case law. The appeals court was created just a few years after the Supreme Court’s *Diehr* decision, which held that a computer-guided process of vulcanizing rubber using the Arrhenius equation was patent eligible under § 101. Since that time, we have witnessed the transition from mainframe computers, to desktops, to tablets, and now smartphones—the latter of which are exponentially more powerful and faster than old mainframe computers, at a fraction of the price.

Along the way, the Internet was developed. It is now almost impossible to appreciate how much life—including research and development—has changed with all the facets of society and information being connected. And

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44. Paulina Krzyszczak et al., *The Growing Role of Precision and Personalized Medicine for Cancer Treatment*, 6 TECH. J., nos. 3 & 4, 2018, at 79.
45. Robinson & Medlock, *supra* note 43, at 13 (“By virtually every measurable factor, the biotechnology industry has literally exploded in the 25 years since *Chakrabarty*.”).
46. See Beauchamp, *supra* note 20.
as many readers know, Larry Page and Sergey Brin started Google in the late 1990s when they met at Stanford University, and their early work formed the basis of some of Google’s first patents.\footnote{49}

In the mid- to late-1990s, a boom in Internet start-up companies led to the dot-com bust of 2000.\footnote{50} As a result, the largest technology companies were able to simply aggregate many of the start-ups’ fledgling ideas and improvements into their own systems, and they did so without regard to whether they might have been patented by now-defunct entities.\footnote{51} But while many of the start-ups were gone, their investors and creditors were left with their patents covering inventions now being used by the surviving technology giants.\footnote{52} Patent litigation ensued; and, for the first time, the giants in the technology field faced patent lawsuits from entities who were not practicing the inventions of their patents and who sought royalties based on the defendants’ revenues from large integrated software products, even though the asserted patents pertained only to small features or parts.\footnote{53}

In the early 2000s, however, the anti-patent forces started to organize and produce reports seeking to undermine the strength and value of U.S. patents. Several leading federal agencies weighed in with their consistent message that patents were a problem. In 2003, the Federal Trade Commission (FTC) issued an extensive document that generated substantial resistance to strong intellectual property and patents.\footnote{54} The next year the


\footnote{53} Id.

National Research Council (NRC) followed suit. In 2005, the FTC chimed in once more. In 2007, the antitrust divisions of the FTC and the Department of Justice (DOJ) joined forces and reiterated the administration’s apparent view that patents were, as a whole, causing significant harm to competition. This message was front and center, even though there was little reliable data for the claim; instead, most of the antipatent messaging rested on anecdotal narratives meant to advance a broader assault on patent rights.

Building on those reports, as well as repeated criticism of patents by many tenured law professors, various lobbying groups emerged. A group of computer and Internet mega-corporations formed the Coalition for Patent Fairness (CPF). Creatively named like many other modern-day lobbying groups, CPF unleashed a massive lobbying and public relations campaign. It was well organized, well funded, and relentless.

55. NAT’L RSCH. COUNCIL, A PATENT SYSTEM FOR THE 21ST CENTURY (Stephen A. Merrill et al. eds., 2004).
58. See id.
60. See Golden, supra note 59, at 507 n.7.
61. See id. at 507.
62. See id. at 507 n.7. The CPF was supported and funded by the likes of Apple,
In this context, beginning in 2005, Congress began to hold regular hearings on alleged patent abuses and possible amendments to the patent law. Due to CPF's lobbying and public relations efforts, a narrative developed about abusive and wasteful suits, extortionate royalty demands, patent hold-ups, low quality patents, and patent trolls.63 A number of congressional hearings were held on the ostensible premise of patent reform, but in almost every instance, the proposed patent reform would have substantially weakened the force of a U.S. patent, e.g., radically altering how a court or jury could assess damages for patent infringement.64 Despite the lobbying efforts of the high-tech groups, no legislation passed as of the close of 2010.65

Thus, leading into the second decade of the twenty-first century, public messaging about patents had completely changed in the 30 years from when Congress created the Federal Circuit to foster uniformity and certainty in patent law for the betterment of U.S. industry and innovation.66 Gone were the days when patents were recognized as advancing innovation and U.S. commerce.67 The dominant message had become a focus on patent trolls, so much so that the term had become part of the lexicon of legal reporters and beyond.68

III. THE TRANSFORMATION AND DEVALUATION OF THE U.S. PATENT

No one decision or event explains the fundamental transformation and devaluation of the U.S. patent system. Nor is it as dispersed as a death by a thousand cuts. Indeed, to say we have witnessed the death of the U.S. patent system is not quite accurate. What is apt, however, is that at a certain point,

Cisco Systems, Dell, Google, and HP. The CPF later became, in effect, the High Tech Inventors Alliance. See also HIGH TECH INVENTORS ALL., https://www.hightechinventors.com/ [https://perma.cc/4H6S-QUVH].
63. See generally Golden, supra note 59.
64. Id. at 557 n.290.
66. See U.S. DEPT OF JUST. & FED. TRADE COMM’N, supra note 57.
67. See, e.g., H.R. REP. NO. 97-312, at 20 (1981) (noting the testimony of a number of witnesses who described the creation of what would become the Federal Circuit as “one of the most far-reaching reforms that could be made to strengthen the United States patent system in such a way as to foster technological growth and industrial innovation”).
68. See generally Chan & Fawcett, supra note 59.
the combined effects of a number of semi-independent events over the span of about a decade or so have coalesced to form the perfect storm for U.S. patent rights.

The Congress and the Federal Circuit reinvigorated the U.S. patent system through the 1980s and 1990s, but that began to change in the mid-2000s. The Supreme Court renewed its interest in substantive patent law, which led to an overall weakening of and decrease in certainty in patent law. The patent grant’s exclusive right likewise was weakened, and the Court’s decisions on patent eligibility have become a collection of irreconcilable precedents. Along the way, and as a result of years of concerted lobbying efforts, Congress passed the AIA, which radically altered the way patent rights were adjudicated and enforced—and mostly to the detriment of patent owners. Perhaps most fundamentally important, and stemming from the AIA, was a Supreme Court case that redefined the patent grant as a mere public franchise instead of private property. The result is a diminished U.S. patent system, with the national appeals court in charge of patent law having a hobbled role in ensuring uniformity in the law.

A. The Supreme Court’s Renewed Activity in Patent Law

For at least the first two decades of the Federal Circuit’s existence, the Supreme Court largely stayed out of substantive patent law. Whether intentionally or not, the Federal Circuit was allowed to carry out its charge from Congress and develop a body of case law to reinvigorate U.S. innovation and add certainty and uniformity to U.S. patent law. To be sure, the Supreme Court decided patent-related cases in the years following the


creation of the Federal Circuit, but the cases often focused on specific, nuanced issuances, related to procedural issues, or were premised on procedure or another area of law, such as administrative law.\textsuperscript{74}

That situation began to change in the mid-2000s. The Court started to grant certiorari in more cases presenting issues pertinent to the key substance of patent law.\textsuperscript{75} In 2006, the Court decided \textit{eBay Inc. v. MercExchange, L.L.C.}, which, as discussed below, weakened the ability of a patent owner to obtain an injunction.\textsuperscript{76} In 2007, the Court decided \textit{MedImmune, Inc. v. Genentech, Inc.}, which increased the ability of a licensee to challenge the validity of a licensed patent.\textsuperscript{77} The same year, the Court decided \textit{KSR International Co. v. Teleflex Inc.}, which lowered the bar for proving a patent to be obvious.\textsuperscript{78} Again in 2007, the Court decided \textit{Microsoft Corp. v. AT&T Corp.}, which limited the U.S. patent law’s ability to reach the importation of infringing goods under 35 U.S.C. § 271(f).\textsuperscript{79} And in 2008, the Court decided \textit{Quanta Computer, Inc. v. LG Electronics, Inc.}, which interpreted patent exhaustion in a manner that again diminished a patent owner’s ability to license its patent.\textsuperscript{80}

These decisions taken together mark the Court’s re-entry into the field of substantive patent law. While the individual cases themselves addressed differing patent law issues, three important themes emerged from the Court’s decisions. First, all five cases concerned matters that went to the perceived strength, value, and enforceability of the patent grant—and because of the outcomes, all five cases worked to weaken the force and value


\textsuperscript{75} Holbrook, supra note 72, at 72.


\textsuperscript{79} See Microsoft Corp. v. AT&T Corp., 550 US. 437, 458–59 (2007).

\textsuperscript{80} 553 U.S. 617 (2008). Nine years later, the Court again applied a broad view of patent exhaustion in \textit{Impression Products, Inc. v. Lexmark International, Inc.}, 137 S. Ct. 1523 (2017).
of a patent.\textsuperscript{81} \textit{KSR} made it much easier to invalidate patents for obviousness, even though the decisional analysis ("reason to combine") was, on its face, little different from the Federal Circuit's analysis ("motivation to combine").\textsuperscript{82}

Second, the five decisions created general uncertainty about patent rights.\textsuperscript{83} Both \textit{MedImmune} and \textit{Quanta} created deep uncertainty in an untold number of patent license agreements. The Court in \textit{KSR} offered its analysis in its typical approach of avoiding line-drawing.\textsuperscript{84} But the resulting increased uncertainty was antithetical to the Federal Circuit's charge from Congress when it was created.\textsuperscript{85} Just as importantly, more uncertainty in patent law is precisely what the innovation and business communities did not need.

