

The Youngest Patent Validity Proceeding: Evaluating Post-Grant Review

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Introduction

Of the three major *ex post* patent validity challenge mechanisms that the 2011 Leahy-Smith America Invents Act¹ put into place, the third is beginning to show signs of use. Post-grant review is an administrative proceeding of remarkable breadth as compared both to *inter partes* review and to the transition program for covered business method patents. Thus far, however, patent challengers have made very limited use of post-grant reviews: in the four years since the procedure became available, the United States Patent and Trademark Office has received only twenty-one petitions for post-grant review. By contrast, the agency has received over 4,000 petitions for *inter partes* review and over 400 petitions for covered business method review during the same period. Although post-grant review's higher relative cost may play a role in this differential usage going forward,² the primary obstacle to its use so far has been structural.

By its terms, post-grant review is available only to challenge patents that have issued from applications filed under the new "first inventor to file" framework of the America Invents Act.³ That framework went into effect on March 16, 2013, eighteen months from the AIA's enactment.⁴ Even the earliest patent applications made under the first-inventor-to-file regime, then, could only recently have begun to emerge from the patent examination process and become eligible for post-grant review challenges. For U.S. patent applications that are ultimately issued as patents, estimated average examination pendency is 2.79 years.⁵ So the delay in post-grant review's usage is understandable.

¹ Pub. L. No. 112-29 (2011).

² A standard petition for post-grant review (challenging up to 20 claims) carries a basic cost of \$30,000 (a filing fee of \$12,000 and an institution fee of \$18,000 fee if the USPTO determines that the petition deserves to be adjudicated on its merits). The same fee applies to covered business method reviews. *Inter partes* review, however, carries a somewhat lower cost of \$23,000 (a filing fee of \$9,000 and an institution fee of \$14,000 fee if the USPTO determines that the petition deserves to be adjudicated on its merits). See generally USPTO, CURRENT FEE SCHEDULE, available at www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule.

³ Prior to the America Invents Act, U.S. patent law operated under a "first to invent" framework in which priority of ownership in patented inventions favored those who were (demonstrably) the first to invent. *Patent Law—Patentable Subject Matter—Leahy Smith America Invents Act Revises U.S. Patent Law Regime.—Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (to be Codified in Scattered Sections of 35 U.S.C.)*, 125 HARV. L. REV. 1290 (2012). In fact, one of Congress's leading concerns in enacting the AIA was that under existing U.S. patent law, even if later comers had already obtained one or more patents to a given invention, the first inventor could unsettle that allocation of rights, and the result was contentious and expensive litigation. See generally Joe Matal, *A Guide to the Legislative History of the America Invents Act: Part I of II*, 21 Fed. Circuit B.J. 435, 453–465 (2011) (discussing the legislative debate).

⁴ Pub. L. No. 112-29 § 3(n)(1).

⁵ UKIPO & USPTO, PATENT BACKLOGS, INVENTORIES AND PENDENCY: AN INTERNATIONAL FRAMEWORK 76 (2013), available at www.gov.uk/government/uploads/system/uploads/attachment_data/file/311239/ipresearch-uspatlog-201306.pdf.

Nevertheless, an initial empirical and institutional analysis of post-grant review is now timely. A great and growing body of empirical research is now emerging on the uses (and potential abuses) of *inter partes* review and covered business method review proceedings, and this research has important lessons for empirical analysis of post-grant review.⁶ Legal challenges have also been mounted against the very framework in which the America Invents Act's patent validity review mechanisms operate; these legal policy debates, too, bear directly on how post-grant review will function and how effective it will be in achieving its intended aims.⁷

The purpose of this Article is to frame that initial analysis of post-grant review and, in particular, to offer suggestions for empirically evaluating salient institutional features of *ex post* patent validity review in the administrative agency setting of the USPTO.

I. Error Correction in the Patent System

The origins of agency error in patent examination are now increasingly well understood both as a theoretical matter and an empirical one. Even under the best of circumstances, the *ex ante* evaluation of patent applications would be a process with attendant error costs. The issuance of U.S. patent rights is consciously designed as a precursor to transactions and assessments of economic value that are revealed later, in the market.⁸ This market-oriented view of the economic value of patent rights is a long-established premise in patent doctrine itself, particularly the doctrine of utility.⁹ As a result, the process of patent examination must conceptually be limited

⁶ E.g., Saurabh Vishnubhakat, Arti K. Rai & Jay P. Kesan, *Strategic Decision Making in Dual PTAB and District Court Proceedings*, 31 BERKELEY TECH. L.J. 45 (2016); Brian J. Love & Shawn Ambwani, *Inter Partes Review: An Early Look at the Numbers*, 81 U. CHI. L. REV. DIALOGUE 93 (2014).

⁷ Most prominently, the Supreme Court recently decided *Cuozzo Speed Technologies, LLC v. Lee*, 136 S. Ct. 2131 (2016). The Court held in *Cuozzo* that the USPTO Patent Trial and Appeal Board may construe patent claims in an *inter partes* review using a different standard (broadest reasonable interpretation) than the one that U.S. district courts use (ordinary meaning as understood by one of ordinary skill in the art), and that the USPTO's statutorily nonreviewable decision to institute an *inter partes* review remains unreviewable even after a final agency order has been entered and despite the presumption of judicial review built into the Administrative Procedure Act. These holdings have direct import for post-grant review as well. See Vishnubhakat et al., *supra* note 6.

⁸ More precisely, patents as legal rights are tradable assets upon which markets for technology and knowledge can, and do, take shape. For a succinct overview of the economic literature describing this type of market formation, see Daniel F. Spulber, *How Patents Provide the Foundation of the Market for Inventions*, Northwestern Law & Econ Research Paper No. 14-14 (June 2014), available at www.ssrn.com/abstract=2487564; Ashish Arora & Alfonso Gambardella, *The Market for Technology*, in 1 HANDBOOK OF THE ECONOMICS OF INNOVATION (Bronwyn H. Hall & Nathan Rosenberg, eds.) (2010); Stuart J.H. Graham et al., *High Technology Entrepreneurs and the Patent System: Results of the 2008 Berkeley Patent Survey*, 24 BERKELEY TECH. L.J. 1255 (2009); ASHISH ARORA, ANDREA FOSFURI & ALFONSO GAMBARDELLA, *MARKETS FOR TECHNOLOGY: THE ECONOMICS OF INNOVATION AND CORPORATE STRATEGY* (2001).

⁹ E.g., *Lowell v. Lewis*, 1 Mason. 182 (1817). In *Lowell*, Justice Story consciously—and momentarily, for it has survived largely intact into the present day—endorsed a low bar for satisfying the requirement that an invention must be “useful” in order to be patentable. The invention, he ex-

to evaluating the technological, rather than economic, merits of an invention. Modern USPTO practice reflects this emphasis by requiring that the agency's patent examiners as well as the practitioners who are permitted to practice before the agency must possess technical training in science or engineering disciplines—while requiring no background or training in business, economics, finance, or other such fields.¹⁰ To this best-case limitation, of course, must also be added practical constraints such as agency infrastructure, budgetary uncertainty, and personnel issues.¹¹

So the examination process will, and does, produce both false-positive errors and false-negative ones by granting patents that, in retrospect, should have been denied and by denying patents that should have been granted. A rich debate persists on the theoretical implications of these errors, particularly the effect that they have on substantive patent doctrine, given that applicants can appeal decisions to deny a patent whereas the agency (or anyone else) cannot directly appeal decisions to grant a patent.¹² Also prominent in this theoretical debate is the statutory presumption of patentability, under which the burden lies not with the applicant to show that a patent should issue but rather with the examiner to show that a patent should not issue.¹³

No less important than these theoretical accounts is considerable empirical evidence that patent value is not distributed uniformly but is concentrated in relatively few patents and patent portfolios. Patents that are selected for litigation are more

plained, need not be an improvement upon the state of the art, but merely accomplish its intended objective without injury to public mores. In other words, utility does not require an *ex ante* showing of marginal economic value over and above what is currently available in the market. If the invention does prove to be “not so extensively useful, it will silently sink into contempt and disregard”—i.e., market forces themselves will deliver any deserved economic punishment. *Id.*

¹⁰ See USPTO Office of Enrollment & Discipline, GENERAL REQUIREMENTS BULLETIN FOR ADMISSION TO THE EXAMINATION FOR REGISTRATION TO PRACTICE IN PATENT CASES BEFORE THE UNITED STATES PATENT AND TRADEMARK OFFICE 4 (discussing scientific and technical training requirements for admission to the patent registration examination), available at www.uspto.gov/sites/default/files/OED_GRB.pdf.

¹¹ See USPTO, PERFORMANCE & ACCOUNTABILITY REPORT FISCAL YEAR 2015 22–24 (2016), available at www.uspto.gov/sites/default/files/documents/USPTOFY15PAR.pdf (discussing management challenges, particularly sustainable funding and IT infrastructure). The budgetary uncertainty of the agency's operations arises primarily from its reliance on the decisions of potential applicants to file new patent applications as well as existing patent owners to pay maintenance fees to keep current patents in force. *Id.* at 29–46. The USPTO's personnel decisions are constrained by an extensive collective bargaining agreement that has been in force, with modifications, for thirty years. See AGREEMENT BETWEEN U.S. DEPARTMENT OF COMMERCE/PATENT AND TRADEMARK OFFICE AND THE PATENT OFFICE PROFESSIONAL ASSOCIATION (1986), available at www.popa.org/static/media/uploads/Agreements/cba.pdf.

¹² See Melissa F. Wasserman, *The PTO's Asymmetric Incentives: Pressure to Expand Substantive Patent Law*, 72 OHIO ST. L.J. 379 (2011); Jonathan S. Masur, *Patent Inflation*, 121 YALE L.J. 470 (2011); Arti K. Rai, *Who's Afraid of the Federal Circuit?*, 121 YALE L.J. ONLINE 335 (2011) (replying to Masur); Lisa Larrimore Ouellette, *What Are the Sources of Patent Inflation? An Analysis of Federal Circuit Patentability Rulings*, 121 YALE L.J. ONLINE 347 (2011) (replying to Masur); Jonathan S. Masur, *Inflation Indicators*, 121 YALE L.J. ONLINE 375 (2012) (surreplying to Rai and Ouellette).

