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Institutional Design for Innovation: A Radical Proposal for Addressing § 101 Patent Eligible Subject Matter

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INSTITUTIONAL DESIGN FOR INNOVATION: A RADICAL PROPOSAL FOR ADDRESSING § 101 PATENT-ELIGIBLE SUBJECT MATTER

KRISTEN OSENGA*

The doctrine of patent-eligible subject matter is a mess, and it is weakening patent rights in this country. Nearly everyone, from the bar to the bench and from academia to industry, has called for reform. Multiple proposals to amend 35 U.S.C. § 101 have been drafted, each aimed at trying to make the doctrine more workable. Although offered with the best intentions, the proposals to fix patent-eligible subject matter are doomed to fail because none of the proposals address which institution is best suited to determine patent eligibility.

This Article takes a different, and perhaps radical, tactic. Specifically, patent-eligible subject matter inquiries should be vested solely in the courts. The U.S. Patent and Trademark Office (Patent Office) should not consider patent eligibility of patent applications or issued patents. Although this solution seems incongruous, in looking at the particular institutional competencies of the courts versus the various components of the Patent Office, it becomes clear that if the doctrine of patent-eligible subject matter is to be fixed, the courts are in the best position to do so. In addition to being particularly suited to determine patent eligibility, vesting these decisions in the courts should result in a more workable and certain test for patent eligibility, which in turn should strengthen patent rights and enhance innovation.

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INTRODUCTION

The United States—the land of innovation—has an innovation problem. Two reports recently published announced that the country has fallen from its previous position as a leader in innovation. One report, the 2018 Bloomberg Innovation Index, stated that the United States dropped out of the top ten innovative countries for the first time in the six-year history of the index.¹ The other report, the United States Chamber of Commerce’s Global IP Index for 2018, stated that the country remained atop the list generally but fell significantly with respect to patent protection.² In fact, in the Chamber’s index, the United States dropped completely out of the top ten with respect to countries offering strong patent protection to innovators, falling to a tie for twelfth with Italy.³ Additional reports indicate innovative firms are leaving the United States and shifting their operations overseas to Europe and China.⁴

What is behind the collapse of the United States as an innovation leader? In part, it is due to the erosion of effective and reliable patent protection available to inventors and innovators.⁵ There is a strong correlation between effective patent rights and growing innovation

1. Michelle Jamrisko & Wei Lu, *The U.S. Drops out of the Top 10 in Innovation Ranking*, BLOOMBERG (Jan. 23, 2018, 6:00 AM), <https://www.bloomberg.com/news/articles/2018-01-22/south-korea-tops-global-innovation-ranking-again-as-us-falls>.

2. U.S. CHAMBER OF COM., GLOBAL INNOVATION POL’Y CTR., CREATE: U.S. CHAMBER INTERNATIONAL IP INDEX 6, 35–36, 156–57 (6th ed. 2018), http://www.theglobalipcenter.com/wp-content/uploads/2018/02/GIPC_IP_Index_2018.pdf [hereinafter CREATE].

3. *Id.* at 35.

4. See Ryan Davis, *Experts Look to Congress to Stem Patent-Eligibility ‘Chaos,’* LAW360 (Apr. 20, 2018, 7:14 PM), <https://www.law360.com/articles/1035947>.

5. Strength of patent protection (or lack thereof) is directly implicated in the Chamber’s index. See CREATE, *supra* note 2, at 156; see also Chris Coons, *A Few Thoughts on the Supreme Court’s Section 101 Jurisprudence*, IP WATCHDOG (Feb. 8, 2017), <http://www.ipwatchdog.com/2017/02/08/thoughts-supreme-courts-section-101-jurisprudence> (noting that the erosion of patent protection, caused in part by the state of patent-eligible subject matter, has “worrisome implications for long-term investment in research and development, negatively influencing American predominance in emerging technologies”). In the Bloomberg Index, the United States remained strong in the category of patent activity (meaning that many patent applications were filed); the lower categories, however, included tertiary efficiency and research concentration—how many people are going into and working in science and technology research and development (R&D). See Jamrisko & Lu, *supra* note 1. There is certainly a relationship between workers in the R&D field, spending on research and development, and innovation.

economies, including investment in new ideas.⁶ One particular area of patent law that has contributed to the erosion of reliable patent rights is patent-eligible subject matter—or what types of inventions can be patented. Patent-eligible subject matter, as others have recognized, is a “real mess.”⁷ It is chaotic,⁸ “a foggy standard cloaked as a rule,”⁹ “rife with indeterminacy,”¹⁰ and in a “state of crisis.”¹¹ Even U.S. Court of Appeals for the Federal Circuit (Federal Circuit) judges, who are partially responsible for the state of the doctrine, have expressed concern about the level of confusion surrounding the doctrine.¹² Importantly, the issue of patent-eligible subject matter disproportionately affects two industries that represent a substantial sector of the United States economic and innovation base: biotechnology and computer-related inventions.¹³

6. See Stephen Haber, *Patents and the Wealth of Nations*, 23 GEO. MASON L. REV. 811, 814 (2016).

7. Ryan Davis, *Kappos Calls for Abolition of Section 101 of Patent Act*, LAW360 (Apr. 12, 2016, 4:32 PM) (quoting David Kappos, former Director of the U.S. Patent & Trademark Office), <https://www.law360.com/articles/783604/kappos-calls-for-abolition-of-section-101-of-patent-act>.

8. See *The Impact of Bad Patents on American Businesses: Hearing Before the Subcomm. on Courts, Intell. Prop., & the Internet of the H. Comm. on the Judiciary*, 115th Cong. 3 (2017) (supplemental statement of Judge Paul R. Michel), <http://www.ipwatchdog.com/wp-content/uploads/2017/09/Supplemental-Statement-of-Paul-R-Michel-Sept-12-2017.pdf> (“Patent-eligibility law under § 101 has descended into chaos after a string of Supreme Court decisions.”).

9. Michael Risch, *Nothing is Patentable*, 67 FLA. L. REV. F. 45, 45 (2015).

10. Kevin Madigan & Adam Mossoff, *Turning Gold into Lead: How Patent Eligibility Doctrine Is Undermining U.S. Leadership in Innovation*, 24 GEO. MASON L. REV. 939, 941 (2017).

11. David O. Taylor, *Amending Patent Eligibility*, 50 U.C. DAVIS L. REV. 2149, 2151 (2017) [hereinafter Taylor, *Amending Patent Eligibility*] (“In short, patent law—and in particular the law governing patent eligibility—is in a state of crisis.”).

12. See, e.g., *Berkheimer v. HP Inc.*, 890 F.3d 1369, 1374 (Fed. Cir. 2018) (Lourie, J., concurring) (per curiam) (“I believe the law needs clarification by higher authority, perhaps by Congress, to work its way out of what so many in the innovation field consider are § 101 problems.”); see also Ryan Davis, *Fed. Circ. Judges’ Plea to Reps Shows Patent-Eligibility Angst*, LAW360 (June 4, 2018, 7:47 PM), <https://www.law360.com/articles/1049274> (quoting Edward R. Reines, who stated, “For a well-respected Federal Circuit judge to suggest that the Supreme Court’s jurisprudence is unworkable and requires legislative attention is a matter of courage”); Gene Quinn, *Judge Stoll tells AIPLA Alice/Mayo ‘a difficult line of cases to administer’*, IPWATCHDOG (Oct. 26, 2018), <http://www.ipwatchdog.com/2018/10/26/judge-stoll-aipla-alice-mayo> (quoting Judge Stoll as saying “One of the more challenging issues I’ve seen since I’ve been at the court is the 101 test and the *Alice/Mayo* test. It is a difficult line of cases to administer”).

13. See Jason D. Reinecke, Comment, *Is the Supreme Court’s Patentable Subject Matter Test Overly Ambiguous? An Empirical Test*, UTAH L. REV. (forthcoming 2019) (manuscript at 1), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3123524.