Third, the five decisions appeared to send a firm message from the Court that the Federal Circuit was uniformly wrong on fundamental patent law issues.\textsuperscript{86} Across the five cases, there were only two dissents—Justice John Paul Stevens in \textit{Microsoft}, and Justice Clarence Thomas in \textit{MedImmune}, and no other justices joined those dissents.\textsuperscript{87} Indeed, the Supreme Court seemed to leave the impression that the Federal Circuit's jurisprudence had gone so far astray that even acknowledging the intricacies, complexities, or competition between policy and pure statutory interpretation innate in many critical patent law issues was unnecessary.

The Supreme Court has never before been seen as a court with its finger on the pulse of cutting-edge technology.\textsuperscript{88} It is a generalist court, and for good reason, as it has to decide the thorniest and trickiest legal cases our nation

\textsuperscript{81} See generally eBay Inc., 547 U.S. 388; MedImmune, 549 U.S. 118; KSR Int'l, 550 U.S. 398; Microsoft Corp., 550 US. 437; Quanta Comput., 553 U.S. 617.
\textsuperscript{82} See \textit{KSR Int'l}, 550 U.S. at 401, 418.
\textsuperscript{83} We have detailed elsewhere the uncertainty created by the Supreme Court's patent law jurisprudence. See Paul Michel & Matthew J. Dowd, \textit{The Uncertain State of Patent Law 10 Years into the Roberts Court}, IAM, Nov./Dec. 2016, at 27; Paul R. Michel, \textit{The Supreme Court Saps Patent Certainty}, 82 GEO. WASH. L. REV. 1751 (2014).
\textsuperscript{84} See \textit{KSR Int'l}, 550 U.S. 398.
\textsuperscript{87} See Microsoft Corp., 550 U.S. at 462–64 (Stevens, J., dissenting); MedImmune, 549 U.S. at 137–46 (Thomas, J., dissenting).
\textsuperscript{88} Amelia Thomson-DeVeaux, \textit{The Supreme Court Is Stubbornly Analog–By Design}, FIVETHIRTYEIGHT (May 29, 2018) https://www.fivethirtyeight.com/features/the-supreme-court-is-stubbornly-analog-by-design/ ("The Supreme Court is an openly—even proudly—technophobic institution.").
sees. But that generalist nature has had an overall negative impact by injecting too much legal uncertainty into patent law, often not fully understanding the technical intricacies associated with the patent technology at issue.

B. The Weakening of the “Exclusive Right”

Enshrined in the Constitution as part and parcel of the intellectual property rights clause is the right to exclude. As the Constitution provides, “The 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.” Part and parcel with promoting the useful arts is the right to exclude, i.e., “the exclusive Right,” that is at the heart of the patent grant. Indeed, the Supreme Court and other courts have repeatedly recognized that the government’s grant of a right to exclude is part of the quid pro quo in the patenting process.

For these reasons, once a defendant was found to have infringed a valid and enforceable patent, the typical, though not automatic, remedy was an injunction. The injunction was the natural remedy to enforce the constitutional right to exclude. True, in some circumstances, the violation of an exclusive right did not warrant an injunction, as the patent owner could be made whole through monetary relief or, in rare instances, a compelling public interest existed to foreclose injunctive relief. After all, Section 283 of the Patent Act provides that a court may grant an injunction “in accordance with the principles of equity.” But merely awarding money

89. See id.
90. See Michel, supra note 83, at 1753–54.
91. See U.S. CONST. art. I, § 8, cl. 8.
92. See id.
damages and permitting continued infringement moving forward was not the
usual remedy upon a finding of infringement of a property right.96

An important early case in the transformation of patent rights involved
the right to injunctive relief. In eBay Inc. v. MercExchange, L.L.C., the
Supreme Court was asked to overturn the Federal Circuit's decision granting
an injunction in view of proven infringement of a valid patent.97 The Court
held “the four-factor test historically employed by courts of equity” applies
in the context of issuing a permanent injunction for patent infringement.98

The effect of the Court's decision was to significantly undercut the
injunctive right established in the Constitution that is so critical to
intellectual property rights. Since then, the availability of injunctive relief for
patent owners has been radically altered, and for many patent owners,
significantly diminished.99

Further, allowing future infringement of a valid patent complicated
matters in terms of calculating damages for ongoing infringement. As later
stated by the Federal Circuit after the eBay decision, “the calculus” for an
ongoing royalty “is markedly different” from that for a reasonable royalty
for past infringement.100 The Federal Circuit has also explained there is “a
substantial shift in the bargaining position of the parties” after a patent is
found valid.101 These facts complicate any calculation a court (or a jury)
would have to do to assess damages for continued post-verdict infringement.
While not its purpose, the grant of an injunction avoids a lot of these messy
considerations about future value of court-sanctioned infringement.

One end result—which is a continued trend through this decade-plus-
long transformation—is in increased uncertainty about the exclusive right
associated with the patent.102 In the past, a patent owner had a reasonable
expectation that, if the patent was upheld as valid and shown to be infringed,

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98. Id. at 394.
99. Seaman, supra note 42, at 1982–84; see also Michel & Battaglia, supra note 70,
at 1, 2 (explaining “that the federal courts over time have misunderstood and misapplied
the Supreme Court’s landmark 2006 decision” in eBay).
101. ActiveVideo Networks, Inc. v. Verizon Commc’ns Inc., 694 F.3d 1312, 1342
(Fed. Cir. 2012).
102. See generally Amado, 517 F.3d at 1353; ActiveVideo Networks, Inc., 694 F.3d at
1312.
the court would likely enjoin the infringer.103 After all, if you went to court to ask that a neighbor stop using your car without your permission, you could expect the court would order the neighbor to stop and to pay you damages for the past use of your car.

That analogy no longer holds for many patent owners, as Justice Anthony Kennedy’s concurrence in eBay has ironically become the majority view by the lower courts.104 Justice Kennedy was overly concerned with a so-called “industry” “in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees.”105 Of course, as others have explained, licensing patents (and even copyrights) is a long-established element of U.S. commerce.106 And Justice Kennedy’s reasoning rested on additional assumptions about patent enforcement, few of which are supported by any evidence.107 He claimed that certain firms would use an injunction as a “bargaining tool to charge exorbitant fees.”108 He focused on the “potential vagueness” of patents, as well as asserting that a certain class of patents “were not of much economic and legal significance in earlier times,” both without any support.109 He further categorically asserted, without evidence or explanation, any company might not deserve an injunction simply because “the patented invention is but a small component of the product.”110 Ironically, these declarations exemplified the type of categorical conclusions for which the Court criticized the Federal Circuit.

Whether intentional or not, the resulting outcome is a bias in the award or denial of injunctions.111 Despite the neutral approach of Justice Thomas’s opinion for the Court, and despite Chief Justice John Roberts’s reasoning rooted in history, Justice Kennedy’s concurrence took root in much

104. Id. at 1991.
106. E.g., Moskoff, supra note 20, at 962–65 (detailing how Charles Goodyear, Elias Howe, Jr., and others “employed the patent licensing business model in the early nineteenth century before the Civil War (what historians call the Antebellum Era), revealing that this commercial practice in the innovation industries has very old historical antecedents indeed”).
108. Id. at 396.
109. Id. at 397.
110. Id.
111. See id. at 396–97.
subsequent decision-making, thus reducing the general availability of injunctions, particularly for those entities that did not use the patented invention.\textsuperscript{112}

C. Increased Confusion in Patent Eligibility Law

In the ten terms prior to the creation of the Federal Circuit, the Court decided four cases concerning patent eligibility.\textsuperscript{113} Two cases upheld eligibility; two did not. While far from perfect, the case law appeared stable.

For much of the Federal Circuit’s early years of building its core patent jurisprudence, few cases addressed issues of patent eligibility, at either the Supreme Court or the Federal Circuit. The issue arose on occasion, but it was frequently in the context of an ex parte appeal from the PTO.\textsuperscript{114} Even when not, the court’s patent eligibility case law often aligned with the practicalities of real-world innovation.\textsuperscript{115} Indeed, it was rare for a district court to ever grant a motion to dismiss a complaint for patent infringement at the pleadings stage under Federal Rule of Civil Procedure 12. A patent is presumed valid by statute after all.\textsuperscript{116}

That started to change as the Supreme Court continued its re-interest in patent law. Beyond the five cases discussed above, the Court began to question the settled role of § 101 in patent validity determinations. As a first sign, in \textit{Laboratory Corp. of America Holdings v. Metabolite Laboratories, Inc.}, Justice Stephen Breyer (along with Justices Stevens and David Souter) questioned the validity of claims directed to a diagnostic test for determining

\textsuperscript{112} See id.