¹³ See Sean B. Seymore, *The Presumption of Patentability*, 97 MINN. L. REV. 990 (2013).

likely to be of high value than to be of low value.¹⁴ Meanwhile, patents (like legal rights more generally) that are of uncertain validity are more likely to be selected for litigation than are patents whose validity or invalidity is apparent.¹⁵

Thus, patent examination exists under a combination of inevitable agency error when evaluating inventions for patentability, structurally asymmetric agency process in granting patents versus denying them, and unforeseeably distributed value across those patents that will eventually bring about the social and economic consequences of the agency error. Put another way, we know that some bad patents will go out into the world but cannot know *beforehand*—in the agency examination process—which ones will eventually be both of poor-enough quality to pose real economic harm and valuable enough to litigate and find out. It is perhaps unsurprising, then, that the prevailing view of patent examination is that it proceeds under a veil of rational ignorance,¹⁶ where patent examiners seek information about patentability using only finite resources that do not exceed the value of the information itself.¹⁷

Rational ignorance, however, is still only a descriptive claim about how patent examination works: how it ought to work is a separate matter. Of the two aforementioned types of patent examination errors that the USPTO may commit—improper grants and improper denials—the latter are generally of less concern because administrative and judicial review are available for applicants to challenge such denials. To be sure, these are not panaceas for overly aggressive patent denials, which also represent a dynamic social cost in the form of lost incentives for inventors to invest in future research.¹⁸ The cost and delay of such additional legal process can be prohibitive, particularly for small firms and independent inventors. Nevertheless, the *de jure* unavailability of appeal for improper grants means that, whatever potential amount of social cost may be at stake from patents that should not have been granted, the cost cannot be mitigated *ex ante* through direct administrative or judicial review. The errors must be corrected *ex post*.

Proposals for *ex post* correction fall into two broad categories that correspond to the institutions that bear the duty to correct: litigation in federal courts and administrative reevaluation in the USPTO.

¹⁴ See John R. Allison et al., *Valuable Patents*, 92 GEO. L.J. 435 (2004).

¹⁵ Jay P. Kesan & Gwendolyn G. Ball, *How Are Patent Cases Resolved? An Empirical Examination of the Adjudication and Settlement of Patent Disputes*, 84 WASH. U. L. REV. 237, 243 (2006). For the generalized theoretical discussion, see George L. Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. LEGAL STUD. 1 (1984).

¹⁶ See Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. UNIV. L. REV. 1495 (2001).

¹⁷ *Id.* (citing RALPH T. BYRNS & GERALD W. STONE, *ECONOMICS* 433 (4th ed. 1989), and MANCUR OLSON, *RATIONAL IGNORANCE, PROFESSIONAL RESEARCH, AND POLITICIANS' DILEMMAS, IN KNOWLEDGE, POWER AND THE CONGRESS* 130 (William H. Robinson & Clay H. Wellborn eds., 1991)).

¹⁸ Andres Sawicki, *Better Mistakes in Patent Law*, 39 FLA. ST. U. L. REV. 735, 760–761 (2012).

II. Correction through Litigation

The traditional mode of defeating improperly granted patents has been litigation, either as a defense to a patent owner-initiated lawsuit that itself alleges infringement,¹⁹ or else as a preemptive lawsuit seeking declaratory judgment that a patent is invalid or, at the least, not infringed by the party seeking relief.²⁰ Both modes of litigation-based error correction, however, are subject to important constraints.

A. What the Stakes Are

A primary constraint is cost. Patent litigation, even for declaratory judgments, can be quite expensive. Biannual economic survey data from the American Intellectual Property Law Association suggests, for instance, that the median cost of patent infringement litigation is \$700,000 in low-stakes cases, i.e., where less than \$1 million is in controversy. In cases of the highest stakes, where more than \$25 million is in controversy, the median cost of infringement litigation rises to some \$5.5 million. Table 1 summarizes recent trends in this regard.

*Table 1. Median Patent-Infringement Litigation Costs (Thousands)*²¹

Amount in Controversy	2005	2007	2009	2011	2013
< \$1M	\$650	\$600	\$650	\$650	\$700
\$1M–\$10M	n/a	n/a	n/a	n/a	\$2,000
\$10M–\$25M	n/a	n/a	n/a	n/a	\$3,325
\$1M–\$25M	\$2,000	\$2,500	\$2,500	\$2,500	\$2,600
> \$25M	\$4,500	\$5,000	\$5,500	\$5,000	\$5,500

High cost, in turn, affects the ability of litigation to serve a meaningful role in error correction. Cost creates an incentive to settle a case even where the merits of the case are questionable simply because it would be economically irrational under the circumstances to litigate to vindication.²² A notable source of this patent settlement calculus, though by no means all of it, is the American Rule of litigation, under which each side presumptively pays its own costs regardless of who prevails.²³

¹⁹ 35 U.S.C. §§ 282(b)(1)–(2).

²⁰ 28 U.S.C. § 2201(a).

²¹ AM. INTELL. PROP. LAW ASS'N, REPORT OF THE ECONOMIC SURVEY 34 (2013) [hereinafter AIPLA Survey].

²² Saurabh Vishnubhakat, *What Patent Attorney Fee Awards Really Look Like*, 63 DUKE L.J. ONLINE 15, 17 (2014); Colleen V. Chien, *Reforming Software Patents*, 50 HOUS. L. REV. 325, 340–42 (2012); David Rosenberg & Steven Shavell, *A Model in Which Suits Are Brought for Their Nuisance Value*, 5 INT'L REV. L. & ECON. 3 (1985).

²³ Vishnubhakat, *supra* note 22, at 19. See generally John F. Vargo, *The American Rule on Attorney Fee Allocation: The Injured Person's Access to Justice*, 42 AM. U. L. REV. 1567 (1993). The English Rule, by contrast, presumptively provides that the non-prevailing party in litigation pays the expenses of the prevailing party.

The patent statute does provide for fee shifting akin to the English rule, but only in “exceptional” cases,²⁴ leaving most patent lawsuits subject to ordinary settlement incentives.

Customarily, the American Rule is defended as a guarantor of fairness and access to justice: the uncertainty of litigation suggests both that “one should not be penalized for merely defending or prosecuting a lawsuit” and that “the poor might be unjustly discouraged from instituting actions to vindicate their rights if the penalty for losing included the fees of their opponents’ counsel.”²⁵

The settlement incentive in patent litigation, however, turns this logic on its head: the private benefit of an improperly granted patent rests with the patent-owning plaintiff who asserts it in litigation, and the resource-constrained party that is at risk of settling a questionable lawsuit is the defendant. In such cases, concern for access to justice would counsel in favor of fee-shifting to protect the weaker party’s ability to defend itself. In practice, this is exactly the argument that has been advanced for Congress or the courts to broaden the reach of fee-shifting in patent cases.

At least as to the courts, the argument has succeeded in a pair of recent cases before the Supreme Court. In *Octane Fitness, LLC v. Icon Health & Fitness, Inc.*, the Court held that for fee shifting under § 285, “[d]istrict courts may determine whether a case is ‘exceptional’ in the case-by-case exercise of their discretion, considering the totality of the circumstances.”²⁶ The Court explained that this flexible view of exceptionality—i.e., amenability to finding that a particular case does, indeed, warrant fee shifting—was more consistent with the statute than was the “overly rigid” approach of the Federal Circuit.²⁷ In the companion case *Highmark Inc. v. Allcare Health Management System, Inc.*, the Court further held that “an appellate court should review all aspects of a district court’s § 285 determination for abuse of discretion” rather than *de novo*, as was the Federal Circuit’s practice.²⁸ The cumulative effect of these decisions is to give district courts not only greater ability to find a case exceptional and shift fees but also greater immunity from appellate reversal. Indeed, the first empirical studies into the effects of *Octane Fitness* and *Highmark* suggest that these decisions have increased attorney fee shifting to a statistically significant degree.²⁹ By contrast to judicial reforms of patent fee shifting, however, legislative proposals for presumptive or asymmetric fee shifting have made little progress so far.³⁰

²⁴ 35 U.S.C. § 285.

²⁵ *Fleishmann Distilling Corp. v. Maier Brewing Co.*, 386 U.S. 714, 718 (1967).

²⁶ 134 S. Ct. 1749, 1756 (2014).

²⁷ *Id.* at 1756–1757.

²⁸ 134 S. Ct. 1744, 1746–1747 (2014).

²⁹ See, e.g., Scott M. Flanz, *Octane Fitness: The Shifting of Patent Attorneys’ Fees Moves into High Gear*, 19 STAN. TECH. L. REV. 329 (2016).

³⁰ See Innovation Act, H.R. 9, 114th Cong. § 3(b) (2015). No action has been taken on H.R. 9 since a

Still, fee shifting alone merely lowers the settlement threshold for potentially frivolous claims; it does not eliminate it. The availability of presumptive fee shifting (the loser always pays) means that a defendant's risk-adjusted cost of defending an infringement lawsuit is lower than it would otherwise be. The availability of asymmetric fee shifting (where only a losing patent owner pays a prevailing defendant's expenses while a losing defendant does not pay the prevailing patent owner's expenses) would lower the defendant's risk-adjusted cost even further—but the cost would still not be zero. In all cases, a losing defendant would still be required to pay at least its own expenses, and these expenses could still represent a nontrivial settlement threshold against assertions of questionable patents. To this extent, cost still limits the ability of litigation to correct improper patent grants by the USPTO.

Nor is this limitation unsurprising. The structure of civil litigation in the United States favors settlement, so much so that despite variation across substantive areas of the law, recent estimated aggregate settlement rates are on the order of 66.9 percent and, in certain types of cases, are as high as 87.2 percent.³¹ Yet true error correction in the sense of removing improperly granted patent rights from the market by invalidating them altogether requires courts to adjudicate them on the merits rather than to allow parties to settle.³² This suggests that the settlement-friendly civil litigation paradigm of U.S. law is in tension with the aim of correcting false-positive patent granting errors by the USPTO.