The current chaos that is patent-eligible subject matter arose largely from a series of cases decided by the U.S. Supreme Court between 2010 and 2014, followed by aftershocks driven by the lower courts and the United States Patent and Trademark Office (Patent Office) as these institutions tried to figure out what the Supreme Court had actually decided. This rapidly developing (or perhaps devolving depending on your perspective) jurisprudence had two destabilizing effects on patent law and on innovation more broadly. First, there is immense confusion about precisely what the test for patent-eligible subject matter is and how it should be applied.¹⁴ Second, a number of previously-issued patents have been invalidated for lack of patent-eligible subject matter, raising questions about the viability of extant patent rights in many important industries.¹⁵ These two issues are having negative effects on the certainty, reliability, and strength of patent rights in this country.¹⁶

The first issue—uncertainty as to the test for patent-eligible subject matter and how it is to be applied—should come as no surprise given the nebulous test that has been imposed by the Supreme Court. Specifically, the current test comprises two parts. The first part of the test asks whether the claims are directed to an ineligible concept, including laws of nature, natural phenomena, and abstract ideas.¹⁷ If the first question is answered in the affirmative, the second part asks

14. For just a few of the many articles highlighting the uncertain state of patent-eligible subject matter, see, for example, Ted G. Dane, *Are the Federal Circuit's Recent Section 101 Decisions a "Specific Improvement" in Patent Eligibility Law?*, 26 FED. CIR. B.J. 331 (2017); Christopher M. Holman, *Patent Eligibility Post-Myriad: A Reinvigorated Judicial Wildcard of Uncertain Effect*, 82 GEO. WASH. L. REV. 1796 (2014); Robert Mazzola, *The 101 Conundrum: Creating a Framework to Solve Problems Surrounding the Interpretation of 35 U.S.C. § 101*, 14 CHI.-KENT J. INTELL. PROP. 400 (2015); David O. Taylor, *Confusing Patent Eligibility*, 84 TENN. L. REV. 157 (2016) [hereinafter Taylor, *Confusing Patent Eligibility*]. *But see* Reinecke, *supra* note 13, at 3 (using an empirical study to claim that “the new test for patentable subject matter seems less unpredictable than commentators have suggested”).

15. See generally *Bilski Blog*, FENWICK & WEST LLP, www.bilskiblog.com (last visited May 20, 2019) (enter “invalidation rate” in search bar) (regularly reporting invalidation rates of issued patents for lack of patent-eligible subject matter).

16. See Rebecca S. Eisenberg, *Diagnostics Need Not Apply*, 21 B.U.J. SCI. & TECH. L. 256, 257 (2015) (discussing the impact of the bar on diagnostic testing patents on innovation); MICHEL, *supra* note 8, at 3–4 (“The legal uncertainty [arising from the chaos of § 101] is devastating American business, including high tech, manufacturing, biotech, and pharmaceutical industries.”).

17. See *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216–18 (2014).

whether the claim's other elements transform that claim into a patent-eligible practical application of an otherwise ineligible concept.¹⁸

Sadly, the Supreme Court intended to clarify the doctrine of patent-eligible subject matter when it announced the current two-step inquiry, but this test and how it is to be applied is anything but clear. While the question of part one invokes uncertainty about what these three categories of ineligible concepts include, the question of part two is indeterminate in even what it is seeking. A former Chief Judge of the Federal Circuit described the test as “too vague, too subjective, too unpredictable and impossible to administer in a coherent consistent way.”¹⁹ Not surprisingly, others have likened the two-part test to Justice Stewart's test for obscenity: “I know it when I see it.”²⁰ Courts have offered little guidance for implementing these two questions, beyond stating that routine or conventional steps will be insufficient to render a claim patent eligible.²¹

The second type of uncertainty, resulting from the invalidation of many existing patents, is a different matter altogether. Based on the Supreme Court's quadrilogy of patent-eligible subject matter opinions decided in the last decade, the Patent Office and all levels of courts have been invalidating many patents as directed to ineligible subject matter.²² Patents are property rights,²³ but are also legal rights that businesses use for a variety of purposes, including to prevent others from copying their innovative technology, to signal technological competence or market strength to investors and the public, to defend against infringement lawsuits, and to increase cross-licensing negotiation power.²⁴ In fact, there is a demonstrated relationship

18. *See id.*

19. *See* Gene Quinn, *Judge Michel says Alice Decision 'Will Create Total Chaos,'* IP WATCHDOG (Aug. 6, 2014), <http://www.ipwatchdog.com/2014/08/06/judge-michel-says-alice-decision-will-create-total-chaos> (suggesting the *Alice* decision created a two-step test that is nonsensical).

20. *See* Taylor, *Confusing Patent Eligibility*, *supra* note 14, at 161 (citing *Jacobellis v. Ohio*, 378 U.S. 184, 197 (1964) (Stewart, J., concurring)).

21. *See id.*

22. *See* Robert L. Maier, *Will Any Software Patents Survive?*, N.Y. L.J. (Nov. 21, 2017, 2:00 PM), <https://www.law.com/newyorklawjournal/sites/newyorklawjournal/2017/11/21/will-any-software-patents-survive> (discussing the “trend of district courts and the Federal Circuit regularly invalidating software patents” under § 101).

23. *See* Adam Mossoff, *The Trespass Fallacy in Patent Law*, 65 FLA. L. REV. 1687, 1692 (2013) (“Patents have long been identified as property rights in American law.”).

24. *See* Ted Sichelman & Stuart J.H. Graham, *Patenting by Entrepreneurs: An Empirical Study*, 17 MICH. TELECOMM. TECH. L. REV. 111, 114–15 (2010).

between a start-up company having a patent and a higher probability of it receiving venture capital funding and ultimately succeeding as a business.²⁵ Whether a start-up company or an established firm, patents are extremely important to many firms' existence. To the extent that firms fear that granted patents will be taken away from them, the patents then lose their value for the various purposes for which they are being used. This in turn may hamper a business's ability to commercialize its technology and deter investment in additional innovation, or may even spell the end of the firm itself.

The uncertainties surrounding patent-eligible subject matter have led to multiple calls—from academia, from the bar, from industry, and more—to fix this doctrine.²⁶ However, the various proposals aimed at fixing patent-eligible subject matter are doomed to fail. Specifically, the current proposals generally add more words to the current statute and are likely to result in tests just as vague and unworkable as the current statute, with additional words to be misinterpreted.²⁷ More importantly, however, is that none of the proposals have examined which institution or institutions would be best suited for determining patent-eligible subject matter. Even if a clear and appropriate test could be drafted, if the wrong institution is wielding it, the problem is unlikely to be resolved.

Instead of simply adding to the cacophony of ineffective reform proposals, this article advances a radical solution that calls for situating patent-eligible subject matter inquiries with the institution best suited for the task and in a way that also may enhance and incentivize innovation. Specifically, this article argues patent eligibility inquiries should not be undertaken by the Patent Office. This means two things: before a patent is issued, the question of patent eligibility should not be considered by the examiner or by the Patent Trial and Appeals Board (PTAB or Board), and after a patent is issued, patent-eligible subject matter should not be the basis for any post-grant review at the Patent Office. Instead, to the extent patent-eligible subject matter is in question, these decisions must be made by the courts.

It may seem incongruous to situate patent-eligible subject matter with the courts, especially as the courts have created a large portion of

25. See Joan Farre-Mensa et al., *What is a Patent Worth? Evidence from the U.S. Patent "Lottery"* 26–27, 30 (U.S. Patent & Trademark Off. Econ. Working Paper No. 2015-5, 2018), <https://ssrn.com/abstract=2704028>.

26. See *infra* Section II (providing an overview of various reform efforts).

27. See *id.*

the mess associated with the doctrine. However, in looking at how to best fix an uncertain doctrine to align with the purpose of patent law and applying various tenets of institutional design, the courts become the optimal choice for this undertaking. Administrative law provides additional support for courts to take on this task as well. Vesting the decision-making power with the courts ensures that the issue is before the best institution for the task. Furthermore, this should incentivize courts to craft a more workable and certain test for patent-eligible subject matter, strengthen patent rights, and ultimately, enhance innovation.