\textsuperscript{114} In re Beauregard, 53 F.3d 1583, 1584 (Fed. Cir. 1995) (dismissing the appeal because the PTO agreed “computer programs embodied in a tangible medium, such as floppy diskettes, are patentable subject matter under 35 U.S.C. § 101 and must be examined under 35 U.S.C. §§ 102 and 103”); In re Grams, 888 F.2d 835, 836, 841 (Fed. Cir. 1989) (holding a claim to a mathematical algorithm for “[a] method of diagnosing an abnormal condition” was not patent eligible under § 101).

\textsuperscript{115} State St. Bank & Tr. Co. v. Signature Fin. Grp., Inc., 149 F.3d 1368, 1371–77 (Fed. Cir. 1998), \textit{abrogated by In re Bilski}, 545 F.3d 943 (Fed. Cir. 2008); Arrhythmia Rsch. Tech., Inc. v. Corazonix Corp., 958 F.2d 1053, 1058–61 (Fed. Cir. 1992) (holding as patent-eligible “[a] method for analyzing electrocardiograph signals to determine the presence or absence of a predetermined level of high frequency energy in the late QRS signal”).

patient deficiencies in certain vitamins. Justice Breyer thought the inventors "simply described the natural law at issue in the abstract patent language of a 'process.'" While the Court dismissed the case as improvidently granted, it was an omen of the Court's coming antipathy toward the Federal Circuit's approach to patent eligibility.

Just a few years later, the Court picked up where it left off with Laboratory Corp. and delved into patent eligibility under 35 U.S.C. § 101. In 2010, in Bilski v. Kappos, the Court narrowed eligibility for computer-implemented inventions by rejecting the Federal Circuit's "machine-or-transformation" test as the best means to determine whether a claim is patent eligible under 35 U.S.C. § 101. In 2012, the Court again narrowed eligibility, this time for medical diagnostic methods in Mayo Collaborative Services v. Prometheus Laboratories, Inc. The following year, in 2013, the Court entered the fray of gene patents in Association for Molecular Pathology v. Myriad Genetics, Inc., rejecting patents directed to human genes and naturally occurring DNA sequences. The very next year, 2014, saw Alice Corporation v. CLS Bank International cement the "wholly-new" criteria and its novel two-step test for analyzing eligibility under § 101.

As with when the Court re-entered patent law in the 2006–2008 period, the Court's new interest in patent-eligibility jurisprudence introduced massive changes in a matter of a few years. In combination, the four cases revolutionized the law, sharply narrowing eligibility. Thousands of patents, eligible when issued, were invalidated under the new regime in both the courts and the PTO. Massive uncertainty clouded the reliability of many thousands more, reducing investment incentives for venture capitalists and corporate leaders alike.

The thrust of Mayo and the other decisions was to massively expand prior judge-made law on "implied exceptions" to the four statutory

118. Id. at 137.
119. Id. at 125.
categories Congress made eligible in § 101. Congress plainly mandated that patents are for processes, machines, manufactures, and compositions of matter—broad categories Congress intended to cover almost all types of inventions. The Supreme Court, however, effectively rewrote the statute, narrowing these categories based on its own policy beliefs. The Supreme Court all but ignored the statute that, on its face, made four broad classes of inventions eligible for patenting. The Court was, in essence, claiming for itself the power to make broad national innovation policy, but it lacks the necessary experience or factual knowledge base for doing so. Moreover, the analysis set forth in the Alice and Mayo decisions appears to be unsupported by precedent and is inconsistent with Diehr, which had disapproved of some of Flook’s loose language.

The line of § 101 cases also displayed a concerning reliance on unsupported and incorrect characterizations about patents and the Court’s own precedent. In Bilski, the Court relied on Justice Kennedy’s concurrence in eBay to assert, without any evidence, that “some business method patents raise special problems in terms of vagueness and suspect validity.” The Court maintained, without “a high enough bar” on eligibility, “patent examiners and courts could be flooded with claims that would put a chill on the creative endeavor and dynamic change.” What did the Court even mean by “a chill on . . . dynamic change”? Patent policy should not rest on broadly worded characterizations of “possibilities,” without any consideration of empirical evidence—particularly when the Court’s discussion was entirely unmoored from the statutory text.

The decisions in Mayo and Alice included equally nonempirical, unsupported declarations. Justice Breyer, writing for the Mayo Court, claimed that certain types of patents would “foreclose[] more future

125. See id.
129. Id.
invention than the underlying discovery could reasonably justify." 131 But that assertion rests on a fundamental misunderstanding of patents. No patent "forecloses" future invention, as research within a patented area is plainly permitted, and a patent owner rarely seeks to exclude such follow-on research. 132 Moreover, one purpose of a patent is to disclose to the public promising new areas of innovation, so that they may develop further inventions within that new space. 133

*Mayo* and *Alice* also invoked undefined and unspecified standards for assessing patent eligibility. 134 In *Mayo*, the majority opinion uses the term "abstract" some 52 times, yet never defines it; this, of course, is consistent with *Bilski*, which used the term without definition and expressly stated that the Court "need not define further what constitutes a patentable `process." 135 The *Mayo* Court also required the patent to claim "significantly more" without explaining what was meant by that phrase. 136

Beyond the specific legal errors, the outcome has been a quagmire in which courts, innovators, and investors alike can make very little sense of whether a patented invention qualifies as patent-eligible subject matter. 137

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131. *Mayo*, 566 U.S. at 86; see also id. at 87 ("The presence here of the basic underlying concern that these patents tie up too much future use of laws of nature simply reinforces our conclusion that the processes described in the patents are not patent eligible, while eliminating any temptation to depart from case law precedent.").

132. See Madey v. Duke Univ., 307 F.3d 1351, 1360–61 (Fed. Cir. 2002) (acknowledging that "the experimental use defense persists albeit in the very narrow form articulated by [the Federal Circuit]") (citing Embrex, Inc. v. Serv. Eng’g Corp., 216 F.3d 1343, 1349 (Fed. Cir. 2000); Roche Prods., Inc. v. Bolar Pharm. Co., 733 F.2d 858, 863 (Fed. Cir. 1984)).

133. See, e.g., Harold C. Wegner, *Can Any Patent “Preempt” Follow-on Research?*, PATENTDOCS (July 2012), https://patentdocs.typepad.com/files/can_any_patent_pream_follow_on_research.pdf [https://perma.cc/379W-L864] (explaining the courts’ “understanding of a research ‘preemption’ is dead wrong when one considers the fundamental right under the patent system to experiment on a patented invention, free from any patent liability”).

134. See *Mayo*, 566 U.S. at 70; *Alice*, 573 U.S. at 217.


136. Cf. *Mayo*, 566 U.S. at 77 ("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?").

Myriad commentators have observed the utter confusion with patent eligibility.\footnote{See e.g., Christopher M. Holman, The Mayo Framework Is Bad for Your Health, 23 GEO. MASON L. REV. 901, 912 (2016) ("The Supreme Court has left it to the lower courts to grapple with the critical question of how much ‘what else’ is ‘enough’ to cross over the threshold and into the realm of patent eligibility.")} Even so, since \textit{Mayo}, the Supreme Court has rejected scores of requests to revisit and revise its § 101 jurisprudence. Resounding calls for the Supreme Court’s intervention—even from the Federal Circuit judges themselves—have not convinced the Court to grant certiorari in any of the scores of petitions filed.\footnote{See e.g., Sherry Knowles, Reflections on Denial of Cert in Athena Diagnostics, IPWATCHDOG (Jan. 20, 2020), https://www.ipwatchdog.com/2020/01/20/reflections-denial-cert-athena-diagnostics/id=118025/; Insights From Intellectual Property Expert David Kappos, STOUT (Oct. 2, 2019), https://www.stout.com/en/insights/article/insights-intellectual-property-expert-david-kappos [https://perma.cc/BKR2-SKZV] ("We’ve now put our thumb on the scales in favor of a patent system that can’t protect major areas of innovation, like diagnostics and aspects of computer software."); \textit{see also} Am. Axle & Mfg., Inc. v. Neapco Holdings LLC, 977 F.3d 1379, 1382 (Fed. Cir. 2020) (Moore, J., concurring) ("As the nation’s lone patent court, we are at a loss as to how to uniformly apply § 101. All twelve active judges of this court urged the Supreme Court to grant certiorari in \textit{Athena} to provide us with guidance regarding whether diagnostic claims are eligible for patent protection. There is very little about which all twelve of us are unanimous, especially when it comes to § 101. We were unanimous in our unprecedented plea for guidance.").} At this point, it appears that the Supreme Court, with its current composition, is unlikely to enter the fray of patentable subject matter.