B. Who Can, and Does, Mount the Challenge

Somewhat ironically, while the private settlement calculus is based on costs that are individually *too high* for particular defendants, it also reflects a collective action problem in that the cost to rival defendants of invalidating a questionable patent is *too low* relative to the high social benefit. As the Supreme Court held in the 1971 *Blonder-Tongue* case, when a patent is adjudged invalid (and all appeals have been exhausted), the patent is invalid not only against the party and for purposes of the given case, but invalid altogether.³³ Therefore, a particular defendant must consider that invalidating a patent will not only benefit it but will also benefit all other poten-

hearing in February 2016 of the House Committee on Small Business and Entrepreneurship, and given the current election-year dynamics, none is likely before the 114th Congress adjourns. *See also* Patent Abuse Reduction Act of 2013, S. 1013, 113th Cong. § 5(a) (2013); Patent Litigation Integrity Act of 2013, S. 1612, 113th Cong. § 101(a) (2013). No action was taken either on S. 1013 or on S. 1612 since a hearing in December 2013 of the Senate Committee on the Judiciary.

³¹ Theodore Eisenberg & Charlotte Lanvers, *What Is the Settlement Rate and Why Should We Care?*, 6 J. EMPIRICAL LEG. STUD. 111, 115, 130 (2009).

³² Megan M. La Belle, *Against Settlement of (Some) Patent Cases*, 67 VAND. L. REV. 375, 398–401 (2014) (arguing essentially that the prevailing strong set of incentives for settlement in patent cases “achieves peace instead of justice”).

³³ More precisely, the defeated patent owner is collaterally estopped to relitigate the patent's validity in future cases, either against the same party or against any other parties. *Blonder-Tongue Laboratories, Inc. v. University of Illinois Foundation*, 402 U.S. 313 (1971).

tial defendants, some or even many of whom may be its competitors.³⁴ In this sense, patent invalidity judgments are public goods that are susceptible to familiar problems of free riding and undersupply.³⁵

This need not be the case, of course. Even without returning to a pre-*Blonder-Tongue* world in which invalidity judgments benefit only the defendants or declaratory judgment plaintiffs who have invested in them, the collective action problem of who *will* pursue an invalidity judgment can be addressed through the rules governing who *can* do so, by relaxing the requirements of who has standing to challenge patents.

Proposals to expand standing in patent cases are a growing literature. Treating the validity of patents as a matter of public rather than private law, for example, would warrant generous rules of standing (and personal jurisdiction, as the case may be) to invite litigation-based challenges.³⁶ Closely related to this public-law approach is the view that separation-of-powers concerns are diminished in the patent context.³⁷ As the argument goes, courts should ordinarily limit themselves from hearing cases aimed at vindicating “the undifferentiated public interest” that is properly committed to executive branch.³⁸ The USPTO is an exception, however, as its executive agency powers do not include substantive rulemaking authority³⁹ and implicitly leave much doctrinal development in patent law to the expertise of the Federal Circuit.⁴⁰ Perhaps most direct in its attempt to resolve collective action concerns is the view that standing to challenge patent validity should be aligned both with existing incentives to bring such challenges at all and, more specifically, with incentives to bring socially desirable types of validity challenges.⁴¹

³⁴ Joseph Scott Miller, *Building a Better Bounty: Litigation-Stage Rewards for Defeating Patents*, 19 BERKELEY TECH. L.J. 667, 687–688 (2004).

³⁵ *Id.*

³⁶ Megan M. La Belle, *Patent Law As Public Law*, 20 GEO. MASON L. REV. 41 (2012). Similar in this regard is the view that patent invalidity challenges ought to be treated in the law explicitly as a species of public interest litigation with commensurately broad access to federal courts. *E.g.*, Amelia Smith Rinehart, *Patent Cases and Public Controversies*, 89 NOTRE DAME L. REV. 361 (2013) (discussing trends in the case law that may point the way toward standing reform in patent litigation); Gaia Bernstein, *The Rise of the End User in Patent Litigation*, 55 B.C.L. REV. 1443 (2014) (focusing on the availability of standing for end users of patented inventions); Kali N. Murray, *Rules for Radicals: A Politics of Patent Law*, 14 J. INTELL. PROP. L. 63 (2006) (arguing for standing in patent cases using environmental law as a template).

³⁷ Nicholas D. Walrath, *Expanding Standing in Patent Declaratory Judgment Actions to Better Air Public Policy Considerations*, Note, 88 N.Y.U. L. REV. 476, 506–508 (2013).

³⁸ *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 577 (1992).

³⁹ *Merck & Co. v. Kessler*, 80 F.3d 1543, 1549–50 (Fed. Cir. 1996).

⁴⁰ Walrath, *supra* note 37, at 506–508. *Cf.* Sapna Kumar, 44 U.C. DAVIS L. REV. 1547 (2011) (discussing the Federal Circuit’s expertise in patent law as that expertise relates to the deference that the court should give to an expert agency whose decisions the court reviews—in the context of the International Trade Commission).

⁴¹ Michael J. Burstein, *Rethinking Standing in Patent Challenges*, 83 GEO. WASH. L. REV. 498 (2015). *But see* John F. Duffy, *Standing to Challenge Patents, Enforcement Risk, and Separation of Powers*, 83 GEO. WASH. L. REV. 628 (2015).

Yet these views of patent law as public law akin to regulation rather than private law akin to property, and of patent examination as conferring public rights rather than private rights is itself contested,⁴² and thus far, neither enacted patent reforms nor proposed legislation has taken up the broader view of standing as a tractable solution to the collective action problem that arises in using litigation to correct false-positive patent granting errors by the USPTO.

C. Who Decides

Finally, apart from questions of litigation cost and litigation incentive, there remains the third issue of adjudicative expertise. The problem of expertise takes two forms: doctrinal and technological. In turn, each form of expertise awaits two sets of decision-makers in the courts: judges and juries.

Judges have long been called upon to exercise both doctrinal expertise in patent law and technological expertise with respect to the inventions that particular patents cover. On first impression, the generalist nature of the federal judiciary might suggest a poor fit for patent doctrine. Patent law in its complexity is matched by only a few other fields, such as tax and bankruptcy.⁴³ At the same time, whereas Congress has established specialized courts to respond to cultivate expertise in the complexities of tax law⁴⁴ and bankruptcy law⁴⁵ as an initial matter, formal specialization in patent law is different in two important respects.

First, the U.S. Court of Appeals for the Federal Circuit, which has exclusive jurisdiction over cases of patent infringement,⁴⁶ is an appellate body and so only sees that small fraction of patent cases which are appealed from final judgment—and, even then, only as initially framed by largely generalist trial judges. Tax and bankruptcy judges, by contrast, work under and with the federal trial judiciary and so bring their expertise to bear much more directly on the legal complexity to which they are charged with responding. Second, even the Federal Circuit as a specialized

⁴² Wayne A. Kalkwarf, *Stop in the Name of the PTO! A Review of the Fresenius Saga and PTO-Judicial Interplay*, 22 J. INTEL. PROP. L. 315, 339–340 (2015); Michael Rothwell, *Patents and Public Rights: The Questionable Constitutionality of Patents before Article I Tribunals after Stern v. Marshall*, 13 N.C. J. L. & TECH. 287, 340–341 (2012); Margaret L. Moses, *What the Jury Must Hear: The Supreme Court's Evolving Seventh Amendment Jurisprudence*, 68 GEO. WASH. L. REV. 183, 233n.347 (discussing *Patlex Corp. v. Mossinghoff*, 758 F.2d 594, 604 (Fed. Cir. 1985)); La Belle, *supra* note 36, at 98–100.

⁴³ See Samuel S. Adelsberg, *Bouncing the Executive's Blank Check: Judicial Review and the Targeting of Citizens*, 6 HARV. L. & POL'Y REV. 437, 446 (2012) (likening patent law to bankruptcy and taxation in that all three are “particularly complex issues requiring unique knowledge”); Glenn M. Sulmasy & Andrea K. Logman, *A Hybrid Court for a Hybrid War*, 42 CASE W. RES. J. INT'L L. 299, 303 (2009) (same).

⁴⁴ For an overview of the tax court system see Leandra Lederman, *Tax Appeal: A Proposal to Make the United States Tax Court More Judicial*, 85 WASH. U. L. REV. 1195, 1203–1216 (2008).

⁴⁵ For an overview of the bankruptcy court system, see Daniel J. Bussel, *Power, Authority, and Precedent in Interpreting the Bankruptcy Code*, 41 UCLA L. REV. 1063, 1065–1071 (1994).

⁴⁶ 28 U.S.C. § 1292(c).

court of appeals is of relatively recent vintage, created in 1982.⁴⁷ By contrast, the federal tax court system in various forms dates from 1924,⁴⁸ making it three times as old as the Federal Circuit when the America Invents Act was enacted.

Nevertheless, the complexity of patent law has still produced extensive specialization at the trial court level—but informally rather than formally. It is now a well-established set of findings in the empirical literature that a disproportionately large number of patent cases are filed in only a few judicial districts,⁴⁹ that relatively few district judges see the bulk of these patent cases,⁵⁰ and that this repeated exposure to and experience with patent litigation has significant, and mixed, impacts on the patent law expertise of these judges.⁵¹ In fact, it was in order to formalize, at least partly, this preexisting trend toward specialization that Congress in 2011 (separately from the America Invents Act) enacted the Patent Cases Pilot Program, providing that judges in select judicial districts with sufficient patent caseloads may opt into—and opt out of—hearing patent cases that would otherwise have been randomly assigned to a judge without regard for her expertise or interest in patent law.⁵²

Despite these trends and policy experiments, however, patent law still poses a challenge for the generalist federal judiciary because of another necessary dimension of expertise: technology. Patents are intended to be granted only to sufficiently innovative inventions,⁵³ and ensuring this level of innovation requires scientific training both on the part of attorneys and agents who translate the inventor's art into legally meaningful arguments and evidence and on the part of USPTO examiners who evaluate their sufficiency. Accordingly, adequate education or experience in a science or engineering discipline is a precondition of both admission to practice before the bar of the USPTO requires scientific training⁵⁴ and employment as a USPTO examiner.⁵⁵ Federal judges, of course, face no such scientific education or training requirements, and neither do juries.⁵⁶ Through repeated exposure to patent cases, judges at least may cultivate meaningful competence in evaluating scientific

⁴⁷ Pub. L. No. 97-164 (1982).

⁴⁸ Pub. L. No. 68-175 (1924).