This Article proceeds in three parts. Part I provides a background of patent-eligible subject matter, including what the doctrine entails, which institutions currently address the question of subject matter eligibility, and what sort of mess the doctrine is in. Part II explains recently proposed reform efforts for patent-eligible subject matter and why these reforms are unlikely to make a difference for the disastrous doctrine. Part III describes a radical solution—that determinations of patent-eligible subject matter should not be made at the Patent Office—as well as why this solution makes a lot of sense. This Part also explains why taking this radical step, and taking patent eligibility decisions away from the Patent Office, is more likely to provide more clarity to the doctrine than the other proposed reforms, is apt to strengthen patent law, and will put the United States back at the top of the list of innovative countries. Finally, this Article ends with a discussion of recent changes at the Patent Office, and how these changes could ultimately be used to operationalize the solution proposed in this Article.

I. THE WHAT, THE WHO, AND THE UGLY OF PATENT-ELIGIBLE SUBJECT MATTER

To comprehend why patent-eligible subject matter is a problem and why it must be fixed, it is essential first to understand how and where patent-eligible subject matter fits within the patent law system. This Part will first explain the law of patent-eligible subject matter, how it relates to other requirements of patentability, and how it evolved to its current state. Next, this Part will describe the various institutions that currently decide patent-eligible subject matter and how well these institutions have been doing in this endeavor. Finally, this Part will examine some of the effects that have sprung from the patent-eligible subject matter decisions by these various institutions, as well as detail how these effects are influencing innovation in the United States.

A. *The Law of Patent-Eligible Subject Matter*

The United States Patent Act specifies the laws related to obtaining and enforcing patent rights.²⁸ There are four primary statutory provisions that describe the legal requirements for patentability—35 U.S.C. §§ 101, 102, 103, and 112. Courts have interpreted § 102 as requiring novelty or that the invention be new; § 103 as requiring non-obviousness or that the patent not cover a trivial alteration of a previously-known invention; and § 112 as requiring an adequate level of disclosure to fulfill the quid pro quo aspect of patents.²⁹ Section 101 pulls double duty, imposing a requirement of utility as well as delineating what types of inventions can be patented, or patent-eligible subject matter.³⁰

Section 101 states that whoever invents a new “process, machine, manufacture, or composition of matter” or improvement thereof may obtain a patent, subject to the remaining requirements of patentability.³¹ Courts have interpreted this list of categories broadly, going so far as to claim that “anything under the sun that is made by man” falls into patent-eligible subject matter.³² In the early 1980s, the Supreme Court quoted the “anything under the sun” language when opening the doors to broad swaths of modern invention, including biotechnology and computer software.³³

Although the statute is broad, there are a few judicially-created exceptions to this otherwise expansive understanding of patent-eligible subject matter. Specifically, laws of nature, natural phenomenon, and abstract ideas may not be patented.³⁴ These exceptions were not understood to have significant limiting effects on patent-eligible subject matter, as courts and the Patent Office deemed most inventions eligible for patenting through the 1980s and 1990s.³⁵

28. 35 U.S.C. §§ 1–389 (2012).

29. See Timothy R. Holbrook, *Patent Anticipation and Obviousness as Possession*, 65 EMORY L.J. 987, 990, 993 (2016).

30. See Taylor, *Confusing Patent Eligibility*, *supra* note 14, at 170–71.

31. 35 U.S.C. § 101.

32. See *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (quoting S. REP. NO. 82-1979, at 5 (1952); H.R. REP. NO. 82-1923, at 6 (1952)).

33. See *Diamond v. Diehr*, 450 U.S. 175, 177, 184 (1981) (allowing patenting of a computer algorithm that controlled a rubber mold); *Chakrabarty*, 447 U.S. at 305, 309–10 (allowing patenting of oil-eating bacterium).

34. See *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014) (quoting *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 589 (2013)).

35. One last area of uncertainty were business methods. However, after the Federal Circuit ruled these inventions were eligible for patenting in the *State Street Bank & Trust* case, invalidation under § 101 was essentially a “dead letter.” See Mark A.

This began to change in the early 2000s, when a variety of groups called for a tightening of patentability standards for a number of reasons.³⁶ The courts seemed to heed these calls, first merely suggesting and later implementing a stricter view of patent-eligible subject matter.³⁷ The judicially-created exceptions then took on new importance through the quartet of Supreme Court cases that ultimately led to the aforementioned two-step test for patent-eligible subject matter.

In 2010, the Supreme Court decided *Bilski v. Kappos*,³⁸ affirming the Patent Office's rejection of a patent application because it claimed an "abstract idea" and therefore was not eligible for patenting.³⁹ The invention at issue in *Bilski* was a method of hedging risk when trading commodities, and the claims did not require any particular structures to implement.⁴⁰ The Court reasoned that the claims were directed to

Lemley et al., *Life After Bilski*, 63 STAN. L. REV. 1315, 1318 (2011) (permitting business method patents on inventions that produced "a useful, concrete, and tangible result," including numbers); see also *State St. Bank & Tr. Co. v. Signature Fin. Grp. Co.*, 149 F.3d 1368, 1373 (Fed. Cir. 1998), *abrogated by In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008).

36. See U.S. FED. TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY 14–15 (2003) (contending that "software and business method patents can raise significant competitive concerns and deter innovation, especially because so much of the innovation in those fields builds incrementally on preceding work").

37. In 2006, in a case that was dismissed as improvidently granted, Justice Breyer dissented from the dismissal to argue for a more stringent patent-eligible subject matter requirement. See *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 138 (2006) (Breyer, J., dissenting). The Federal Circuit then picked up the reins, finding ineligible subject matter in a number of cases. See generally *Bilski*, 545 F.3d at 943; *In re Nuijten*, 500 F.3d 1346 (Fed. Cir. 2007); *In re Comiskey*, 499 F.3d 1365 (Fed. Cir. 2007), *superseded by In re Comiskey*, 554 F.3d 967 (Fed. Cir. 2009).

38. 561 U.S. 593 (2010).

39. *Id.* at 609.

40. Claim 1 of the application at issue in *Bilski* is representative:

1. A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:
 - (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;
 - (b) identifying market participants for said commodity having a counter-risk position to said consumers; and
 - (c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.

Ex Parte Bernard L. Bilski & Rand A. Warsaw, No. 2002-2257, 2006 WL 5738364, at *1 (B.P.A.I. 2006).

an abstract idea that was “a fundamental economic practice long prevalent in our system of commerce.”⁴¹ To allow a patent on something like this would, according to the Court, preempt the public from using a basic economic concept.⁴²

The *Bilski* case was followed two years later by *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*,⁴³ where the Supreme Court determined the claimed invention was directed to an ineligible “law of nature.”⁴⁴ The patent at issue in the *Mayo* case claimed a diagnostic method, involving the steps of administering a drug, measuring the level of a metabolite associated with the drug, and, depending on that level, deciding to increase or decrease the drug’s dosage in that patient.⁴⁵ The Court examined these steps and determined that, beyond the law of nature—that is, the correlation between the metabolite level and the optimal dosing of the drug—the claim simply recited “well-understood, routine, and conventional activity” and thus, it was not eligible for patenting.⁴⁶

One year after, the Supreme Court in *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*⁴⁷ determined a patent was invalid because it claimed a “product of nature.”⁴⁸ In the *Myriad* case, the ineligible claims were directed to isolated DNA segments.⁴⁹ Although Myriad

41. *Bilski*, 561 U.S. at 611.

42. *See id.* at 611–12.

43. 566 U.S. 66 (2012).

44. *Id.* at 77.

45. *See id.* at 74–75 (quoting U.S. Patent No. 6,355,623, col. 20, ll. 10–20). Claim 1 of the patent is exemplary:

1. A method of optimizing therapeutic efficacy for treatment of an immune-mediated gastrointestinal disorder, comprising:
 - (a) administering a drug providing 6-thioguanine to a subject having said immune-mediated gastrointestinal disorder; and
 - (b) determining the level of 6-thioguanine in said subject having said immune-mediated gastrointestinal disorder,

wherein the level of 6-thioguanine less than about 230 pmol per 8×10^8 red blood cells indicates a need to increase the amount of said drug subsequently administered to said subject and

wherein the level of 6-thioguanine greater than about 400 pmol per 8×10^8 red blood cells indicates a need to decrease the amount of said drug subsequently administered to said subject.