Another troubling result of the Court’s patent-eligibility jurisprudence is that § 101 has become one of the most litigated issues in patent law, most frequently at the pleading stage without the benefit of any discovery or claim construction.\footnote{Kanel, supra note 124, at 1096 (describing the “increase in Rule 12 motions to dismiss for lack of subject matter eligibility” after \textit{Alice}, observing that 12(b)(6) dismissals are “predominantly upheld by the Federal Circuit,” and noting that “[t]his trend creates a hostile environment for inventors and patent holders and threatens to curb innovation in various areas like computer software, biotechnology, and medical diagnostics”); Gregory H. Lantier & Richard A. Crudo, Can Juries Decide Patent Eligibility Under 35 U.S.C. § 101?, 27 FED. CIR. B.J. 45, 45 (2017) (“No provision of the
focus on § 101 by trying to get an early disposition of the case. No doubt it is a rational response, but, in most cases, it is fraught with problems rooted in evidence and the presumption of validity.\textsuperscript{141} For instance, the Federal Circuit has ruled that step two of the \textit{Alice-Mayo} framework—whether a claim element or combination of elements is “well-understood, routine and conventional”—is a question of fact, not law, and must be proven with clear and convincing evidence.\textsuperscript{142} Of course, if the second step of \textit{Alice-Mayo} is a fact question, this raises questions about how a court can make a factual determination against the patent owner at the pleading stage, particularly given the presumption of validity.\textsuperscript{143}

Troublingly, the Supreme Court’s reimagination of patent eligibility has left key innovation without reliable patent protection.\textsuperscript{144} The Court’s \textit{Alice-Mayo} test excludes large swaths of critically important technology, including medical diagnostic methods.\textsuperscript{145} And, most advanced technologies rely on computer implementation—another area where the mess in eligibility law diminishes incentives to invest and invent.\textsuperscript{146}

Ironically, the instability in patent eligibility law has increased in part because of the PTO’s efforts to add clarity to what types of inventions can be patented. The PTO has issued revised guidelines on what, in the agency’s view, does or does not qualify as patent-eligible subject matter.\textsuperscript{147} While the PTO has undertaken a fair assessment of the law and the needs of

\textsuperscript{141} Kanel, \textit{supra} note 124, at 1092–93.
\textsuperscript{142} Berkheimer v. HP Inc., 881 F.3d 1360, 1368 (Fed. Cir. 2018), \textit{cert. denied}, 140 S. Ct. 911 (2020); \textit{see also} Berkheimer v. HP Inc., 890 F.3d 1369 (Fed. Cir. 2018) (denying rehearing en banc and accompanied by multiple concurring and dissenting opinions).
\textsuperscript{143} Kanel, \textit{supra} note 124, at 1092–93.
\textsuperscript{145} \textit{See id.}
\textsuperscript{146} \textit{See generally} Alice Corp. v. CLS Bank Int’l, 573 U.S. 208 (2014).
innovators, the courts are not bound by the PTO’s guidance on § 101, and the Federal Circuit has expressly said so on several occasions. Thus, inventors and innovators find themselves in the unenviable position of facing conflicting advice about § 101 from the courts and the PTO.

Additionally, the overall impact of the § 101 decisions was even greater because the unpredictability of § 101 rulings compounded the unpredictability of KSR and the subsequent decisions on obviousness under § 103 rulings. Vast numbers of unlitigated patents were overshadowed by the sudden changes in the law and thus rendered effectively unenforceable. The combined effect was to devalue patents, by 60 percent, according to several economists’ studies. Investment incentive fell accordingly, spurred further by added costs and delays of any “time-to-money” royalty. Licensing fell off, and injunctions became almost unobtainable by patent owners not manufacturing products, but instead licensing others. Small business and start-ups in patent-dependent technologies struggled to survive because they could no longer get the outside investment they required. Start-up formation declined to a 40-year low.

D. Increased Extra-Judicial Activity to Weaken Patent Rights

While the foregoing judicial developments were occurring, movement was afoot in the court of public opinion and the corridors of Congress to transform the perception and structure of the U.S. patent system. Discussed above are some of the lobbying and public relations efforts, such as those of the CPF. But a brief expansion on these extra-judicial efforts is in order to fully understand the enormous effort expended to legislatively rework U.S. patent rights.

148. In re Rudy, 956 F.3d 1379, 1383 (Fed. Cir. 2020) (“We are not, however, bound by the Office Guidance, which cannot modify or supplant the Supreme Court’s law regarding patent eligibility, or our interpretation and application thereof.”); Cleveland Clinic Found. v. True Health Diagnostics LLC, 760 F. App’x 1013, 1020 (Fed. Cir. 2019) (“While we greatly respect the PTO’s expertise on all matters relating to patentability, including patent eligibility, we are not bound by its guidance.”).

149. See In re Rudy, 956 F.3d at 1383.


152. Id.
As noted, the mid-2000s witnessed a concerted effort of several groups to revise the patent laws. The FTC, the NRC, and the DOJ all produced reports that are markedly anti-patent. During this time, the so-called “patent troll” narrative was also taking hold. Peter Detkin, former in-house counsel for Intel, is frequently named as the creator of the term patent troll. It is a clearly pejorative term, not too different than “ambulance chaser,” as it seeks to denigrate the party seeking to enforce the patent right, rather than questioning the validity of the patent right itself. It is true that, in the late 1990s and early 2000s, there was an uptick in patent-enforcement actions seeking nuisance-value settlements, particularly against retailers and other end-users of technologies. But those instances were far outweighed by the efforts of legitimate companies seeking to enforce valid patent rights.

Moreover, the term patent troll soon came to cover any non-practicing entity seeking to license patents. In other words, if one was an inventor but did not manufacture or commercialize one’s invention, then one might be called the dreaded patent troll. Any inventor or innovative entity could be labeled a patent troll: a university that created ground-breaking research but licensed its patented technology or an independent inventor whose invention had been stolen by a large corporation and needed financial backing to enforce her patent rights.

Another development during this period was the increased public relations efforts by competing groups to push certain messages about intellectual property. The Big Tech companies spent millions on public relations efforts. And those groups that favored stronger patent rights, such as PhRMA, fought back. It was later learned that Google operates a program to fund academic “research supporting business practices that face

153. See, e.g., FED. TRADE COMM’N, supra note 54.
155. See id. at 193–96.
156. See id.
157. See id. at 189.
158. See id. at 198–200.
160. See id.
regulatory scrutiny,” which includes articles written by law professors.\textsuperscript{161} Gone were the days where the most important advocacy on patent law issues occurred in the courts.

One final event worth noting in the effort to change public perception of patents is the BlackBerry litigation. Before the iPhone, the BlackBerry was king of hand-held communication devices. But there was one small problem: the BlackBerry device infringed several patents invented by Thomas J. Campana, Jr., Michael P. Ponschke, and Gary F. Thelen, and later owned by NTP, Inc.\textsuperscript{162} Eventually, judgment was entered against Research In Motion (RIM) (the maker of the BlackBerry) to the tune about $53 million.\textsuperscript{163} RIM was also facing an injunction for its continued infringement.\textsuperscript{164} While RIM had an opportunity to settle the case for far less, it eventually did settle for $612.5 million to avoid an injunction.\textsuperscript{165}

At the time, the popular press picked up on the possibility that the BlackBerry would be shut down for patent infringement.\textsuperscript{166} Even Congress was concerned about the possible shutdown of service, as almost everyone in business and government used BlackBerrys.\textsuperscript{167} Eventually, there was no

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\footnotesize\textsuperscript{163} See Teska, \textit{supra} note 162.

\footnotesize\textsuperscript{164} See id.


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shutdown, the parties settled the case, and the threat of an injunction actually helped to facilitate the settlement. Nevertheless, the popular media and the public advocacy associated with the BlackBerry case contributed to the growing sentiment that there were too many “bad” patents that were too easy to enforce.

E. The America Invents Act of 2011

In 2011, Congress passed the AIA, which, among other things, created a new and powerful forum in the PTO, as well as new standards and procedures that made invalidating patents issued long ago much easier. The AIA might well be considered one of the most significant and disruptive changes to the U.S. patent system ever.

Much ink and figurative blood have been spilled over the nuances of the AIA and the challenges it has created, for patent owners and accused infringers alike. We do not endeavor to describe all the relevant contours of the AIA. Nor do we discuss all the advantages and disadvantages of the new post-issuance patent review and cancellation proceeding; for standing alone, the AIA regime has much to laud and much to criticize. Relevant here are key features of the AIA, how those features fundamentally altered patent rights and their enforcement and valuation, and how the net effect of the AIA has been to devalue patent rights and create uncertainty for innovators and investors.