⁴⁹ Saurabh Vishnubhakat, *Reconceiving the Patent Rocket Docket: An Empirical Study of Infringement Litigation 1985–2010*, 11 J. MARSHALL REV. INTELL. PROP. L. 58, 78–80 (2011).

⁵⁰ Jay P. Kesan & Gwendolyn G. Ball, *Judicial Experience and the Efficiency and Accuracy of Patent Adjudication: An Empirical Analysis of the Case for a Specialized Patent Trial Court*, 24 HARV. J.L. & TECH. 393, 420–423 (2011).

⁵¹ *Id.* at 423–443. See also Mark A. Lemley & Shawn P. Miller, *If You Can't Beat 'Em, Join 'Em? How Sitting by Designation Affects Judicial Behavior*, 94 TEX. L. REV. 451 (2016).

⁵² Pub. L. No. 111-349.

⁵³ 35 U.S.C. §§ 102, 103.

⁵⁴ USPTO, GENERAL REQUIREMENTS BULLETIN FOR ADMISSION TO THE EXAMINATION FOR REGISTRATION TO PRACTICE IN PATENT CASES BEFORE THE USPTO (July 2015), available at www.uspto.gov/sites/default/files/OED_GRB.pdf.

⁵⁵ USPTO, PATENT EXAMINER POSITIONS, available at careers.uspto.gov/Pages/PEPositions/.

⁵⁶ Robin Feldman, *Plain Language Patents*, 17 TEX. INTELL. PROP. L.J. 289, 291 (2009); Gregg A. Paradise, *Arbitration of Patent Infringement Disputes: Encouraging the Use of Arbitration Through Evidence Rules Reform*, 64 FORDHAM L. REV. 247, 254 (1995).

arguments,⁵⁷ but even this cannot fully substitute for competence in the underlying scientific subject matter.

Accordingly, proposals to manage the scientific complexity that is inherent in modern patent litigation have often looked—and continue to look—to administrative agency expertise as a source of guidance for the courts. For example, claim construction is a foundational step in resolving patent disputes, for construing the meaning of patent claims that define the boundaries of the invention implicates a wide range of issues pertaining to whether the patent is valid, whether the accused products or processes infringe the patent, and so on.⁵⁸ To construe claims from the perspective of patent law’s familiar “person having ordinary skill in the art,” however, is a scientifically fact-intensive exercise that is not necessarily well-suited to generalist judges.⁵⁹ Relying on the familiar administrative-law doctrine of primary jurisdiction, Professor John Duffy has previously proposed that courts could profitably refer claim construction issues to the USPTO and then rely on the advisory opinion of that expert agency to whatever extent the court found appropriate going forward.⁶⁰

Similarly foundational to construing patent claims is identifying the technological field in which an invention belongs, for taxonomic choices both influence how the person having ordinary skill in the art is to be characterized⁶¹ and what set of prior art is to be deemed relevant in evaluating a patent’s validity.⁶² As I propose in detail elsewhere, courts could profitably defer on the USPTO’s highly structured technological classifications as informal adjudications of fact deserving arbitrary and capricious review.⁶³ Nevertheless, though administrative law-based tools such as primary jurisdiction and agency deference are valuable ways to bridge the scientific literacy gap in cases that come before the federal courts, error correction on a large scale in patent law has sought an even more dramatic solution: taking cases out of the federal courts altogether and providing for reevaluation entirely in the agency setting itself.

⁵⁷ Kesan & Ball, *supra* note 50, at 423–443. See also Judith A. Hasko, *Daubert v. Merrell Dow Pharmaceuticals, Inc.: Flexible Judicial Screening of Scientific Expert Evidence Under Federal Rule of Evidence 702*, 1995 WIS. L. REV. 479, 504–505 (1995). In this, judges who regularly oversee patent cases are not unlike those who regularly oversee “toxic tort cases and cases involving high technology.” *Id.*

⁵⁸ J. Jonas Anderson & Peter S. Menell, *Informal Deference: A Historical, Empirical, and Normative Analysis of Patent Claim Construction*, 108 NW. U. L. REV. 1, 16 (2013) (recounting the doctrinal history that “made claim construction an essential step in infringement analysis”).

⁵⁹ Greg Reilly, *Judicial Capacities and Patent Claim Construction: An Ordinary Reader Standard*, 20 MICH. TELECOMM. & TECH. L. REV. 243, 266–270 (2014); Joshua R. Nightingale, *An Empirical Study on the Use of Technical Advisors in Patent Cases*, 93 J. PAT. & TRADEMARK OFF. SOC’Y 400, 403 (2011).

⁶⁰ John F. Duffy, *On Improving the Legal Process of Claim Interpretation: Administrative Alternatives*, 2 WASH. U. J.L. & POL’Y 109 (2000).

⁶¹ Saurabh Vishnubhakat, *The Field of Invention*, 45 HOFSTRA L. REV. (forthcoming 2017), at *24–32, available at www.ssrn.com/abstract=2857155.

⁶² *Id.* at *35–38.

⁶³ *Id.* at *38–49.

III. The Rise of Administrative Correction

In response to concerns about the high stakes of patent litigation, debates over standing and incentives to litigate patents to conclusion, and the doctrinal as well as scientific expertise needed to adjudicate disputes over patent validity, patent policy actors in the modern era have explicitly reallocated considerable decisionmaking authority away from the courts and into the USPTO. An historical survey of that institutional reallocation is beyond the scope of this Article, but the motivations for the change are well aligned with the aforementioned concerns: to offer cost savings, to resolve collective action problems, and to capitalize on the institutional competence of the expert agency over the relative inexpertise of courts.⁶⁴

A. *Ex Post* Review up to the AIA

Since 1980, third parties who wish to challenge the validity of issued patents have been able to do so through *ex parte* reexamination, an administrative proceeding in which the USPTO considers new evidence and reconsiders prior evidence bearing on the patentability of the claimed invention.⁶⁵ Despite the growth in cost from the early 1980s to the present, *ex parte* reexamination has remained far cheaper than even the lowest-stakes category of patent litigation, has been more accessible to the public, and has, of course, been conducted by expert reexaminers in the USPTO.⁶⁶ Once initiated in the USPTO, however, *ex parte* reexamination was conducted just that way—*ex parte*—with no adversarial dialogue with the patent owner before the reexaminer.⁶⁷ Accordingly, a substantial share of *ex parte* reexaminations over the years, nearly a third, have been brought by patent owners themselves.⁶⁸ These reevaluations undoubtedly reflect patent error correction to some extent, but the patent owner's incentive in such cases is plainly to clarify and strengthen its own patents rather than to invalidate questionable ones altogether, so that true error correction is more likely to arise adversarially from third parties with sufficient countervailing incentives to balance the self-interest of the patent owner.

To promote third-party participation not only in initiating requests but also in prosecuting them throughout the administrative reconsideration, adversarial *inter partes* reexamination has been available since 1999.⁶⁹ Yet for a variety of reasons, including strong estoppel provisions against subsequent Article III litigation and the

⁶⁴ The following historical discussion of *ex post* review of patent validity in the administrative state as well as the comparative discussion of different review mechanisms created by the AIA are both set forth in a greater detail in Vishnubhakat, et al., *supra* note 6.

⁶⁵ Bayh-Dole Act, Pub. L. No. 96-517, 94 Stat. 3015 (1980).

⁶⁶ Vishnubhakat et al., *supra* note 64, at 56–58.

⁶⁷ Mark D. Janis, *Rethinking Reexamination: Toward a Viable Administrative Revocation System for U.S. Patent Law*, 11 HARV. J.L. & TECH. 1, 6n.12 (1997) (citing Shannon M. Casey, *The Patent Reexamination Reform Act of 1994: A New Era of Third Party Participation*, 2 J. INTELL. PROP. L. 559 (1995)).

⁶⁸ See USPTO, *Ex Parte* Reexamination Filing Data—September 30, 2014, <http://www.uspto.gov/learning-and-resources/statistics/reexamination-information>.

⁶⁹ American Inventors Protection Act, Pub. L. No. 106-113, 113 Stat. 1501 (1999).

prolonged timeline of resolution, *inter partes* reexamination never received much uptake as a serious mode of administrative error correction.⁷⁰

In an effort to reap the structural benefits of *inter partes* reexamination while making its costly estoppel calculus more worthwhile through faster adjudication and a more searching analysis of patent validity, Congress in 2011 established three significant new proceedings by which members of the public could challenge the validity of issued patents.⁷¹ All three are formal adversarial proceedings that originate in the reconstituted USPTO Patent Trial and Appeal Board.⁷² These three proceedings are *inter partes* review, covered business method review, and post-grant review. Each offers a different scope for error correction, and these differences reflect a range of technological, doctrinal, and systemic values.

The system that has seen the most usage thus far is *inter partes* review. In the four years since the proceeding became available,⁷³ patent challengers have filed more than 4,000 petitions for *inter partes* review.⁷⁴ By comparison, the usage of covered business method reviews over the same time period has been an order of magnitude lower, as patent challengers have filed just over 400 petitions.⁷⁵ Usage of post-grant review, in turn, has been another order of magnitude lower, with only 21 petitions filed—and only since August, 2014, though the proceeding was formally available from the same date as *inter partes* and covered business method review.⁷⁶ The particular terms of each proceeding's availability repay closer scrutiny.

B. Differences among AIA Proceedings

With respect to stakes and decision-making authority, all three of the administrative validity reviews under the America Invents Act offer a comparable set of benefits. The basic cost of *inter partes* review itself is \$23,000: a filing fee of \$9,000 and an institution fee of \$14,000 fee if the USPTO determines that the petition deserves to be adjudicated on its merits.⁷⁷ The basic cost of post-grant review and of covered business method review is \$30,000: a filing fee of \$12,000 and an institution fee of \$18,000 fee if the USPTO determines that the petition deserves to

⁷⁰ Vishnubhakat et al., *supra* note 64, at 58–59.

⁷¹ A fourth proceeding, supplemental examination, is not adversarial but rather a mechanism for patent owners to provide new information material to the patentability of their inventions and thus fortify the legal strength of their patent rights. See 35 U.S.C. § 257; 37 C.F.R. §§ 1.601–1.625; MANUAL OF PATENT EXAMINING PROCEDURE Ch. 2800.