46. *Id.* at 73–74.

47. 569 U.S. 576 (2013).

48. *Id.* at 580.

49. *Id.* at 584 (quoting U.S. Patent No. 5,747,282, col. 153, ll. 56–58). “The first claim asserts a patent on ‘[a]n isolated DNA coding for a BRCA1 polypeptide,’ which has ‘the amino acid sequence set forth in SEQ ID NO:2.’” *Id.*

discovered the location and sequence of some particularly important genes, the subject of the patent claims was not created via invention.⁵⁰

Finally, in 2014, the Supreme Court again found an invention to be ineligible subject matter due to being an “abstract idea” in *Alice Corp. v. CLS Bank Int’l*.⁵¹ The invention in this case was a method and system for managing settlement risks when two parties conduct a financial transaction.⁵² The Court determined that the method was an abstract idea and consisted of “purely conventional” steps to be performed on a generic computer, and thus was ineligible for patent protection.⁵³ As to the system claims, the Court held that these failed for the same reason as the method claims: the general computer system described added nothing to the underlying abstract idea.⁵⁴ Again, in making this determination, the Court relied on the notion of preemption, or the

50. *Id.*

51. 573 U.S. 208, 227 (2014).

52. *CLS Bank Int’l v. Alice Corp.*, 717 F.3d 1269, 1274 (Fed. Cir. 2013) (per curiam) (discussing U.S. Patent No. 5,970,479, col. 65, ll. 23–50). Claim 33 of the ‘479 patent was deemed exemplary:

A method of exchanging obligations as between parties, each party holding a credit record and a debit record with an exchange institution, the credit records and debit records for exchange of predetermined obligations, the method comprising the steps of:

- (a) creating a shadow credit record and a shadow debit record for each stakeholder party to be held independently by a supervisory institution from the exchange institutions;
- (b) obtaining from each exchange institution a start-of-day balance for each shadow credit record and shadow debit record;
- (c) for every transaction resulting in an exchange obligation, the supervisory institution adjusting each respective party’s shadow credit record or shadow debit record, allowing only these transactions that do not result in the value of the shadow debit record being less than the value of the shadow credit record at any time, each said adjustment taking place in chronological order; and
- (d) at the end-of-day, the supervisory institution instructing one[] of the exchange institutions to exchange credits or debits to the credit record and debit record of the respective parties in accordance with the adjustments of the said permitted transactions, the credits and debits being irrevocable, time invariant obligations placed on the exchange institutions.

Id. at 1285.

53. *Alice*, 573 U.S. at 222.

54. *Id.* at 226 (“Put another way, the system claims are no different from the method claims in substance. The method claims recite the abstract idea implemented on a generic computer; the system claims recite a handful of generic computer components configured to implement the same idea.”).

monopolization of a fundamental concept in the relevant field.⁵⁵ Citing back to *Mayo*, the Court noted that routine conventional activity, trivial post-operation actions, and generic or vague limitations are insufficient to add substantive limitations and avoid preemption.⁵⁶

This quartet of cases, or quadrilogy, although most specifically the *Alice* case, introduced chaos into the doctrine of patent-eligible subject matter.⁵⁷ Claiming to rely on its opinion in the *Mayo* case, the Supreme Court in *Alice* articulated the two-step test that is currently the basis of patent-eligible subject matter decisions.⁵⁸ The first step involves determining whether the patent claim is directed to an ineligible concept, specifically a law of nature, natural phenomenon, or abstract idea.⁵⁹ If so, the second step involves determining whether there are additional elements that transform the claim into an eligible application of the underlying ineligible concept.⁶⁰ This second step is described as a “search for an ‘inventive concept’—i.e., an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [underlying concept] itself.’”⁶¹ Put more plainly, is the invention “something more” than simply the ineligible law of nature, natural phenomenon, or abstract idea?⁶²

Despite the appeal and seeming simplicity of a two-step test, the inquiry into patent-eligible subject matter is anything but plain. In fact, the Supreme Court has not fully explained either of the two steps. As to whether the claim is directed to an ineligible concept, in each case of the quadrilogy, the Supreme Court reverted to the oft-repeated tenet that laws of nature, natural phenomenon, and abstract ideas are not patentable.⁶³ However, in the time since these judicially created exceptions were pronounced, the Court has provided very little

55. *Id.* at 216.

56. *Id.*

57. Many better, and more complete, discussions of this quartet of cases have been written by other scholars. See, e.g., Jeffrey A. Lefstin, *The Three Faces of Prometheus: A Post-Alice Jurisprudence of Abstractions*, 16 N.C. J.L. & TECH. 647, 651–57 (2015); Lidiya Mishchenko, *Alice: Through the Formalist Looking-Glass*, 97 J. PAT. & TRADEMARK OFF. SOC'Y 214, 221–24 (2015); Taylor, *Confusing Patent Eligibility*, *supra* note 14, at 178.

58. *Alice*, 573 U.S. at 223.

59. *Id.* at 217–18.

60. *See id.*

61. *See id.* (alteration omitted) (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 72–73 (2012)).

62. *See id.* at 217.

63. *See id.* at 216–17.

guidance about what exactly these terms mean. In fact, in *Alice*, the Court specifically declined to define these excluded categories, preferring to analogize the invention in the instant case with previous cases rather than provide clarity about what makes an invention “abstract.”⁶⁴ As to the second step, requiring that the claimed invention include “something more” virtually invites confusion and uncertainty. With a lack of guidance provided at both steps, it is not surprising that the lower courts have struggled to apply these exceptions to patent-eligible subject matter.⁶⁵ The Supreme Court overruled previous efforts by lower courts to add clarity to this area of law.⁶⁶

Following *Alice*, the Patent Office and the courts have found patent-eligible subject matter to be lacking in the vast majority of cases considered.⁶⁷ The bulk of these invalidity cases center around inventions related to computer and information technology or biotechnology.⁶⁸ This is not surprising given the judicially created exceptions to patent-eligible subject matter include abstract ideas (computer and information technology), laws of nature, and natural phenomenon (biotechnology). It is problematic that these subject areas are particularly affected, given the extent to which they form a large portion of today’s innovation economy.

What is more troubling, because it is so unexpected, is that courts and the Patent Office are using § 101 to invalidate patents (and reject patent applications) in a wide range of non-computer, non-biotechnology fields. In fact, invalidations for lack of patent-eligible subject matter now appear in technologies that have long formed the heart of the American

64. *See id.* at 221 (“In any event, we need not labor to delimit the precise contours of the ‘abstract ideas’ category in this case. It is enough to recognize that there is no meaningful distinction between” the invention in *Bilski* and the invention in *Alice*).

65. *See, e.g.,* Kelly Mackin, *Federal Circuit Guidance is Needed Because District Courts are Misapplying Alice*, IP WATCHDOG (Apr. 7, 2016), <http://www.ipwatchdog.com/2016/04/07/district-courts-misapplying-alice> (detailing the rampant invalidation of claims from hundreds of patents).

66. *See Bilski v. Kappos*, 561 U.S. 593, 604 (2010) (declining to utilize the “machine or transformation” test imposed by the Federal Circuit to clarify patent-eligible subject matter for inventions that include potentially abstract ideas).

67. *See, e.g., Bilski Blog*, *supra* note 15 (reporting statistics on invalidations and rejections under 35 U.S.C. § 101).