The AIA was intended to create “an alternative to expensive court litigation,” but it does much more than that. The statutes and rules did create a forum with procedures for faster adjudication of patent validity, but

168. Barnett, supra note 166.
169. Id.
there were, and still are, many features inherently biased against inventors and patent owners. The standard for instituting AIA reviews is low. The AIA proceedings are not trials (despite their names) and almost never have live witnesses. And while the high cost of discovery in district court litigation is avoided, discovery in AIA proceedings is too curtailed and too difficult to procure beyond the very basic prior art information. Also, for many years, the PTAB employed the broadest reasonable construction standard for claim construction, to the disadvantage of the patent owner. It was nigh impossible to amend the claims of the patent during the AIA proceeding. And the AIA and PTAB rules allow for multiple challenges of the same patent by multiple parties, or even the same party.

In the almost ten years of its existence, the PTAB has invalidated thousands of patents. By the mid-2010s, the PTAB had replaced the district courts as the primary adjudicator of patent validity. The trial courts, moreover, usually stayed the infringement suits pending the results of the PTAB reviews, adding several years of delay as well as costs and risks to patent owners seeking to enforce their patents. Even the Federal Circuit has been over-shadowed by the PTAB’s now-leading role in shaping patent law.

175. See id.
176. See id.
177. See id.
178. See id.
179. See id.
180. The PTAB rules have been amended during the past few years to address some of these problematic areas. For instance, the PTO no longer uses the broadest reasonable interpretation for claim construction. See The Impact of Bad Patents on American Businesses: Hearing Before the Subcomm. on Courts, Intellectual Prop., and the Internet of the H. Comm. on the Judiciary, 115th Cong. (2017) (statement of J. Paul R. Michel, former C.J. of the U.S. Court of Appeals for the Federal Circuit).
This new administrative engine of invalidation compounded the forces stemming from the Supreme Court’s § 101 decisions. Seemingly not the Congress, the Supreme Court, nor the PTAB itself were mindful of the impacts of the aggressive interventions—or perhaps more accurately, the combined and synergistic effect of the quickly changing law. Moreover, rather than become the less-expensive “alternative” to district court litigation, AIA reviews became an additional valuable tool in the arsenal of accused infringers—an addition to district court litigation that added expense and delay and made it more difficult to enforce patent rights and obtain a meaningful remedy for infringement.

The PTAB’s creation also led to conflicting decisions and outcomes between the PTAB and the district courts.184 Sometimes, when the claims were invalidated by the PTAB, the district court suit was immediately dismissed, yielding some efficiencies. Unfortunately, many cases saw the courts uphold validity, and later the PTAB would invalidate the same patent, effectively overruling the court decision.185 This dynamic encouraged more challenges at the PTAB, diminished the role of the district courts, and encouraged unseemly races to tribunals. If the appeal of the PTAB decision was decided before the appeal of the lawsuit by the Federal Circuit, the PTAB result, nearly always upheld, controlled. In extreme cases, the conflict essentially allowed administrative patent judges to override a jury verdict of patent infringement and an award of damages.186

The AIA also laid the foundation for the emergence of powerful patent-challenging entities. These companies have no ostensible interest in the patent system, other than as an entity seeking to cancel patents. The most well-known are Unified Patents and RPX. They each earn fees from members or subscribers, and the companies then seek to cancel patents that are enforced against their members or subscribers. Because the AIA allows anyone to challenge a patent in inter partes review, companies such as Unified Patents and RPX can challenge any patent with essentially no risk of being sued for infringement. This situation creates an entirely new

184. See, e.g., Novartis AG v. Noven Pharm., Inc., 853 F.3d 1289, 1293–94 (Fed. Cir. 2017) (holding the PTAB is not bound by a district court’s findings of validity, even when evaluating decisions based on identical evidence).


186. See id.
dynamic, and in some ways, the companies are the anti-patent troll—a non-practicing entity that seeks only to invalidate patents.187

A recent PTAB decision may put these business models at risk. In 2018, the Federal Circuit remanded a decision in Applications in Internet Time, LLC v. RPX Corp., which required the PTAB to reevaluate the real party in interest analysis and to assess whether RPX was a mere proxy for one of its clients, Salesforce.com.188 If so, it would mean that Salesforce.com would be a real party in interest and thus the one-year time bar under 35 U.S.C. § 315(b) applied. On remand, the PTAB held that Salesforce.com is in privity with RPX and thus the time bar applies.189 While the decision is too fresh as of this writing, it may have major implications for patent-cancellation entities and their business model.

One certainty with the PTAB and the AIA post-issuance proceedings is that they have been a boon for attorneys interested in procedure and administrative law. But that outcome does not benefit innovators and investors. Most major AIA-related appeals have dealt not with substantive patent law but with applications of the Administrative Procedure Act, statutory interpretation, or other procedural vagaries of the AIA.190 The AIA proceedings have even raised substantial questions about which party can appeal to the Federal Circuit based on Article III standing.191 While thorny issues of administrative law are no doubt highly entertaining for many attorneys and academics alike, those unresolved issues only add uncertainty and cost for the innovation community—and all without addressing the fundamental aspects of whether the next breakthrough technology should get patent protection.192

187. See McDonough, supra note 154, at 189.
188. 897 F.3d 1336 (Fed. Cir. 2018).
192. See Jeffrey Killian, Patent Uncertainty: Real Ideas, Real People, Real Harm,
Indeed, almost to confirm this last point, as this Article was being written, the Supreme Court granted certiorari in *United States v. Arthrex, Inc.* and two related cases. As with most of the other cases, *Arthrex* stems from a Federal Circuit appeal from the PTAB, and the issues presented concern constitutional questions about whether administrative patent judges are principal officers for purposes of the.Appointments Clause and, if so, whether the Federal Circuit correctly cured any Appointments Clause defect by severing the application of 5 U.S.C. § 7513(a) to those administrative judges. These cases have involved vigorous briefing, including numerous amicus briefs on both sides, and the Supreme Court heard oral argument on March 1, 2021, but, at the end of the day, the legal questions presented are distractions to the fundamental objective of the patent system—to promote the progress of the useful arts.

**F. Mere Public Franchise Instead of a Private Property Right**

Another fundamental transformation of the U.S. patent system relates to the very fundamental nature of the patent right. For decades—and arguably all along—a patent was deemed equivalent to a traditional property, such as real property or personal property. But all that has changed in the Supreme Court’s view.

The Court in the case of *Oil States Energy Services, LLC v. Greene’s Energy Group, LLC* upended considerable precedent by declaring patent rights to be mere public franchises that can be rescinded by the PTO at any time for virtually any reason. The majority was not persuaded by Congress’s instruction in the Patent Act that patents were to have the “attributes of personal property.” Nor did the *Oil States* majority follow the Court’s earlier precedent comparing patent grants to land grants that

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197. *Id*. at 1373–74.

198. *Id*. at 1375.
were irrevocable and could be rescinded only in a court of law, not an administrative agency.\textsuperscript{199}

It is no exaggeration to remark that the \textit{Oil States} Court ignored a substantial amount of precedent that clearly described a patent as a private property right. In \textit{Ex parte Wood}, the Court wrote: "The inventor has . . . a property in his inventions; a property which is often of very great value, and of which the law intended to give him the absolute enjoyment and possession."\textsuperscript{200} In \textit{Shaw v. Cooper}, the Court stated: "The right of the plaintiff to his invention, is compared to his right to other property, which cannot be divested by fraud or violence."\textsuperscript{201} And in \textit{Cammeyer v. Newton}, the Court wrote: "[T]he rule of law is well settled, that an invention so secured is property in the holder of the patent, and that as such the right of the holder is as much entitled to protection as any other property."\textsuperscript{202} Similarly, in \textit{Continental Paper Bag Co. v. Eastern Paper Bag Co.}, the Supreme Court again emphasized the private property nature of patent rights: "[P]atents are property, and entitled to the same rights and sanctions as other property."\textsuperscript{203}

The Supreme Court has continued this consistent line of thinking as recently as 2015.\textsuperscript{204} Writing for the majority of the Court in \textit{Horne v. Department of Agriculture}, Chief Justice Roberts quoted the following passage from the 1882 decision of \textit{James v. Campbell}: "[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."\textsuperscript{205}

Thus, for decades, the Supreme Court seemingly confirmed the view that a patent secures a private property right—a right based on the fruits of

\textsuperscript{199} \textit{Id.} at 1377–78.
\textsuperscript{200} \textit{Ex parte Wood} & Brundage, 22 U.S. (9 Wheat.) 603, 608 (1824).
\textsuperscript{201} 32 U.S. (7 Pet.) 292, 317 (1833).
\textsuperscript{202} 94 U.S. (4 Otto) 225, 226 (1876) (citing Seymour v. Osborne, 78 U.S. (11 Wall.) 516, 533 (1870)).
\textsuperscript{203} 210 U.S. 405, 425 (1908).
\textsuperscript{204} \textit{See generally} Horne v. Dep't of Agric., 576 U.S. 350 (2015).
\textsuperscript{205} \textit{Id.} at 359–60 (quoting \textit{James v. Campbell}, 104 U.S. (14 Otto) 356, 358 (1881)).
one’s labor and granted as part of the quid pro quo for disclosing the invention to the public.\textsuperscript{206} \textit{Oil States} squarely rejected that view.\textsuperscript{207}