⁷² The PTAB was reconstituted from the USPTO's Board of Patent Appeals and Interferences, the administrative tribunal to which old-style patent reexaminations were appealable after initial review before a reexaminer.

⁷³ The *inter partes* review mechanism became available on September 16, 2012, one year from the date of enactment of the America Invents Act.

⁷⁴ Petition data is from the Docket Navigator service. See DOCKET NAVIGATOR, available at www.docketnavigator.com.

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ USPTO, CURRENT FEE SCHEDULE, available at www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule.

be adjudicated on its merits.⁷⁸ Meanwhile, the estimated attorney costs that are associated with pursuing these validity challenges are on the order of \$130,000.⁷⁹ Moreover, all three proceedings are adjudicated by panels of the PTAB with administrative patent judges hired not only for their deep familiarity with patent doctrine but also for their technical expertise.

As to who can bring a validity challenge, the proceedings are similar but not identical. With one important exception, anyone other than the patent owner itself may file an *inter partes* review⁸⁰ as well as a covered business method review and post-grant review.⁸¹ The exception is that the petitioning party must not previously have challenged the validity of the patent in a civil action, such as a declaratory judgment, though a defensive counterclaim asserting invalidity does not trigger this bar.⁸²

However, *inter partes* review differs from the other proceedings in that it is additionally barred if a petitioner who has previously been sued for infringing the patent in question files its petition more than one year after being served with the prior infringement complaint.⁸³ Meanwhile, parties are barred from seeking covered business method review if they have not been sued for infringement under the patent in dispute.⁸⁴

This means that *inter partes* review can be used defensively up to a point, after which it is time-barred, or it can be used preemptively at any time. In fact, the empirical data on *inter partes* review bear out this potential not only for usage by intended defensive petitioners but also for substantial usage by preemptive petitioners.⁸⁵ Covered business method review can be used only defensively, not preemptively. Post-grant review can be used defensively with no time bar as well as preemptively.

The three proceedings also differ importantly with respect to the legal grounds on which they may challenge the validity of patents. *Inter partes* review allows challenges based only on two arguments: that the invention is anticipated by the prior art under § 102 of the Patent Act, or that it is obvious in light of the prior art under § 103.⁸⁶ *Inter partes* reviews are also limited as to the types of prior art that may support the challenge: only patents and printed publications are allowed.⁸⁷ By

⁷⁸ *Id.*

⁷⁹ Olga Berson, *Challenging Patent Validity Under the AIA: Strategic and Tactical Considerations When Deciding Whether to Pursue Ex Parte Reexamination or Inter Partes Review As Part of the Overall Litigation Strategy*, 2012 WL 6636452, *12 (2012).

⁸⁰ 35 U.S.C. § 311(a).

⁸¹ 35 U.S.C. § 321(a).

⁸² 35 U.S.C. §§ 315(a), 325(a).

⁸³ 35 U.S.C. § 315(b).

⁸⁴ Pub. L. No. 112-29 § 18(a)(1)(B).

⁸⁵ Vishnubhakat, et al., *supra* note 6 at 67.

⁸⁶ 35 U.S.C. § 311(b).

⁸⁷ *Id.*

contrast, the scope of covered business method and post-grant reviews are broader, permitting virtually any patentability criterion to serve as the basis of an invalidity challenge.⁸⁸ Most salient among the grounds for such challenges are subject-matter ineligibility under § 101, anticipation under § 102, obviousness under § 103, and inadequate disclosure under § 112.

Technology-specificity is another point of differentiation among the three proceedings. Whereas parties may seek *inter partes* or post-grant review for patents without regard to the technology areas to which those patents pertain, covered business method review is, by definition, limited only to certain data processing-related patents.⁸⁹ In all three proceedings, however, the mere availability of grounds for questioning patent validity does not assure its usage where particular technologies are concerned.

The upshot of these differences among *inter partes* review, covered business method review, and post-grant review is that structural features matter. Usage of the *inter partes* and covered business method review proceedings has been shaped significantly by the patentability grounds on which challenges may be brought, by the permitted technologies from which patents may be selected for challenge, and by the availability of challenges across all patents versus those issued under the first-inventor-to-file provisions of the America Invents Act. The lessons gleaned so far from empirical study of *inter partes* review and covered business method review offer important insights on how to evaluate post-grant review.

IV. How to Evaluate Post-Grant Review

Structural differences among the available statutory grounds, permitted technological fields, and temporal scope have produced much variation in how *inter partes* review and covered business method review have been used. These effects are the subject of detailed and ongoing empirical research, and the lessons from that research should inform how empirical study of post-grant review proceeds as this youngest of the three patent validity challenge mechanisms begins to see increased use in the coming years.

A. Lessons from IPR and CBM

As to available statutory grounds for challenge, it is telling foremost that although covered business method review allows a wide variety of challenges, large

⁸⁸ 35 U.S.C. § 321(b).

⁸⁹ The statutory definition refers to patents that claim “a method or corresponding apparatus for performing data processing or other operations used in the practice, administration, or management of a financial product or service, except that the term does not include patents for technological inventions.” Pub. L. No. 112-29 § 18(d)(1). The USPTO has, in turn, issued an agency rule defining “technological inventions” on a case-by-case basis based on “[w]hether the claimed subject matter as a whole recites a technological feature that is novel and unobvious over the prior art, and solves a technical problem using a technical solution.” 37 C.F.R. § 42.301(b).

majorities of CBM petitions contain subject-matter ineligibility challenges based on § 101 (68.6% of petitions) obviousness challenges based on § 103 (71.1% of petitions).⁹⁰ By contrast, relatively few CBM petitions contain disclosure-based challenges of inadequate enablement (8.3% of petitions), written description (17.8% of petitions), or indefiniteness (19.4% of petitions).⁹¹ Figure 1 illustrates these findings.

This preference for subject-matter ineligibility and obviousness challenges is, of course, understandable. In the last decade, the Supreme Court has overturned much of the rule-based Federal Circuit precedent regarding the statutory criteria for patentability in favor of flexible standards, and what the Court has addressed is the nonobviousness requirement (in *KSR International Co. v. Teleflex Inc.*⁹²) and the subject-matter eligibility requirement (in a string of four cases over five years⁹³). Moreover, all of the Supreme Court's subject-matter eligibility cases have pointed to what is ineligible, but has provided scant countervailing guidance on what is eligible.⁹⁴ As a result, ineligibility and obviousness are rightly understood as fertile ground for validity challenges, particularly with respect to patents that claim inventions on business methods, which the Court in its dicta has repeatedly singled out for suspicion.⁹⁵

The converse is also true. Just as the technology-specificity of covered business method review fosters an emphasis on two grounds for challenge among the various grounds that are available, *inter partes* review tends to be focused on patents pertaining to inventions related to "Computers & Communications" even though *inter partes* review imposes is no formal constraint with respect to technology. Indeed, challenges to patents in this technology make up the majority (50.4%) of *inter partes* review petitions.⁹⁶ The remaining major technology areas all make up relatively small shares, e.g., "Electrical"-related patents account for 15.4% of *inter partes* review petitions; "Drugs & Medical"-related patents, 13.1% of petitions.⁹⁷ Figure 2 illustrates these findings.

⁹⁰ Vishnubhakat, et al., *supra* note 6 at 69, 98 (Figure 7: Proportions of CBM Petitions Containing Each Grounds for Challenge).

⁹¹ *Id.*

⁹² 550 U.S. 398 (2007).

⁹³ *Alice Corp. v. CLS Bank International*, 134 S. Ct. 2347 (2014); *Association for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107 (2013); *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289 (2012); *Bilski v. Kappos*, 561 U.S. 593 (2010).

⁹⁴ Saurabh Vishnubhakat, "Ariosa v. Sequenom: In Search of Yes After a Decade of No," *Nat'l L. Rev.* (Dec. 4, 2015), available at www.natlawreview.com/article/ariosa-v-sequenom-search-yes-after-decade-no.

⁹⁵ See, e.g., *Alice Corp.*, 134 S. Ct. at 2360–2361 (2014) (Sotomayor, J., conc.) (arguing that "any claim that merely describes a method of doing business does not qualify as a process under § 101") (internal citations omitted); *Bilski*, 561 U.S. at 614 (Stevens, J., concurring in judgment) (same); *Bilski*, 561 U.S. at 657 (Breyer, J., concurring) (same); *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 397 (2006) (Kennedy, J., concurring) (suggesting that the availability of injunctive remedies may be different for business method patents of "potential vagueness and suspect validity").

⁹⁶ Vishnubhakat, et al., *supra* note 6 at 68, 93 (Figure 2: IPR Petition Filings Across Technology).

⁹⁷ *Id.*

This trend, too, is rational in light of the relevant legal context. One point of context is timing. The more flexible—i.e., less predictable—nonobviousness standard of *KSR* was articulated in 2007, and the “subject-matter quartet” of *Bilski*, *Mayo*, *Myriad*, and *Alice* were decided between 2010 and 2014. Meanwhile, though *inter partes* review is limited to anticipation and obviousness challenges under §§ 102 and 103, it is available for all patents,⁹⁸ not merely those issued under the new first-inventor-to-file regime as post-grant review is limited.⁹⁹ Accordingly, *inter partes* review can be used to invalidate patents even if they were valid under the patentability requirements as they were understood at the time when they were issued—so long as they are now invalid under the patentability requirements as they are presently understood in light of the Supreme Court’s recent jurisprudence.

Another point of context is the content of that jurisprudence. There is a general consensus that *KSR* raised the threshold of nonobviousness and made it harder to obtain (or defend) patents under § 103.¹⁰⁰ Where legal opinion differs is whether this higher bar was an appropriate correction¹⁰¹ or an inappropriate impediment.¹⁰² A similar descriptive consensus (and normative disagreement) appears to be emerging about the subject-matter quartet raising the threshold of patent-eligibility,¹⁰³ though the broad and policy-based reasoning of the subject-matter cases makes it likely that a single, unequivocal set of impacts upon patentability may never emerge from those cases. Instead, the effect of the Court’s recent subject-matter cases is better understood in terms of its focus on ensuring true innovation.