68. *See* Paul R. Gugliuzza & Mark A. Lemley, *Can a Court Change the Law by Saying Nothing?*, 71 VAND. L. REV. 765, 774–76 (2018); *see also* Chad Gilles, *Mayo and Alice Had Little Impact on Prosecution (Except for a Few Art Units)*, BIGPATENTDATA (Oct. 23, 2018), <https://bigpatentdata.com/2018/10/subject-matter-eligibility-is-not-that-big-of-a-deal-except-for-a-few-art-units> (noting that some art units in the computer and information technology space, including units 3620, 3680, and 3690, “went absolutely bananas after *Alice*”).

patent system, such as automobiles. In *American Axle & Manufacturing, Inc., v. Neapco Holdings LLC*,⁶⁹ a district court judge invalidated patents on a technology to reduce vibrations being transmitted through the drivetrain of a car.⁷⁰ Despite the fact that the claims were specifically directed to making a part of a car's driveline system,⁷¹ the judge determined under the first step of the test that these claims were directed to laws of nature, specifically Hooke's law and friction damping.⁷² The judge then determined that the claims "are applications of Hooke's law with the result of friction damping."⁷³ However, the judge neglected to consider the claim as a whole, which was instead directed toward an industrial process for manufacturing car parts.⁷⁴ This is what patent-eligible subject matter jurisprudence looks like today.

Although this section attempts to provide a brief understanding of the current state of patent-eligible subject matter, in truth, it is not easily understood. At a June 11, 2018, meeting of the Intellectual Property Business Congress (IPBC) Global Conference, Patent Office Director Andrei Iancu remarked about how difficult it is to explain what qualifies as patent-eligible subject matter, quoting James Madison: "It will be of little avail to the people if the laws are so incoherent that they cannot be understood."⁷⁵ This section now turns to the various institutions that apply this confusing area of law to patent applications and issued patents.

69. 309 F. Supp. 3d 218 (D. Del. 2018).

70. *Id.* at 221, 229.

71. For example, a representative claim (claim 22) follows:

A method for manufacturing a shaft assembly of a driveline system, the driveline system further including a first driveline component and a second driveline component, the shaft assembly being adapted to transmit torque between the first driveline component and the second driveline component, the method comprising:

providing a hollow shaft member;

tuning a mass and a stiffness of at least one liner; and

inserting the at least one liner into the shaft member;

wherein the at least one liner is a tuned resistive absorber for attenuating shell mode vibrations and wherein the at least one liner is a tuned reactive absorber for attenuating bending mode vibrations.

Id. at 221.

72. *Id.* at 225.

73. *See id.*

74. *See id.* at 225–28.

75. *See* Andrei Iancu, Director, U.S. Patent & Trademark Office, Remarks at the Intellectual Property Business Conference (June 11, 2018), <https://www.uspto.gov/about-us/news-updates/remarks-director-andrei-iancu-ipbc-global-conference>.

B. Institutions Deciding Patent-Eligible Subject Matter

There are three primary institutions that determine patent-eligible subject matter: the Patent Office examining corps, the Patent Trial and Appeal Board (PTAB), and the courts. Although the Patent Office is a single agency, the characteristics of the examining corps and the PTAB, as well as the instances in which they assess patent-eligible subject matter, vary sufficiently to discuss them as different institutions for the purpose of this Article. This section will describe these three institutions, as well as one other unique institution that decides patent-eligible subject matter with less frequency—the International Trade Commission. This section will conclude with an explanation of how these institutions decide the issue of patent eligibility at various points during a patent’s life cycle.

1. Patent Office—Examining Corps

The examining corps at the Patent Office is often the first institution to consider the subject matter eligibility of an invention. An examiner determines whether a patent application satisfies the patentability requirements, including novelty, non-obviousness, and adequate disclosure, as well as whether the invention claimed in the application satisfies § 101.⁷⁶

Patent examiners must be U.S. citizens and have successfully completed a four-year course of study “at an accredited college or university leading to a bachelor’s degree, or higher, that included a major field of study . . . in a variety of engineering and science disciplines.”⁷⁷ No advanced technological training is required, nor is any legal training or knowledge.⁷⁸ Patent examiners do, however, go through a training program that includes teaching sessions about the law and examination procedures, as well as hands-on training by working on actual patent applications under close supervision.⁷⁹

76. Gene Quinn, *USPTO Wants YOU for the Patent Examining Corp*, IP WATCHDOG (Feb. 4, 2010), <http://www.ipwatchdog.com/2010/02/04/uspto-wants-you-for-the-patent-examing-corp/id=8729>.

77. See U.S. PAT. & TRADEMARK OFF., ENGINEERS AND SCIENTISTS: EXAMINER BROCHURE, <https://www.uspto.gov/sites/default/files/documents/Examiner%20brochure%202017.pdf> (last visited May 20, 2019) [hereinafter ENGINEERS AND SCIENTISTS].

78. *Id.*

79. See Michael D. Frakes & Melissa Wasserman, *Patent Office Cohorts*, 65 DUKE L.J. 1601, 1620–21 (2016).

Patent examiners are guided in their work by policy statements, guidelines, and manuals issued by the Patent Office.⁸⁰ The most prevalent guidance document is the Manual of Patent Examining Procedure, which does not have the force of law, but is considered within the Patent Office to be the “bible” of patent examination.⁸¹ The examining corps may also avail itself of additional guidance in a variety of memoranda focused on clarifying previously provided Patent Office guidance in light of new case law.⁸²

Measured by volume, the examining corps of the Patent Office arguably has the greatest amount of experience determining patent-eligible subject matter. Over 647,000 patent applications were filed with the Patent Office in fiscal year 2017.⁸³ To be sure, not all of these applications require a detailed analysis of patent-eligible subject matter; in fact, not all of these applications ever reach an examiner’s desk.⁸⁴ Regardless, patent examiners make the vast majority of patent-eligible subject matter decisions each year.

Although patent examiners may handle the greatest number of patent eligibility inquiries, their efforts are viewed as the least important as far as developing the jurisprudence of the doctrine. First, rejections from patent examiners are secret until a patent issues.⁸⁵ Patent prosecution is an *ex parte* activity that is not laid open to the public before a patent is granted.⁸⁶ If no patent ever issues, an examiner’s rejection may never be seen.⁸⁷ Second, and related, an

80. Melissa F. Wasserman, *The PTO’s Asymmetric Incentives: Pressure to Expand Substantive Patent Law*, 72 OHIO ST. L.J. 379, 394 (2011).

81. *See id.*

82. *See id.* *See generally Memoranda to the Examining Corps*, U.S. PAT. & TRADEMARK OFF., <https://www.uspto.gov/patent/laws-and-regulations/examination-policy/memoranda-examining-corps> (last visited May 20, 2019).

83. *See* U.S. PAT. & TRADEMARK OFF., PERFORMANCE AND ACCOUNTABILITY REPORT FY17 27 (2017), <https://www.uspto.gov/sites/default/files/documents/USPTOFY17PAR.pdf>.

84. Patent applications can be abandoned at any time during the examination process. *See 711 Abandonment of Patent Application [R-07.2015]*, U.S. PAT. & TRADEMARK OFF., <https://www.uspto.gov/web/offices/pac/mpep/s711.html> (last modified Jan. 24, 2018, 5:19 PM) (detailing express and unintentional abandonment).

85. Gene Quinn, *Understanding the Patent Process: Rejections vs. Objections*, IP WATCHDOG (Apr. 2, 2016), <http://www.ipwatchdog.com/2016/04/02/patent-process-rejections-vs-objections>.

86. *See* ALAN L. DURHAM, PATENT LAW ESSENTIALS: A CONCISE GUIDE § 5.1, at 32–33 (2d ed. 2004). Prior to 2000, everything was kept secret until a patent issued. *See id.*

87. If the application is abandoned, the public may never learn about the prosecution history. *See id.* at 34.

examiner's rejection is often not the last word on the subject. If the patent applicant believes the examiner erroneously rejected the application, the applicant can appeal the rejection to the PTAB.⁸⁸ At this point, the rejection becomes (more) public, but the determination moves to a different institution.⁸⁹ Third, patent examiners have limited discretion in making patent eligibility determinations. To keep up with the quick evolution of the doctrine, the Patent Office issues numerous guidance documents to aid the examining corps in following the courts' rulings when deciding patent-eligible subject matter.⁹⁰ Examiners are unlikely to deviate from the Patent Office's guidance documents because it would be unnecessarily time-consuming and may have negative career repercussions.⁹¹ For these reasons, it is unlikely that the examining corps of the Patent Office has a significant effect on the law of patent-eligible subject matter.