Be that as it may, \textit{Oil States} is yet another example of the trend over the past 15 years of weakening patent rights.\textsuperscript{208} Under \textit{Oil States}, a patent is merely a public franchise, granted at the whim of the executive.\textsuperscript{209} Further, under \textit{Oil States}, a patent owner does not have a right to a jury trial to assess patent validity.\textsuperscript{210} Instead, the public franchise can be revoked by the Executive Branch, outside the context of an Article III court.\textsuperscript{211}

The point here is not to delve into whether \textit{Oil States} and the other decisions are necessarily the correct legal outcome.\textsuperscript{212} Indeed, there are reasonable historical arguments that patent validity was an issue to be decided in equity, and therefore patent validity could be adjudicated without a jury.\textsuperscript{213} Rather, the point is that \textit{Oil States} marks a fundamental shift in the jurisprudential thought of what a patent fundamentally is. The patent no longer belongs on the same shelf as private property, such as real property or even personal tangible property. The patent is now relegated to that lower class of property that depends fully on the solicitude of the government.\textsuperscript{214}

\begin{itemize}
\item \textsuperscript{206} The Patent Act itself intends that patents be treated as private property. 35 U.S.C. § 261 (2018) ("Subject to the provisions of this title, patents shall have the attributes of personal property.").
\item \textsuperscript{207} \textit{Oil States Energy Servs. LLC v. Greene’s Energy Grp., LLC, 138 S. Ct. 1365, 1375 (2018).}
\item \textsuperscript{208} \textit{See id. at 1374–75.}
\item \textsuperscript{209} \textit{Id.}
\item \textsuperscript{210} \textit{Id. at 1379. This outcome contrasts with \textit{Markman v. Westview Instruments, Inc., 517 U.S. 370, 377 (1996)}, where the Supreme Court explained, “There is no dispute that infringement cases today must be tried to a jury, as their predecessors were more than two centuries ago.”}
\item \textsuperscript{211} \textit{Oil States Energy Servs. LLC, 138 S. Ct. at 1374.}
\item \textsuperscript{212} For a more in-depth analysis of \textit{Oil States} and its implications, see Adam Mossoff, \textit{Essays, Statutes, Common Law Rights, and the Mistaken Classification of Patents as Public Rights}, 104 IOWA L. REV. 2591, 2614 (2019) (arguing “it is deeply mistaken to assert that patent rights are based solely in legislation, just as it is equally wrong to say that property rights in real estate are based solely in judicial common law decisions”), and Richard A. Epstein, \textit{The Supreme Court Tackles Patent Reform: A Series of Articles Examining Oil States Energy Services, LLC v. Greene’s Energy Group, LLC, 19 FEDERALIST SOC’Y REV. 132, 133 (2018) (rejecting Oil State’s claim that “patents fall ‘squarely’ within the domain of public rights for which adjudication before an Article III court is not necessary”).}
\item \textsuperscript{213} \textit{See Epstein, supra note 212, at 135.}
\item \textsuperscript{214} \textit{Oil States Energy Servs. LLC, 138 S. Ct. at 1379.}
\end{itemize}
G. The Diminished Role of the Federal Circuit as the Nation’s Patent Court

As a close to this section of the Article, we remark on the notably diminished role the Federal Circuit now holds, some 40 years after its creation, in the overall adjudication scheme for U.S. patents. Four decades ago, the court started with Congress’s charge to restore uniformity and consistency to patent law and to create the innovation certainty needed to boost the nation’s commerce.215 Of course, that was not the court’s only concern, as it was given a broad base of jurisdiction over various subject matter of national importance.216

For many years, the appeals court dutifully discharged its mandate,217 The early Federal Circuit worked to create its own body of patent jurisprudence, building on the case law of the U.S. Court of Customs and Patent Appeals (CCPA), as well as the precedents from regional courts of appeals and the district courts.218 As Congress intended, the court became the primary adjudicator of national patent disputes.219

The court’s current situation, however, is now far different, in at least two important ways. First, the court’s influence over substantive patent law has diminished.220 As more and more patent challenges are adjudicated at the PTAB rather than the district courts, the Federal Circuit is more constrained in its ability to correct what it might see as substantively wrong decisions.221 This outcome is a direct result of the greater deference the Federal Circuit must give to the PTAB’s fact-finding, as compared to fact-finding by district court judges.222 Factual issues, such as anticipation and the predicate findings of obviousness, must be reviewed for substantial evidence from the PTAB.223

216. See text accompanying supra note 1.
217. See generally Beighl, supra note 36.
218. See id.
220. See generally Wallach & Darrow, supra note 171.
221. Id., at 114–17.
222. See, e.g., Braintree Lab’ys., Inc. v. Novel Lab’ys., Inc., 749 F.3d 1349, 1358 (Fed. Cir. 2014) (explaining a district court’s findings of fact are reviewed for clear error); Harmonic Inc. v. Avid Tech., Inc., 815 F.3d 1356, 1363 (Fed. Cir. 2016) (noting the court reviews the PTAB’s factual findings for substantial evidence).
The second major difference is that a much larger percentage of the court’s docket is devoted to patent cases (from the PTAB). As Judge Timothy Dyk recently estimated, “[T]he total time devoted to the patent docket at the Federal Circuit likely exceeds 80 [percent].” Some might see this as a positive outcome, but it runs contrary to Congress’s original intent when it created the Federal Circuit. Overspecialization in appellate courts can lead to less optimal decision-making, and it was why Congress specifically ensured that the Federal Circuit’s jurisdiction was sufficiently varied to prevent what the Hruska Commission called “tunnel vision.”

Take note that these comments are not a wistful meander of days gone by. The observations raise serious concerns about whether Congress, when it passed the AIA in 2011, fully appreciated the unintended consequences of the legislation—specifically, its effects on the Federal Circuit. The court hears far more patent appeals from the PTO than ever intended. In response, the court has increasingly relied on Rule 36 dispositions, where the court summarily affirms without an explanation. While these one-line orders are within the court’s authority, their more frequent use leaves much of the innovation community—and the PTO itself—with less guidance on important legal issues.

224. See Dyk, supra note 219, at 973.
225. Id.; see also Wallach & Darrow, supra note 171, at 108–09 (noting the 2011 amendments addressed the need for a more efficient system to challenge invalid patents).
228. Dyk, supra note 219, at 973.
229. See id. at 972–76.
231. Id. at 888–89.
IV. THE PATH FORWARD FOR REVITALIZING THE U.S. PATENT SYSTEM

The preceding Part has provided a clear overview of how the U.S. patent landscape has radically changed over the course of four decades, with much of the decline in the past 15 years. The 1980s began with Congress's hope for a revitalized patent jurisprudence, spearheaded by the newly created Federal Circuit. The new appeals court accomplished its goal and worked to create a stable body of patent law that encouraged innovation and maintained a reasonable level of certainty in patent law.\textsuperscript{233} But by the time the country entered 2010 and continued on to 2020, the U.S. patent system was a shell of what Congress had hoped for when it established the Federal Circuit.

Now, the question is what can be done to improve the situation. The Supreme Court's jurisprudence is problematic in several areas, most particularly in patent eligibility, but the Court has little apparent interest in fixing its troubling precedents. The mega-corporations' lobbying efforts continue, with their apparent goal being to diminish the force of patent rights and to prevent start-ups from threatening their market dominance with innovative new technologies—even though companies like Google and Amazon used their own patents to protect their own early-stage innovation and get their market edge in their early years.\textsuperscript{234} Plus, Congress's experiment with the AIA has caused far more problems than it has solved—unless of course one enjoys litigating arcane administrative law issues.

A possible wish list of those wanting to fix the status quo would be to simply undo all that is described above. But we know that not to be likely. Be that as it may, the innovation community must work to ensure the United States remains the global leader in research and development. The current situation is detrimental to the economic health and vitality of the United States. Below we detail various considerations that should be considered in trying to fix the U.S. patent system and the U.S. innovation economy.

\textsuperscript{233} See Meador, supra note 226, at 615.
\textsuperscript{234} Duffy, supra note 49, at 2.
A. Ensuring Innovation Certainty

Innovation has long been the driving force of the U.S. economy. This innovation continues today and includes quantum computing research; Nobel-prize-winning CRISPR gene-editing technologies; autonomous and electric vehicles; 5G telecommunications; artificial intelligence; and many others. The nation’s continued success in innovation is critical for maintaining the United States as an economic leader.

Successful innovation requires the proper environment, or innovation ecosystem. Innovators need intellectual capital, an educated workforce, and access to financial capital. These resources enable innovators to conduct research and development and to optimize products for the commercial marketplace.