For example, in *Mayo*, the Court held that a method for calibrating drug dosage based on how much the drug’s byproducts remained in the bloodstream did no more than apply “well-understood, routine, conventional activity” to the laws of nature that govern how drugs broke down in the bloodstream and was therefore patent-ineligible.¹⁰⁴ Similarly, in *Alice*, the Court extended its reasoning from *Mayo* about

⁹⁸ Pub. L. No. 112-29 § 6(c)(2)(A).

⁹⁹ Pub. L. No. 112-29 § 6(f)(2)(A).

¹⁰⁰ Jason Rantanen, *The Federal Circuit’s New Obviousness Jurisprudence: An Empirical Study*, 16 STAN. TECH. L. REV. 709, 738–739 (2013); Theresa Stadheim, *How KSR v. Teleflex Will Affect Patent Prosecution in the Electrical and Mechanical Arts*, 91 J. PAT. & TRADEMARK OFF. SOC’Y 142, 148 (2009); Janice M. Mueller, *Chemicals, Combinations, and “Common Sense”: How the Supreme Court’s KSR Decision Is Changing Federal Circuit Obviousness Determinations in Pharmaceutical and Biotechnology Cases*, 35 N. KY. L. REV. 281, 283 (2008).

¹⁰¹ E.g., John F. Duffy, *KSR v. Teleflex: Predictable Reform of Patent Substance and Procedure in the Judiciary*, 106 MICH. L. REV. FIRST IMPRESSIONS 34, 37 (2007) (referring to the *KSR* decision as an instance of “growth and correction” in the patent system); Janice M. Mueller & Daniel Harris Brean, *Overcoming the “Impossible Issue” of Nonobviousness in Design Patents*, 99 Ky. L.J. 419, 425 (2010) (similarly referring to the *KSR* decision as a “correction of outlier decisions”).

¹⁰² E.g., Rexford Johnson & Matthew Whipple, *KSR and the Rising Bar of Innovation*, 51-AUG ADVOCATE (IDAHO) 18, 18 (2008) (characterizing responses to the *KSR* decision as “fears that *KSR* so drastically raised the ‘non-obviousness standard’”) (emphasis added).

¹⁰³ E.g., Richard C. Kim, *The Impact of the America Invents Act and Recent Court Decisions on US Patent Procurement and Enforcement*, ASPATORE, 2015 WL 9875585, *18 (noting that “potential attacks against the patent/patent owner [have been] made easier” by the *Alice* decision).

¹⁰⁴ 132 S. Ct. at 1298.

laws of nature to address abstract ideas as well. The Court in *Alice* held that a system for mitigating settlement risk in financial transactions did no more than add “well-understood, routine, conventional activit[ies] previously known to the industry” to what the Court believed amounted to no more than the abstract idea of electronic recordkeeping and was therefore patent-ineligible.¹⁰⁵

In both instances, the Court’s concern was that, over and above the law of nature or abstract idea on which the invention relied, it lacked any truly inventive concept. This retrospective focus on the state of the prior knowledge and on what was “well-understood, routine, conventional” is wholly consonant with an obviousness challenge, which has long looked to the “scope and content of the prior art” and has disfavored inventions that are trivial variations of well-understood or conventional products or practices.¹⁰⁶ It is not surprising, then, that patents on software- and business method-related inventions that are vulnerable to a subject-matter eligibility attack are also vulnerable to an obviousness attack—and that *inter partes* review is being used for that purpose.

B. Court-Agency Substitution

A final lesson from the observed usage of *inter partes* and covered business method review is that error correction in the agency setting of the Patent Office has a mixed relationship with traditional error correction in the courts. One effect is the standard model of substitution, where a party that has already been sued in district court for infringement subsequently brings an administrative challenge to patent validity.¹⁰⁷ Also at work is nonstandard substitution, where a party brings an administrative validity challenge to one or more patents even though it has not yet been sued for infringement in district court on those patents.¹⁰⁸ Standard substitution is defensive and is possible for *inter partes* review as well as for covered business method review.¹⁰⁹ By contrast, nonstandard substitution is preemptive and is possible for *inter partes* review¹¹⁰ but not for covered business method review.¹¹¹

The usage of *inter partes* review and covered business method review in defensive and, where permitted, preemptive ways is significant. This usage presents at least three important implications for the relationship—even competition—between the Patent Office and the courts for primacy in resolving disputes over patent validity. First, standard substitution and its defensive, self-interested posture is the norm. The large majority of petitioners (70%) are prior district court defendants as to the patents that they challenge in *inter partes* review.¹¹² The magnitude of the standard

¹⁰⁵ 134 S. Ct. at 2359.

¹⁰⁶ *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17 (1966).

¹⁰⁷ Vishnubhakat, et al., *supra* note 6 at 49–50.

¹⁰⁸ *Id.* at 50–51.

¹⁰⁹ *See supra* note 83 and accompanying text.

¹¹⁰ *See id.*

¹¹¹ *See supra* note 84 and accompanying text.

¹¹² Vishnubhakat, et al., *supra* note 6 at 49–50.

substitution effect among *inter partes* review petitioners is technology-specific.¹¹³ Similarly, standard substitution among *inter partes* review petitions themselves is also technology-specific, with much variation among the share of petitions in each technology where at least one petitioner was a prior defendant in district court on the same patent.¹¹⁴ These findings are illustrated in Figures 3 and 4.

Second, and following from the first, nonstandard substitution and its preemptive posture is a substantial phenomenon, as 30% of petitioners are not prior district court defendants as to the patents that they nevertheless challenge in *inter partes* review.¹¹⁵ Like defensive standard substitution, preemptive nonstandard substitution is highly technology-specific and, moreover, reflects significant disparities between the shares of *inter partes* review petitioners who were not prior defendants and *inter partes* review petitions on which no prior defendants are named. This disparity reveals that petitioners who are not prior defendants are joining petitions that have been filed by prior defendants.¹¹⁶ This use of joinder may be socially beneficial collective action aimed at invalidating patents of questionable quality, though the particular strategic mechanics of bringing these challenges through serial petitions may also reflect undesirable delay and harassment.¹¹⁷

A third implication lies between standard and nonstandard substitution and reflects a rare, but interesting, phenomenon: petitions for *inter partes* review that are preemptive in the sense that no district court litigation has yet been filed against that particular petitioner on that particular patent, but the district court litigation does come fairly soon thereafter. Such petitions are filed, in other words, with litigation in the offing.¹¹⁸ Among patents that have been asserted in district court as well as challenged in either *inter partes* review or covered business method review, only about 3% of the patents were asserted in district court at the same time or after the first Patent Office validity challenge, rather than before.¹¹⁹ That this type of prelitigation validity challenge exists at all suggests that petitions for *inter partes* review are, at least partly, taking the place of declaratory judgment actions that similarly precede imminent litigation.¹²⁰

The importance of these implications for present purposes is that post-grant review allows defensive and preemptive challenges alike, just as *inter partes* review does. This structural similarity invites comparisons of Patent Office proceedings with district court litigations for patents in post-grant review as well.

¹¹³ *Id.* at 77, 107 (Figure 15a: Share of IPR Petitioners That Were Defendants in a Prior Suit on the Same Patent, by Technology).

¹¹⁴ *Id.* at 77, 108 (Figure 15b: Share of IPR Petitions in Which At Least One Petitioner Was a Defendant in a Prior Suit on the Same Patent, by Technology).

¹¹⁵ *Id.* at 50–51.

¹¹⁶ *Id.*

¹¹⁷ *Id.*

¹¹⁸ *Id.* at 73.

¹¹⁹ *Id.*

¹²⁰ *Id.*

C. PGR Data: A First Look

These lessons from *inter partes* and covered business method review point to meaningful ways in which to begin evaluating the relatively small number of patents that have been subjected to post-grant review thus far. Since post-grant review became available, only twenty issued patents have been challenged across twenty-one petitions.¹²¹ The patents and several of their bibliographic characteristics are listed in Table 1. Of particular note are the respective technology categories of the patents involved, the grant date of the patents, and the filing dates of the post-grant review petitions. Also derived from this information is the post-grant review filing deadline and the amount of time remaining when each petition was actually filed.

As with the other validity challenge proceedings, usage of post-grant review is technology-specific and notably focused on “Computers & Communications”-related patents (32%). Figure 5 illustrates the technology distribution of post-grant review petitions. Timing of the initial set of post-grant review petitions, meanwhile, varies considerably. Measured as the difference between the actual date when the post-grant review petition *actually was* filed and the nine-month deadline after grant by which any post-grant review petition *must be* filed, petitioners brought their challenges with different amounts of time to spare. The median time remaining until the filing deadline was roughly 4.4 months, but the distribution was bimodal with peaks at 2.2 months and 6.5 months. Figure 6 illustrates these findings.

Usage of post-grant review is also grounded primarily in obviousness-based challenges. Assertions rooted in obviousness appear in 85.7% of the petitions filed thus far. By comparison, anticipation-based challenges appear in 47.6% of petitions; subject-matter eligibility-based challenges in 38.1% of petitions; and the disclosure-based requirements of enablement, written description, and definiteness in 33.3% of petitions or fewer. Figure 7 illustrates these findings.

Moreover, obviousness challenges appear to overlap considerably with other grounds in petitions for post-grant review. Anticipation is a natural accompaniment to obviousness, as both requirements police innovation and do so by comparing the present invention to the prior art.¹²² And, indeed, every petition for post-grant review so far that has contained a challenge based on anticipation has also contained at least one challenge based on obviousness. This overlap extends to other statutory grounds as well. With the exception of three petitions—one based on ineligibility under § 101 and the other two based on disclosure-related requirements under

¹²¹ One additional case, mistakenly docketed as No. PGR2013-00007 (June 12, 2013), was actually a petition for *inter partes* review and was both dismissed by the PTAB and expunged. It is mentioned here because its case number nevertheless appears in searches for post-grant review petitions.

¹²² Courts have summarized this relationship by suggesting that “anticipation is the epitome of obviousness.” *E.g.*, *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 716 (Fed. Cir. 1984) (quoting *In re Fracalossi*, 681 F.2d 792, 794 (C.C.P.A. 1982)); see also *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983).

§ 112—all petitions for post-grant review contain at least one obviousness-based challenge. This broad preference for obviousness across technology areas is understandably contrary to the predominance of subject matter-eligibility in covered business method reviews, as the latter are restricted to a technology that is frequently questioned on eligibility grounds whereas post-grant review is available—and is being used—as to patents from all technologies.