Although the examining corps may not have a significant effect as far as shaping the law, it does have a substantial, if silent, effect on innovation more generally. Specifically, decisions of the examining corps may "nip" certain technologies in the bud by cutting off patent protection at a very early stage. Individual companies may alter their spending decisions regarding research and development based on patent eligibility signals received from the Patent Office, which could have a direct impact on innovation.⁹² Additionally, negative determinations by the examining corps may have a broader effect on innovation by limiting the amount of disclosure, because the patent does not issue, and limiting the products that reach the market, because a company may decline to commercialize technology it cannot protect

88. See 35 U.S.C. § 6(b)(1) (2012) (authorizing PTAB review of "adverse decisions of examiners upon applications for patents"). Some 10,000 of these ex parte appeals are resolved by the PTAB each year. See John M. Golden, *Working Without Chevron: The PTO as Prime Mover*, 65 DUKE L.J. 1657, 1667 (2016).

89. See *infra* Section I.B.2 (discussing the PTAB's qualifications as a patent-eligibility decider).

90. See, e.g., *Subject Matter Eligibility*, U.S. PAT. & TRADEMARK OFF., <https://www.uspto.gov/patent/laws-and-regulations/examination-policy/subject-matter-eligibility> (last visited May 20, 2019); see also Jeffrey A. Lefstin et al., *Final Report of the Berkeley Center for Law & Technology Section 101 Workshop: Addressing Patent Eligibility Challenges*, 33 BERKELEY TECH. L.J. 551, 561 (2018).

91. See Wasserman, *supra* note 80, at 397–98.

92. See, e.g., Amanda G. Ciccatelli, *Revising Section 101 of the Patent Act: What's at Stake?*, IP WATCHDOG (July 26, 2017), <http://www.ipwatchdog.com/2017/07/26/revising-section-101-patent-act> (noting that the patent eligibility standard may be having a chilling effect on patent rights, altering the incentives for private companies to invest in research); see also Coons, *supra* note 5.

via patent rights. In keeping information and products from the public, future innovators may find fewer “shoulders of giants” to stand on.⁹³

2. Patent Office—PTAB

More than any other institution, the PTAB has an opportunity to consider patent-eligible subject matter at multiple points of a patent’s life. The PTAB hears appeals of rejections from the examining corps, which may include questions of patent-eligible subject matter.⁹⁴ Additionally, the PTAB may consider subject matter eligibility of issued patents via post-grant proceedings, specifically via post-grant review or covered business method review.⁹⁵

The PTAB is a group of administrative patent judges within the Patent Office.⁹⁶ Per statute, administrative patent judges are “persons of competent legal knowledge and scientific ability who are appointed by the Secretary [of Commerce], in consultation with the Director.”⁹⁷ Sitting in panels of at least three members,⁹⁸ PTAB judges hear not just appeals from “adverse decisions of examiners,” but also reexaminations of issued patents, inter partes reviews, post-grant reviews, and covered business method reviews.⁹⁹

93. This phrase is typically attributed to Isaac Newton: “If I have seen farther, it is by standing on the shoulders of giants.” Letter from Isaac Newton to Robert Hooke (Feb. 5, 1675), reprinted in ROBERT K. MERTON, *ON THE SHOULDERS OF GIANTS: A SHANDEAN POSTSCRIPT I* (1993). The phrase more recently gained popularity in the innovation space. See Suzanne Scotchmer, *Standing on the Shoulders of Giants: Cumulative Research and the Patent Law*, 5 J. ECON. PERSP. 29, 29 (1991).

94. See Stephen Ball & Victor P. Lin, *Using Ex Parte Patent Appeals to Advance Prosecution*, LAW360 (Mar. 15, 2016, 10:45 AM), <https://www.law360.com/articles/769482/using-ex-parte-patent-appeals-to-advance-prosecution>. The PTAB generally affirms the examiner’s rejections in cases involving patent-eligible subject matter. See *id.*

95. See, e.g., Philip Swain, *The Remarkable Effectiveness of Alice v. CLS Bank Challenges at the PTAB*, FOLEY HOAG LLP: PTAB BLOG (Oct. 23, 2015), <http://www.ptab-blog.com/2015/10/23/the-remarkable-effectiveness-of-alice-v-cls-bank-challenges-at-the-ptab>.

96. See 35 U.S.C. § 6(a) (2012). The PTAB’s membership also includes the Patent Office Director and Deputy Director, as well as the Commissioners for Patents and for Trademarks. See *id.*

97. See *id.* The statutory criteria do not set a terribly high threshold. Gene Quinn, the founder of IP Watchdog, studied the qualifications of the currently sitting PTAB administrative law judges and deemed them “shockingly inexperienced.” See Gene Quinn, *PTAB Judges Shockingly Inexperienced Compared to District Court Judges*, IP WATCHDOG (Mar. 6, 2018), <http://www.ipwatchdog.com/2018/03/06/ptab-judges-shockingly-inexperienced>.

98. See 35 U.S.C. § 6(c).

99. § 6(b).

The PTAB, while deciding patent-eligible subject matter less frequently than the examining corps, still has ample opportunity to consider the issue. For example, the PTAB regularly has over 12,000 appeals pending annually of rejections from examiners.¹⁰⁰ Of course, not all of these cases include patent-eligible subject matter rejections; however, because the PTAB can initiate review of subject matter eligibility *sua sponte*,¹⁰¹ it could potentially be considered in all of these cases. Additionally, between 2012—when the proceedings became available—and October 2017, there were 529 covered business method review petitions and 82 post-grant review petitions filed at the PTAB.¹⁰² While these post-grant proceedings do not necessarily include a patent-eligibility challenge, it is a commonly raised ground of invalidation. Regardless of how the issue comes before it, the PTAB has been aggressively developing the contours of patent-eligible subject matter.¹⁰³

Unlike the examining corps at the Patent Office, the PTAB's patent-eligible subject matter decisions carry greater weight in the grand scheme of the doctrine because the PTAB's influence is felt in multiple directions, both by the examining corps and by the courts. The influence of the PTAB on the examining corps is hard to quantify because it is often of a more personal nature. Specifically, a particular examiner's understanding of patent-eligible subject matter is going to be directly influenced by his experiences from appeals of his previous cases before the PTAB. The PTAB's affirmance of the examiner's rejections will likely encourage the examiner to continue to issue these rejections going forward. If the PTAB *sua sponte* rejects a patent application under § 101 that the examiner had not rejected, the incentive to issue ineligible subject matter rejections in the future may be increased. On the other hand, the PTAB's influence on the courts is much easier to

100. See U.S. PAT. & TRADEMARK OFF., APPEAL & INTERFERENCE STATISTICS: PATENT TRIAL AND APPEAL BOARD 3 (2017), https://www.uspto.gov/sites/default/files/documents/appeal_interference_statistics_2017oct.pdf. Prior to fiscal year 2016, the PTAB had over 20,000 pending appeals annually. See *id.*

101. See Kristen Osenga, *The Problem with PTAB's Power over Section 101*, 17 CHI.-KENT J. OF INTELL. PROP. 405, 407 (2018).

102. See U.S. PAT. & TRADEMARK OFF., TRIAL STATISTICS: IPR, PGR, CBM 3 (2017), https://www.uspto.gov/sites/default/files/documents/trial_statistics_october_2017.pdf. The trend continued, with five CBM and four PGR petitions filed in October 2017. See *id.* at 5 (reporting fiscal year 2018 filings to date).