Equally important is a sufficient degree of what we call innovation certainty. Innovation certainty considers those legal, regulatory, economic, and political factors that affect the degree of risk associated with developing innovation. The lower the degree of innovation certainty, the less hospitable the system is for innovators and investors. The less stable the legal and political rules, the more inimical the jurisdiction is to the investors.

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236. Haber, supra note 235, at 811.

237. Michel & Dowd, supra note 6, at 12.

238. Id.

239. Id.
who ultimately finance the innovative work. Innovators and investors must have a legal, regulatory, economic, and political ecosystem that, at least reasonably and at best optimally, encourages and rewards creative thought and innovative research. Otherwise, those skilled workers who can create the innovation and those investors with the funds to support the innovation, will go elsewhere and devote their efforts to more remunerative activities than research and development that are unlikely to yield a suitable return on the investment of time and money.

During the past 15 years, innovation certainty in the United States has decreased dramatically, and the decrease is directly attributable, in our views, to two general trends: (1) the destabilization of patent law, and (2) the increased uncertainty in antitrust law. Both patent law and antitrust law, when properly implemented, can contribute to an optimal level of innovation certainty. Patent law incentivizes innovation by awarding exclusive rights, thereby encouraging investment in and public disclosure of inventions. Antitrust law incentivizes innovation by maximizing competition in a free marketplace and allowing start-up innovators to disrupt markets, avoid monopolies created by market power, and maximize consumer welfare, particularly in the short term. Working within these legal regimes, private firms innovate and commercialize.

The current 15-year trend of destabilizing U.S. patent law has significantly contributed to the decrease in innovation certainty. The case law on patent eligibility, as detailed above, is likely the largest contributor to the patent uncertainty, especially for the high-tech computer sector and the medical diagnostics fields. The lingering effects of eBay on injunctive relief also contribute significantly to innovation uncertainty. Plus, there is the continuing drumbeat of those who rail against reliable patent rights. And while the PTO is making improvements in how the AIA is implemented by the agency, those constant modifications to the AIA process, in a way, only

240. Id.
241. Id.
244. Id. at 13.
245. Id. at 12–14.
highlight the fact that patent adjudication is more and more in the hands of the political branch and the large body of administrative patent judges.

Ultimately, patent policy must be improved. Ideally, it would be done without the need for additional regulation and new legislation, as any changes to regulation and legislation would most likely create further problems to be resolved by the interested participants and the courts. Ideally, the courts, including the Supreme Court would right the jurisprudential ship in accordance with our above critique of existing precedent. Unfortunately, after almost 15 years, that outcome seems unlikely, and the fate of improvements in the nation’s patent policy is increasingly resting with Congress and the PTO.

To foster innovation certainty, federal agencies must not overstep their bounds when enforcing federal antitrust and competition laws. Unfortunately, the FTC has taken overly aggressive positions in recent years, largely to the detriment of patent owners. For example, in 2016, the FTC exercised its authority under the Federal Trade Commission Act to investigate the licensing of intellectual property. The FTC’s decision to investigate “patent assertion entities” (PAEs) was seen as a shot across the bow of patent owners and licensors of intellectual property.

More importantly, the FTC’s final report did not resolve the concerns of innovators and patent owners. Rather than revealing much useful information, the report revealed general trends, many of which were already known by anyone with experience in patent litigation and patent licensing. For example, the report noted, “[M]ost licenses in the sample followed a patent infringement suit against the alleged infringer.” But experienced counsel already knew that many infringers refuse to even consider licensing a patent until sued for infringement. The FTC report was bound to produce

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247. See id.
248. Id. at 5.
semi-informative but non-generalizable conclusions, in part due to its one-size-fits-all approach of the FTC’s definition of PAEs.

Not all may be lost, however. The antitrust section of the DOJ, under the leadership of Assistant Attorney General Makan Delrahim, has been implementing corrective actions with respect to patent rights and competition law. On December 19, 2019, the DOJ and the PTO, joined by the National Institute of Standards and Technology (NIST), issued a joint policy statement (2019 Joint Policy Statement) about the availability of remedies for infringement of standard-essential patents (SEPs) that are subject to fair, reasonable, and non-discriminatory (FRAND) licensing commitments. The 2019 Joint Policy Statement was intended to replace the 2013 joint statement by the DOJ and PTO. The 2019 Joint Policy Statement seeks to ensure that “appropriate remedies . . . [are] available to preserve competition, and incentives for innovation and for continued participation in voluntary, consensus-based, standard-setting activities.” Importantly, the 2019 Joint Policy Statement offers the view that “[a]ll remedies available under national law, including injunctive relief and adequate damages, should be available for infringement of standards-essential patents subject to a FRAND commitment, if the facts of a given case warrant them.” The 2019 Joint Policy Statement is thus a positive step toward restoring the proper level of innovation certainty in the U.S. innovation ecosystem.


252. Id.


254. Id.
Similarly, the DOJ intervened in the highly controversial Section 5 action instituted by the FTC against Qualcomm. The case involved the FTC’s novel theory of antitrust violation based on Qualcomm’s “no patent license, no chip” policy and was filed January 2017 at the 11th hour before the transition from the Obama Administration. After the district court ruled against Qualcomm, the DOJ took the bold step of filing briefs in the appeal in direct opposition to the FTC’s arguments, creating a rare instance of stark contrast between the two federal agencies responsible for competition and antitrust law. Ultimately, the unanimous panel for the Ninth Circuit rejected the FTC’s theory and reversed the district court’s finding of liability.

Much more can be and has been written about the importance of implementing the proper patent and antitrust policies. The present short overview merely highlights a few of the notable items as they relate to ensuring an optimal level of innovation certainty for the U.S innovation community. The innovation community must be vigilant in working with the PTO, DOJ, and FTC together—rather than focusing solely on the PTO—to ensure that innovation certainty and optimal patent policies are enacted and enforced.

B. Staying Ahead of Competitors

Ensuring innovation certainty for U.S. inventors and investors also relates to the country’s status and stature in the global innovation marketplace. The United States has long been the leader in innovation, and it needs to maintain its status as such. To maintain its global innovation advantage, the nation must increase innovation certainty in relation to its

255. F.T.C. v. Qualcomm Inc., 935 F.3d 752 (9th Cir. 2019).
257. See United States’ Statement of Interest Concerning Qualcomm’s Motion for Partial Stay of Injunction Pending Appeal, F.T.C. v. Qualcomm Inc., 969 F.3d 974 (9th Cir. 2020) (No. 19-16122), 2019 WL 3306496.
258. Judge Michel submitted two amicus briefs in the F.T.C. v. Qualcomm appeal, one during briefing on the motion to stay the injunction and one during the merits briefing. The panel decision cited Judge Michel’s brief in support of its reasoning. See id. at *39, *40, *44 n.28.
259. See Madigan & Mossoff, supra note 150, at 941–42.
global innovation competitors. Unfortunately, the data suggests the United States’ position is slipping by a number of measures.260

One such measure is the ranking of the national patent systems. For many years, the U.S. patent system was easily considered the best in the world—even beyond any specific ranking methodology. Indeed, the U.S. patent system was routinely referred to as the “gold standard.”261 But those days are gone.262

In terms of specific rankings, the U.S. patent system was routinely ranked at the top of the list of any number of rankings systems. For instance, the United States fell from Number 1 in the world in patent strength to Number 12 one year and then tied with ten other nations for second place in another.263

Beyond the rankings, overall consensus of the venture capital (VC) community, and the investor community more broadly, had fallen dramatically by 2018–2019. Many experts pleaded for reviving strong patents and broader eligibility. Reports showed that investments of VC funds were flowing away from patent-dependent technologies into less risky activities such as entertainment and social media, and proportionately out of the United States to overseas nations with better patent protection.264

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260. See id. at 952–60.
261. See, e.g., id. at 939 (“Compared to other countries, the United States has long had a ‘gold standard’ patent system.”).
262. Joff Wild, Sadly, Michelle Lee Is Wrong to Believe the US IP System Is Gold Standard and That It Works for the Little Guy, INTELL. ASSET MGMT. (Dec. 13, 2015), https://www.iam-media.com/law-policy/sadly-michelle-lee-wrong-believe-us-ip-system-gold-standard-and-it-works-little-guy (discussing PTO Director Michelle Lee’s designation of the U.S. patent system as the “gold standard” and stating that “[w]hen Lee talks about the amount of innovation the [U.S.] produces showing that the [U.S.] system is the gold standard, she is talking about the past”); see also Kappos et al., supra note 16.
Beyond the lower rankings and the diminished VC-confidence levels, the overarching concern remains a diminished innovation ecosystem within the United States as compared to its global innovation competitors, in particular Europe and China. While the United States had been weakening patents and shrinking eligibility, all of Europe and much of Asia, including China, have been moving in the opposite direction. In addition, injunctions in those other non-U.S. jurisdictions have become as routine there as they are rare here, at least for NPEs. Overall, patent litigation is faster and much less expensive and disruptive than in the United States. In general, patent enforcement results were more predictable in non-U.S. jurisdictions, and hence patent rights in Europe and Asia are seen as more reliable.