Finally, even at this early stage, parties do appear to be using post-grant review as strategic components in broader disputes in the agency setting of the PTAB as well as in the federal courts. Of the twenty patents challenged in post-grant review, the majority (60%) have been challenged with no related infringement claims observed as to those patents in U.S. district court litigation. These petitions follow the nonstandard model, then, and are preemptive. The remaining 40% of petitions do follow the standard model and are defensive in that they are responses to patent infringement claims in U.S. district court. More specifically, 30% of post-grant review petitions appear to be based on direct self-interest by district court defendants. The remaining 10% of petitions follow multiple federal-court suits alleging infringement by multiple defendants, from which one defendant takes the initiative and petitions for post-grant review. Figure 8 illustrates these findings, which suggest that standard- and nonstandard-model petitioning both play an important role in post-grant review, just as they have in the other administrative validity challenge proceedings.

This marked overlap, right from the start, between post-grant review and federal-court litigation also suggests that current disputes over the PTAB's authority to institute *inter partes* review petitions and to construe patent claims in adjudicating those reviews will have considerable impact on institution decisions and claim construction in post-grant review as well. The *Cuozzo* case now pending before the Supreme Court presents both of these questions and is hotly contested in particular on whether the PTAB's "broadest reasonable interpretation" standard for construing patent claims is appropriate.¹²³ This standard produces broader claim scope than does the "plain and ordinary meaning" standard that federal courts use, and a result of this broader claim scope is a greater likelihood that the PTAB will find the patent invalid.¹²⁴ In addressing this disparity, the petitioner and at least four amici curiae in *Cuozzo* have pointed to the substantial degree to which patents that are challenged in *inter partes* review are also the subject of earlier-filed litigation in the federal courts.¹²⁵ As the "broadest reasonable interpretation" standard of claim con-

¹²³ No. 15-446 (Sup. Ct. Jan. 15, 2016).

¹²⁴ Petition for a Writ of Certiorari, *Cuozzo Speed Technologies, LLC v. Lee*, No. 15-446, at 19 (Sup. Ct. Oct. 6, 2015).

¹²⁵ Brief of Petitioner, *Cuozzo Speed Technologies, LLC v. Lee*, No. 15-446, at 42 (Sup. Ct., Feb. 22, 2016) (citing Vishnubhakat, et al., *supra* note 6); Brief of Amici Curiae 3M Company, et al. in Support of Petitioner, *Cuozzo Speed Technologies, LLC v. Lee*, No. 15-446, at 36 (Sup. Ct., Feb. 29, 2016) (same); Brief of Amicus Curiae Intellectual Ventures Management in Support of Petitioner, *Cuozzo Speed Technologies, LLC v. Lee*, No. 15-446, at 3 (Sup. Ct., Feb. 29, 2016) (same); Brief of Amici Curiae InterDigital, Inc., et al. in Support of Petitioner, *Cuozzo Speed*

struction also governs post-grant review¹²⁶ and as parties also appear to be using post-grant review in considerable overlap with litigation, the resolution of these present structural disputes over *inter partes* review directly implicate the future usage of post-grant review as well.

Conclusion

The relatively minimal usage of post-grant review in the four years since it became available is starting to change as more patents issue under the first-inventor-to-file provisions of the America Invents Act. Thus, where data was once markedly lacking, a significant new body of data on post-grant review will be generated. Systematic analysis of that data will be important not only because any evaluation of patent reform efforts would be incomplete without it but also because the relatively limited *inter partes* and covered business method review proceedings are best understood as interim measures to mitigate the patent examination error costs of the past—whereas post-grant review is the relatively broader, more permanent measure for managing examination error in the future. Empirical lessons from *inter partes* and covered business method review have provided, and continue to provide, important guideposts for making that systematic analysis, and the first look offered in this paper is intended as a starting point for much more detailed study to come.

Technologies, LLC v. Lee, No. 15-446, at 21, 23 (Sup. Ct., Feb. 29, 2016) (same); Brief of Amicus Curiae Federal Circuit Bar Association in Support of Petitioner, Cuozzo Speed Technologies, LLC v. Lee, No. 15-446, at 9 (Sup. Ct., Feb. 29, 2016) (same).

¹²⁶ 37 C.F.R. § 42.200(b).

Tables & Figures

Figure 1. Proportions of CBM Petitions Containing Each Grounds for Challenge

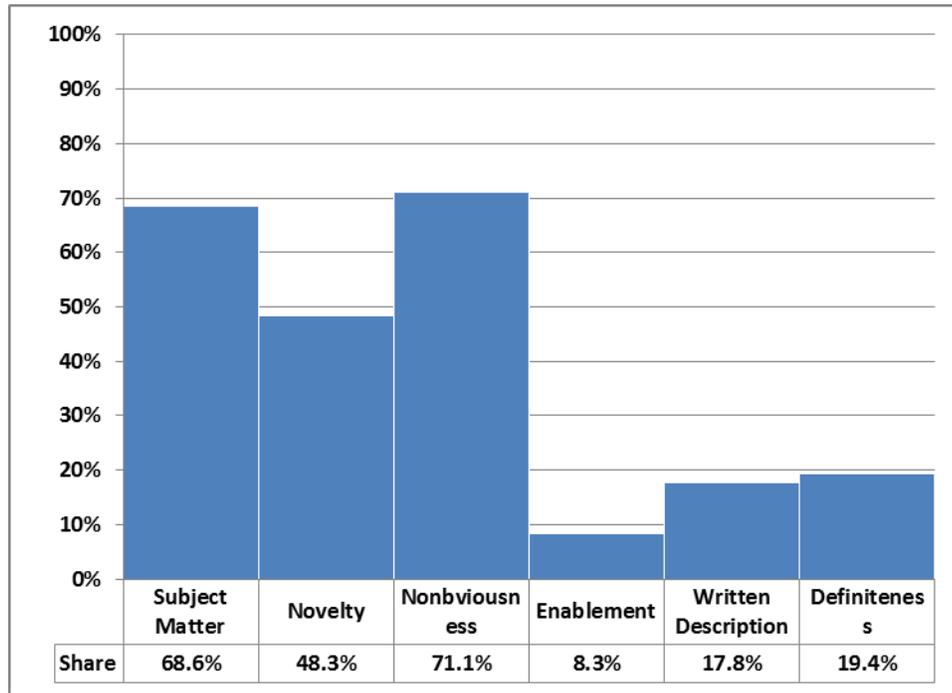


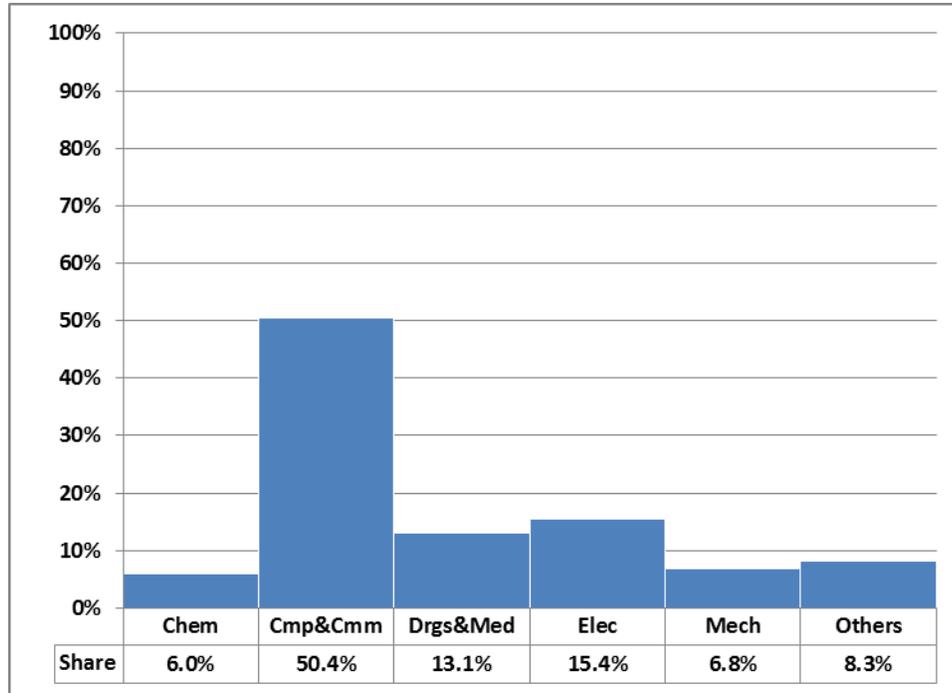
Figure 2. IPR Filings across Technology

Figure 3. Share of IPR Petitioners That Were Defendants in a Prior Suit on the Same Patent, by Technology

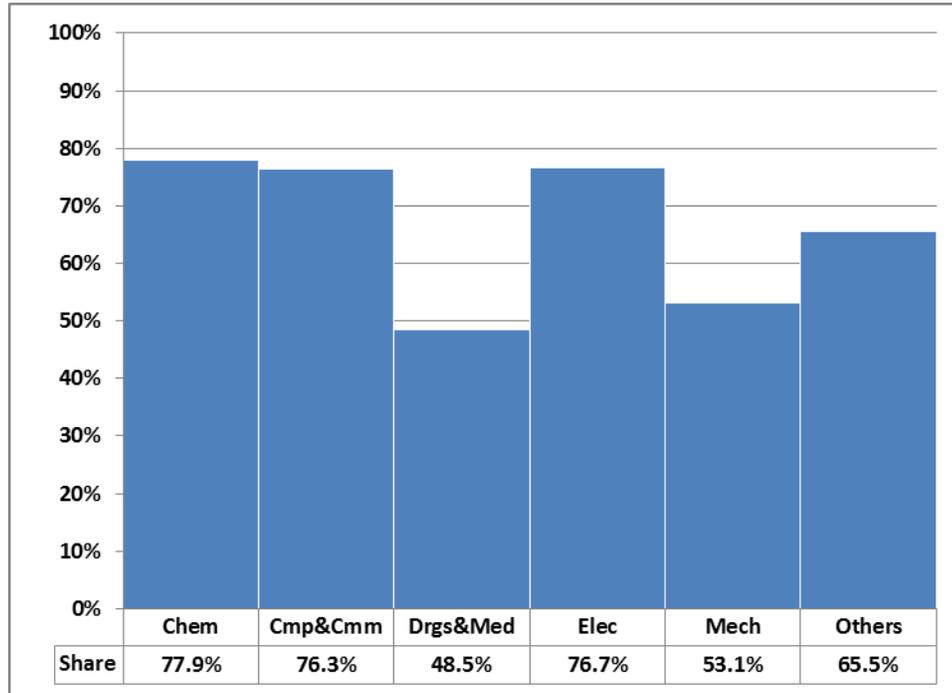


Figure 4. Share of IPR Petitions in Which At Least One Petitioner Was a Defendant in a Prior Suit on the Same Patent, by Technology