103. See Stuart Minor Benjamin & Arti K. Rai, *Administrative Power in the Era of Patent Stare Decisis*, 65 DUKE L.J. 1563, 1577 (2016) (noting that, especially within the CBM context, "the PTAB has . . . been aggressive, particularly with respect to its interpretation of section 101").

see because jurisprudence developed by the PTAB is often accepted wholesale by the courts. Patent-eligible subject matter decisions are regularly affirmed by the Federal Circuit and often without opinion.¹⁰⁴

The PTAB's patent-eligible subject matter jurisprudence is also having a significant impact on innovation. The PTAB has been called a "death squad"¹⁰⁵ and a "killing field."¹⁰⁶ Although these monikers were earned for more than just the PTAB's stance on patent-eligible subject matter, the problem is striking enough that multiple blogs are devoted, at least in part, to tracking the PTAB's § 101 decisions.¹⁰⁷ While the Patent Office is the initial obstacle for patent applicants, particularly in the patent-eligible subject matter arena, the PTAB may be the final hurdle standing between an inventor and a patent.¹⁰⁸ The PTAB also has significant power to end an issued patent's life.¹⁰⁹ Because PTAB determinations have been, at best, uncertain, and at

104. See Gugliuzza & Lemley, *supra* note 68, at 794 fig.12.

105. See Tony Dutra, *Rader Regrets CLS Bank Impasse, Comments on Latest Patent Reform Bill*, BNA (Oct. 29, 2013), <https://www.bna.com/rader-regrets-cls-n17179879684> (stating that on one side of the PTO "[y]ou have 7000 people giving birth to property rights," but within the PTAB, there are as many as 300 administrative patent judges "acting as death squads, killing property rights").

106. See, e.g., Gene Quinn & Steve Brachmann, *Patent Killing Fields of the PTAB: Erasing Federal District Court Verdicts on Patent Validity*, IP WATCHDOG (Jan. 14, 2018), <http://www.ipwatchdog.com/2018/01/14/patent-killing-fields-ptab-erasing-federal-district-court-verdicts-patent-validity>.

107. See, e.g., *Bilski Blog*, *supra* note 15; *Post Grant Proceedings*, BIRCH, STEWART, KOLASCH & BIRCH, LLP, <https://www.postgrantproceedings.com> (last visited May 20, 2019); *Post-Grant*, FISH & RICHARDSON LLP, <http://fishpostgrant.com> (last visited May 20, 2019); *PTAB Watch: Section 101*, MARSHALL, GERSTEIN, & BORUN LLP, <https://www.ptabwatch.com/category/section-101> (last visited May 20, 2019).

108. See, e.g., Lauren Hockett & Christopher M. DiLeo, *Analogous Analysis: A Survey of Recent PTAB Decisions Establishing Subject Matter Patent Eligibility*, KNOBBE MARTENS (Apr. 24, 2017), <https://www.knobbe.com/news/2017/04/analogous-analysis-survey-recent-ptab-decisions-establishing-subject-matter-patent> (highlighting recent cases where the PTAB ruled that there was patent-eligible subject matter over an examiner's rejection); Robert R. Sachs, *The One Year Anniversary: The Aftermath of #AliceStorm*, BILSKI BLOG (June 20, 2015), <https://www.bilskiblog.com/2015/06/the-one-year-anniversary-the-aftermath-of-alicestorm> (providing data on patent-eligible subject matter rejections at the Patent Office). This data has been regularly updated, and although there are slight signs that patent-eligible subject matter rejections are decreasing, they still remain an issue. See, e.g., Robert R. Sachs, *AliceStorm Update for Q1 2017*, BILSKI BLOG (Apr. 6, 2017), <http://www.bilskiblog.com/blog/2017/04/alicestorm-update-for-q1-2017>.

109. See, e.g., Madigan & Mossoff, *supra* note 10, at 955 ("The PTAB, however, continues aggressively to invalidate patents with § 101 rejections, as its 'kill rate' in the CBM program remains a remarkable 97.8%.").

worst, anti-patent, these decisions are greatly influencing how corporations invest in innovative activities going forward.¹¹⁰

Because the PTAB can decide patent-eligible subject matter both before a patent issues as well as after, the consequences to innovation are great.¹¹¹ Just as with the examining corps, when the PTAB rejects an application, it can have the localized effect of altering that company's future research and development trajectory, as well as the broader effect of keeping information and products from the public. When the PTAB invalidates an issued patent, it will likely have a localized effect on the particular patent owner, but because the patent (and often a product) are available to the public, the broader effect on innovation may be smaller in nature.

3. Courts

Patent-eligible subject matter decisions are also being made by courts at all levels. Federal district courts decide the issue as a regular part of patent infringement lawsuits, with the alleged infringer claiming in defense the patent is invalid due to failure to meet § 101.¹¹² The Federal Circuit decides appeals from district court patent infringement lawsuits as well as appeals of various sorts from the PTAB.¹¹³ Finally, the Supreme Court hears appeals of both types of

110. Lefstin et al., *supra* note 90, at 589–90; Kevin Madigan, *An Ever-Weakening Patent System is Threatening the Future of American Innovation*, CTR. FOR THE PROTECTION OF INTELL. PROP. (Apr. 28, 2017), <https://cpip.gmu.edu/2017/04/28/an-ever-weakening-patent-system-is-threatening-the-future-of-american-innovation> (citing Robert Sterne and Judge Michel at a conference where they indicated that investment in innovation is down, due in part to the PTAB and uncertainty in patent law).

111. See Osenga, *supra* note 101, at 406–08.

112. Federal district courts have exclusive jurisdiction over “any civil action arising under any Act of Congress relating to patents.” 28 U.S.C. § 1338(a) (2012). This includes cases brought by patent owners, alleging infringement, as well as declaratory judgment actions filed by accused infringers, alleging the patent they are accused of infringing is either not infringed or is invalid.

113. See Ellen E. Sward & Rodney F. Page, *The Federal Courts Improvement Act: A Practitioner's Perspective*, 33 AM. U. L. REV. 385, 389–91 (1984). The Federal Circuit has jurisdiction over three types of patent cases, granted by the Federal Courts Improvement Act (FCIA). See Paul R. Gugliuzza, *The Federal Circuit as a Federal Court*, 54 WM. & MARY L. REV. 1791, 1801 (2013). These three patent case types are (1) federal district court cases “arising under” patent law, including patent infringement suits or suits seeking declaratory judgments of patent invalidity; (2) appeals from the Patent Office, including appeals of rejected patent applications and post-issuance review proceedings; and (3) appeals from International Trade Commission investigations regarding importation of products that allegedly infringe patents. See *id.*

cases decided by the Federal Circuit, including patent infringement cases and appeals from the Patent Office.

It is not easy to generally describe the characteristics of federal judges, particularly across the various levels from district court to Supreme Court. Per the Constitution, federal judges are nominated by the President of the United States and confirmed by the Senate.¹¹⁴ However, the Constitution sets forth no further qualifications for judges.¹¹⁵ The Senate Judiciary Committee typically conducts confirmation hearings.¹¹⁶ Federal judges, once confirmed, are appointed for life.¹¹⁷ Because there are no formal criteria for being nominated and confirmed as a judge, and because judges' life tenure means that the aggregate of currently sitting judges has been nominated and confirmed by a variety of political actors across time, the education and background of the judiciary as a whole is incredibly varied.

Although the Supreme Court hears the least number of patent-eligible subject matter cases, the topic has clearly caught the Court's interest and imagination with four § 101 cases being decided over the span of four years, even with the Court's limited docket.¹¹⁸ Additionally, as the highest court, the Supreme Court's jurisprudence on patent-eligible subject matter carries substantial weight with the lower courts and the Patent Office. However, the ambiguous two-part test crafted by the Supreme Court has left "district courts and the Federal Circuit to fend for themselves."¹¹⁹ With this much confusion being instilled by the Supreme Court, it makes sense to place the blame for patent eligibility chaos with that institution.¹²⁰ To be fair, though, the cases the Supreme Court has to work with are not always the best,¹²¹ and so some responsibility must also lie with the other courts.

114. See U.S. CONST. art. II, § 2, cl. 2.

115. See *FAQs: Federal Judges*, U.S. COURTS, <http://www.uscourts.gov/faqs-federal-judges> (last visited May 20, 2019).

116. See *id.*

117. See *id.*

118. See Ciccattelli, *supra* note 92.

119. See Reinecke, *supra* note 13, at 8.

120. See, e.g., Gene Quinn, *Naked Emperors: A Supreme Court Patent Tale*, IP WATCHDOG (May 31, 2015), <http://www.ipwatchdog.com/2015/05/31/naked-emperors-a-supreme-court-patent-tale>.