The diminution in value of U.S. patents is important, as the United States’ global competitors are making serious strides to overtake it as the home of twenty-first century innovation. One of the biggest threats—figuratively and literally—is China. Five years ago, the Chinese government launched a massive effort, supported by massive funding, to implement an ambitious master plan, Made in China 2025. The objective of Made in China 2025 is to transform China from being the world’s low-cost production factory to being the global leader in key twenty-first-century technologies.

One critical technology at stake—5G telecommunications—is of particular concern. Despite the warnings from the United States and other countries about the security risks linked to Chinese-based 5G equipment, many companies and countries have installed Huawei-sourced technology in its telecom infrastructure. The United States’ closest allies are similarly implementing these low-cost China-based products, even though safer Western-made alternatives are available.

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267. See id.
Another critical technology is advanced medicines based on the latest genetic discoveries. China has surpassed the United States in terms of hosting clinical trials, despite the United States' long-held dominance in the healthcare space. In a controversial move, Chinese scientists were the first to implement CRISPR technology to genetically modify the human genome in a fetus. China is also making significant advances in artificial intelligence, quantum computing, autonomous vehicles, robotics, 3-D printing, and other computer-related technologies. If not already, China will likely become the global leader in some or all of these critical technologies.

Numerous factors contribute to this shift in technological leadership. China significantly subsidizes favored firms in key areas—like Huawei, its leading 5G company. The United States does not. The United States’ strongest 5G company, Qualcomm, must compete against Huawei and the Chinese government, while also contending with legal and regulatory challenges from its own government. As noted above, the FTC launched an ill-advised antitrust enforcement action against Qualcomm, adversely affecting the revenue the company needs to fund its research and development and improve its competitive advantage in the global marketplace.

China has also notably boosted private investment incentives by strengthening patent protections in the country. It has upgraded its patent office, repeatedly modernized its intellectual property laws, and created new IP courts trained in technology that provide fast, cheap enforcement with routine injunctions against infringers. China’s revisions to its patent system


271. F.T.C. v. Qualcomm Inc., 935 F.3d 752 (9th Cir. 2019).


may also significantly shift the balance of global FRAND and SEP litigation to Chinese courts.\textsuperscript{274}

Disappointingly, the United States’ response has been anemic, lacking an overall master plan or even a cohesive strategy to concentrate on advancing the key technologies vital to U.S. economic security and innovation certainty. In fact, rather than increasing government support for critical research and development funding, the United States has reduced it. In the 1960s, U.S. government funding for R&D equaled 1.8 percent of GDP; now it is only 0.6 percent, a two-thirds drop.\textsuperscript{275} If these trends continue, they will create significant national security concerns.\textsuperscript{276}

Private funding by venture capitalists is also increasingly moving overseas, with the United States’ share of global venture capital shrinking from 84 percent in 2004 to around 50 percent in recent years. China and Europe, with stronger patent protections, have benefitted. U.S. private investments have also disturbingly shifted away from hard technologies, like computer chips, to lower-risk commercial activities like entertainment and hospitality.

The United States has done none of these things. Instead, as outlined above, U.S. patent protections have been weakened and antitrust policies have been notably anti-patent for many years, thus creating a disincentive for innovation and investment. The U.S. innovation community needs to take action to respond to an increasingly competitive global innovation marketplace. If the status quo does not change, the odds of other countries

\textsuperscript{274} See Yu & Contreras, supra note 265 (noting two recent patent decisions by Chinese courts “signal a new willingness of Chinese courts to vie for jurisdictional authority in global battles over standard-essential patents”).


\textsuperscript{276} Related to national security and the lack of a national plan for innovation, the White House recently declared a national emergency with respect to the availability of critical minerals and rare earth metals. See Executive Order on Addressing the Threat to the Domestic Supply Chain from Reliance on Critical Minerals from Foreign Adversaries and Supporting the Domestic Mining and Processing Industries (Sept. 30, 2020), https://www.federalregister.gov/documents/2020/10/05/2020-22064/addressing-the-threat-to-the-domestic-supply-chain-from-reliance-on-critical-minerals-from-foreign [https://perma.cc/2PVR-RCRO].
overtaking, permanently, the United States as the global innovation leader are greatly enhanced.

C. Specific Legislative and Regulatory Changes to Ensure Innovation Certainty and National Competitiveness

Given the state of affairs, and the Supreme Court’s apparent resistance to revisit its § 101 precedents and other rulings, we appear to sit at the crossroads, needing legislative and regulatory changes to improve innovation certainty. Legislation, of course, should not be the first resort for every problem associated with the United States’ innovation certainty problem. But after a certain point, the legislative and regulatory revisions become necessary to improve the nation’s innovation ecosystem.

Congress has been considering legislation—some good, some not so good. Amazingly, even during the past ten years, some members of Congress have continued to entertain legislation that would further restrict the rights of patent owners and further devalue patent protection in the United States.277 Other members have introduced legislation that would be a positive step forward.278

From a general standpoint, two reasonable legislative options should be considered. First, Congress should consider a legislative overhaul to 35 U.S.C. § 101 in order to correct the errors of the Supreme Court’s recent decisions. In 2019, the Senate started to address the § 101 mess. Senators Thom Tillis and Chris Coons worked to study the problem and build consensus for possible legislation that would have amended § 101.279 As leaders of the Senate Judiciary Subcommittee on Intellectual Property, they held extensive hearings and received testimony from numerous witnesses.280


279. See id.

But after making some advances, progress was stalled, due in no small part to the demands from the High Tech Inventors Alliance, whose members are largely satisfied with the status quo. The change in administration and other elected officials may create further hurdles. Notwithstanding these obstacles, Congress should again take up patent legislation that would fix the patent-eligibility conundrum.

Second, Congress should consider legislation that would overrule or minimize the effects of eBay and restore a reliable remedy of injunctive relief when a valid patent is infringed.281 One such bill that has been proposed is the STRONGER Patent Acts of 2019. The bipartisan legislation included a number of proposed amendments to improve the U.S. patent system. Among those was its provision that would amend 35 U.S.C. § 283 by adding a subsection (b) that would read: “Upon a finding by a court of infringement of a patent not proven invalid or unenforceable, the court shall presume that—(1) further infringement of the patent would cause irreparable injury; and (2) remedies available at law are inadequate to compensate for that injury.”282 That new subsection (or a comparable provision) would be a step in the right direction to restore a meaningful right to an injunction when a valid patent is infringed.

Beyond these important corrections, there are other areas that can be improved. The STRONGER Patents Act included provisions that would have improved the AIA review process, among other things.283 Other members of Congress and other pro-innovation groups have offered suggestions on how to improve the U.S. patent system.284 While a discussion of all possible legislative fixes is far beyond the confines of this Article, the important message is that the U.S. innovation community must remain vigilant and active in seeking the legislative corrections to foster the innovation certainty that will enable it to continue creating, innovating, and commercializing twenty-first century technology.

Ensuring innovation certainty and global competitiveness requires more than fixes to the patent system, however. Beyond a reliable patent system, innovation certainty needs improvements to R&D funding. One

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282. Id.
283. See id.
284. See Coons & Tillis, supra note 278.
such bill that would help is the Endless Frontier Act.\textsuperscript{285} It proposed to vastly increase the federal investment in R&D by $100 billion per year and to focus on the advanced technologies of the twenty-first century.\textsuperscript{286} These are the same technologies China wants to dominate through its Made in China 2025 Plan.\textsuperscript{287}

Without a course correction of U.S. policy, the United States will almost certainly lose the global race for technological leadership. Modern innovation is incredibly expensive and time-consuming. The United States’ progress in these areas is a function of the investment our private and government sectors devote to a fostering innovation ecosystem.\textsuperscript{288} While the challenges are not small, the future is bright, and there is no reason to think the United States cannot continue as the global leader in innovation.

V. CONCLUSION

The U.S. patent system has been the stalwart of U.S. innovation, which in turn is the driver of so much of the U.S. economy. For the country to maintain its leadership role, it must continue to ensure that the U.S. innovation ecosystem provides a sufficient level of innovation certainty to the inventors, investors, and other elements of the business, research, and development communities.

A major part of that assurance must be to fix the U.S. patent system—to increase its reliability and credibility. Congress’s goal from 40 years ago was to create a national appeals court—the Federal Circuit—that would add uniformity and certainty to patent law. The court did so for many years, but much has changed. Congress and the innovation community must work to reverse the detrimental changes implemented over the past 15 years. If not, the United States risks losing out to its global innovation competitors, such as Asia and Europe, who are offering stronger and more reliable patent systems, thereby enhancing the innovation certainty in their own innovation ecosystems.

\textsuperscript{287} See McBride & Chatzky, supra note 266.
\textsuperscript{288} See generally Haber, supra note 235.