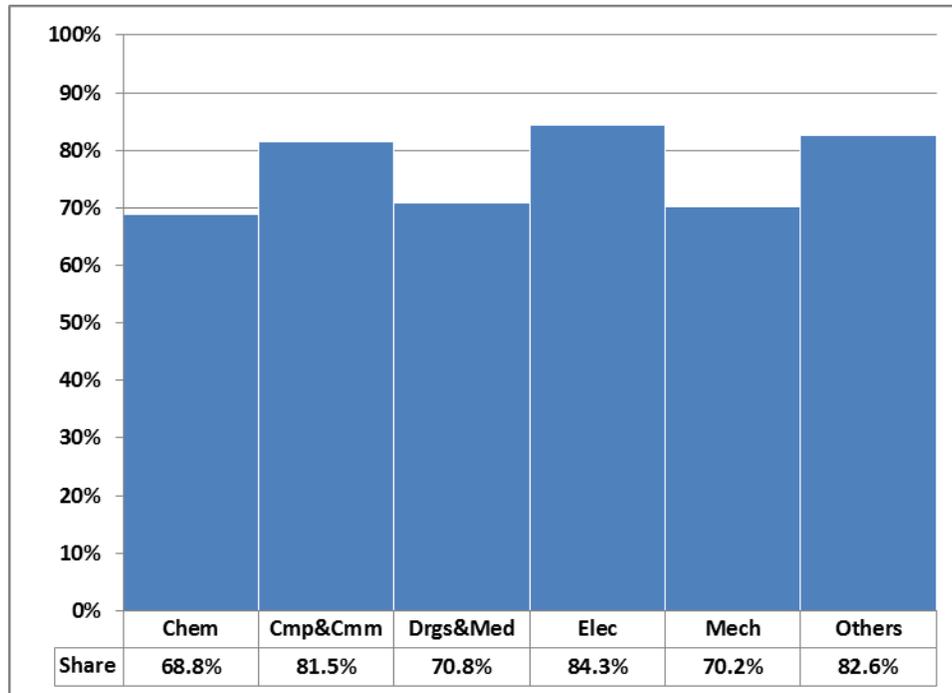


Table 1. PGR Petitions Data

Case No.	Patent No.	NBER	Patent	PGR	PGR	PGR Filing
			Grant		Deadline	Filing
			Date		Date	(days)
2013-00007	8364295	2	01/29/13	10/29/13	06/12/13	139
2014-00008	8684420	6	04/01/14	01/01/15	08/05/14	149
2014-00010	8598219	3	12/03/13	09/03/14	09/02/14	1
2015-00003	8660888	2	02/25/14	11/25/14	11/21/14	4
2015-00005	8725557	2	05/13/14	02/13/15	01/30/15	14
2015-00009	8756166	2	06/17/14	03/17/15	03/17/15	0
2015-00011	8859623	3	10/14/14	07/14/15	05/11/15	64
2015-00013	8855280	2	10/07/14	07/07/15	05/19/15	49
2015-00014	8929525	2	01/06/15	10/06/15	05/19/15	140
2015-00017	8933395	4	01/13/15	10/13/15	06/15/15	120
2015-00018	9051066	5	06/09/15	03/09/16	06/22/15	261
2015-00019	8876991	3	11/04/14	08/04/15	08/03/15	1
2015-00022	8882292	4	11/11/14	08/11/15	08/03/15	8
2015-00023	8876638	6	11/04/14	08/04/15	08/04/15	0
2016-00002	9126245	3	09/08/15	06/08/16	11/19/15	202
2016-00004	8968592	1	03/03/15	12/03/15	12/02/15	1
2016-00007	9173942	6	11/03/15	08/03/16	02/05/16	180
2016-00008	9173942	6	11/03/15	08/03/16	02/05/16	180
2016-00010	9155776	6	10/13/15	07/13/16	02/16/16	148
2016-00011	9157017	6	10/13/15	07/13/16	02/23/16	141
2016-00012	9157017	6	10/13/15	07/13/16	02/23/16	141
2016-00013	9038090	2	05/19/15	02/19/16	02/19/16	0

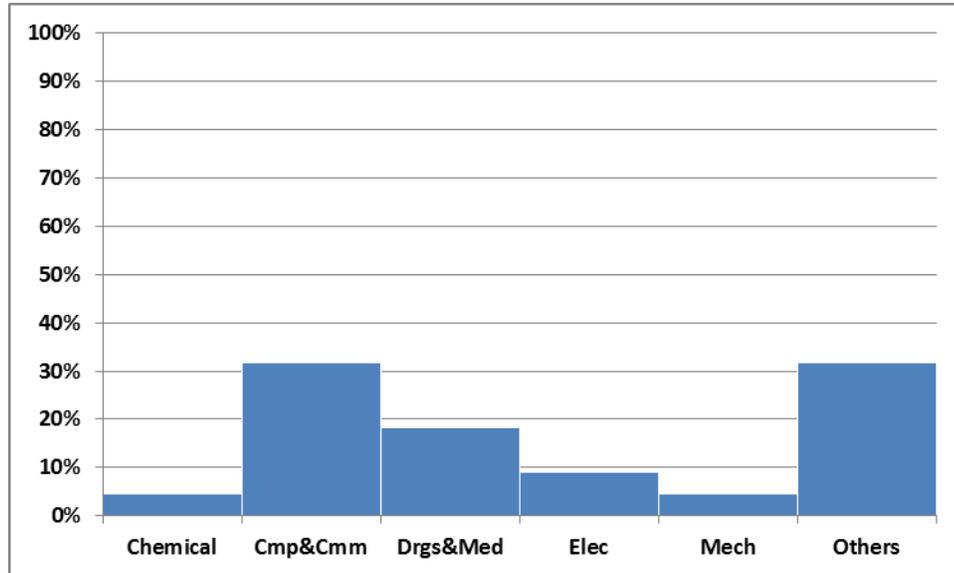
Figure 5. PGR Filings across Technology

Figure 6. Distribution of Time Remaining (Days) Before the Nine-Month PGR Filing Deadline

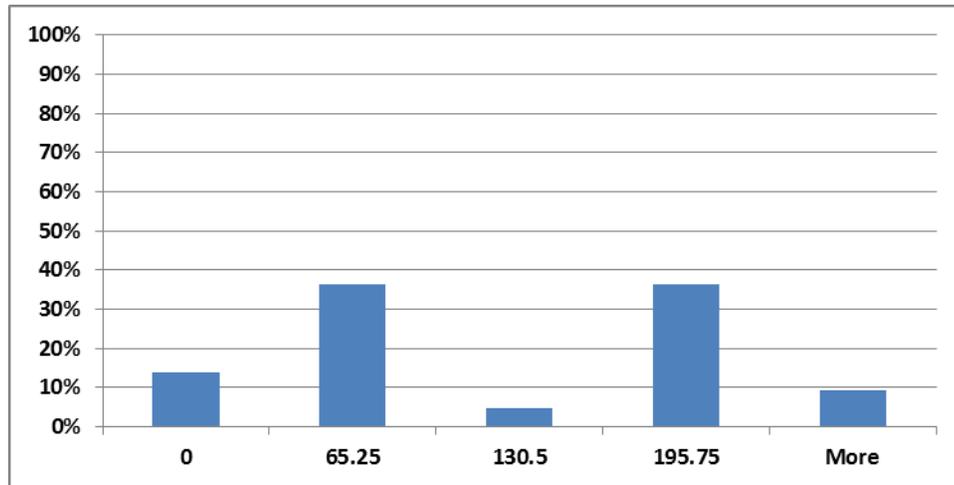


Figure 7. Proportions of PGR Petitions Containing Each Grounds for Challenge

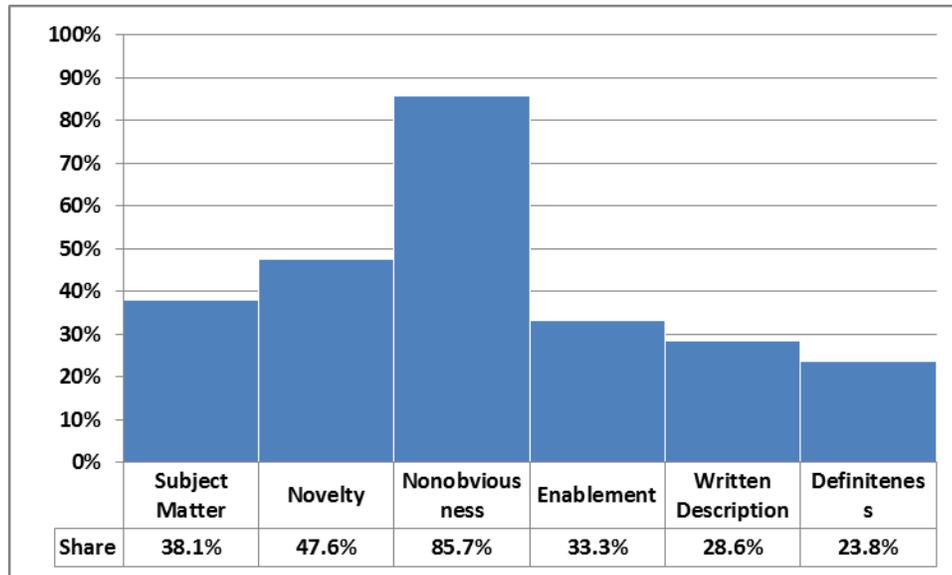


Figure 8. Related Litigation on Patents Challenged in PGR