121. See, e.g., Lauren Katzenellenbogen et al., *Debate on In re Bilski*, 7 NW. J. TECH. & INTELL. PROP. 260, 276 (2009) (noting that *Bilski* was a "bad case" for the Court to elucidate patent-eligible subject matter because "the *Bilski* invention would have been rejected for obviousness, if nothing else").

The Federal Circuit has long been considered, and generally fancies itself, the “last word” on substantive patent law issues.¹²² Particularly before the Supreme Court took great interest in patent law, the Federal Circuit was essentially the Supreme Court of patents.¹²³ Now, when the Supreme Court intervenes in patent law, it is typically because the Federal Circuit has run amok, generally by creating a bright-line test where the Supreme Court believes the analysis should be fuzzier.¹²⁴ Rarely does the Supreme Court grant certiorari to affirm the Federal Circuit.¹²⁵

Because of the relationship between the Supreme Court and the Federal Circuit, the Federal Circuit regularly, and enthusiastically, exercises its ability and desire to develop doctrine in patent law, including subject matter eligibility. For example, in 1998, the Federal Circuit crafted the “useful, concrete and tangible result” test for determining whether a potentially abstract idea was eligible for patenting.¹²⁶ A decade later, the same court decided the test was not fully adequate for its purpose and imposed instead the “machine-or-transformation” test, where a process invention was deemed eligible for patenting so long as either it was “tied to a particular machine or apparatus” or “transforms a particular article into a different state or thing.”¹²⁷ Although the Supreme Court ultimately overruled the “machine-or-transformation” test as the sole test for eligibility, the Court acknowledged that the Federal Circuit’s test was “a useful and

122. See John M. Golden, *The Supreme Court as “Prime Percolator”: A Prescription for Appellate Review of Questions in Patent Law*, 56 UCLA L. REV. 657, 665 (2009) (arguing that the Federal Circuit faces little competition from the PTO because, according to its own precedent, the PTO lacks substantive rulemaking power and should receive “weak” deference for its interpretations of the Patent Act).

123. See Mark D. Janis, *Patent Law in the Age of the Invisible Supreme Court*, 2001 U. ILL. L. REV. 387, 387 (referring to the Federal Circuit as “the de facto supreme court of patents”).

124. See Peter Lee, *Patent Law and the Two Cultures*, 120 YALE L.J. 2, 42–62 (2010) (discussing several cases, including *Festo*, *KSR*, *eBay*, and *Bilski*, that demonstrate the Supreme Court’s more holistic approach in softening the Federal Circuit’s formalistic rules).

125. This is not necessarily unique to the Federal Circuit, nor is it necessarily problematic. See John M. Golden, *The Federal Circuit and the D.C. Circuit: Comparative Trials of Two Semi-Specialized Courts*, 78 GEO. WASH. L. REV. 553, 558 (2010) (noting that from the October 1996 Term through the October 2008 Term, the Supreme Court decided thirteen patent cases in which it reversed the Federal Circuit in seven, vacated the judgment in four, and affirmed in two).

126. *State St. Bank & Tr. Co. v. Signature Fin. Grp., Inc.*, 149 F.3d 1368, 1373 (Fed. Cir. 1998) *abrogated by In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (holding the “practical application of a mathematical algorithm, formula, or calculation” is not an unpatentable abstract idea when it produces a “useful, concrete and tangible result”).

127. *In re Bilski*, 545 F.3d 943, 954 (Fed. Cir. 2008).

important clue, an investigative tool” for understanding patent-eligible subject matter.¹²⁸ Most recently, the Federal Circuit issued a number of decisions attempting to flesh out the Supreme Court’s vague, two-step test.¹²⁹ Without question, the Federal Circuit has and will continue to have significant impact on patent-eligible subject matter.

The district courts in general do not develop overarching patent-eligible subject matter law. District courts generally only consider subject matter eligibility in the context of patent litigation, while the Federal Circuit and Supreme Court currently decide patent-eligible subject matter on appeals from unsuccessful patent applicants from the Patent Office, as well as subject matter eligibility of issued patents from PTAB post-issuance proceedings and from patent infringement litigation.¹³⁰ Because the Supreme Court especially (and to a lesser extent, the Federal Circuit) have not fully fleshed out the test for patent-eligible subject matter, many eligibility decisions at the district courts are being made via analogy to previously decided cases. In this way, the district courts’ opinions, although not binding in other cases, are providing some detail to the contours of the doctrine.

Like the decisions of the Patent Office, the courts’ opinions on patent-eligible subject matter are also having an effect on innovation. The Supreme Court has not determined any invention it has reviewed to be patent-eligible subject matter.¹³¹ The Federal Circuit has found patent-eligible subject matter in less than ten percent of its post-*Alice* cases on the issue.¹³² District courts also tend to invalidate patents due

128. *Bilski v. Kappos*, 561 U.S. 593, 604 (2010).

129. For a few notable examples on the computer and information technology side, see *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016) and *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299 (Fed. Cir. 2016). On the biotechnology or pharmaceutical side, see *Vanda Pharmaceuticals Inc. v. West-Ward Pharmaceuticals International, Ltd.*, 887 F.3d 1117 (Fed. Cir. 2018).

130. Compare *Vanda Pharm. Inc. v. Roxane Labs., Inc.*, 203 F. Supp. 3d 412, 417 (D. Del. 2016) (patent infringement litigation), and *Celsis In Vitro, Inc. v. Cellzdirect, Inc.*, 83 F. Supp. 3d 774, 776 (N.D. Ill. 2015), *vacated and remanded by* Rapid Litig. Mgmt. Ltd. v. CellzDirect, Inc., 827 F.3d 1042 (Fed. Cir. 2016) (patent infringement litigation), with *Vanda Pharm., Inc.*, 887 F.3d at 1120 (patent infringement appeal), *In re Verhoef*, 888 F.3d 1362, 1363 (Fed. Cir. 2018) (appeal of unsuccessful patent application), and *Versata Dev. Grp., Inc. v. SAP Am., Inc.*, 793 F.3d 1306, 1310 (Fed. Cir. 2015) (PTAB post-issuance proceeding).

131. See *supra* Section I.A. (discussing the Supreme Court’s patent-eligible subject matter jurisprudence).

132. See *Gugliuzza & Lemley, supra* note 68, at 768 (finding the Federal Circuit has a 92.3% invalidity rate).

to ineligible subject matter.¹³³ To the extent these courts are invalidating issued patents or affirming rejections by the Patent Office, the courts at all levels are having an impact on the way companies decide to spend, or not spend, their innovation dollars.

In some respects, the effect on innovation when the courts address subject matter eligibility may seem more significant if the outcome is invalidation of an issued patent. After all, the company not only invested the original research and development resources to create the technology, but also the legal resources to patent the invention and likely additional research and development funds to commercialize and bring a product to market. It may seem counterintuitive to say that innovation could be less affected in these cases, but if innovation is considered more broadly, there are benefits to allowing patents to issue and later have them declared invalid. Specifically, the issuance of a patent and the potential that a company will have commercialized the technology described in the patent means that the information, and possibly a product, are available to the public.

4. *Other institutions*

Although it does not come into play as often, there is one additional body that can and does apply patent law in a quasi-judicial setting—the International Trade Commission (ITC). Cases may be brought before the ITC to determine whether to bar importation of products alleged to infringe U.S. patents.¹³⁴ Although it decides fewer cases and patent eligibility questions are less often raised, this institution has the opportunity to rule on § 101 questions. However, because of its unique jurisdiction and relatively low number of cases, the ITC does not serve as a primary arbiter of patent-eligible subject matter, and its jurisprudence has little effect on other institutions.¹³⁵

133. See Bijal Vakil et al., *Months after Berkheimer and Aatrix: Business as Usual*, WHITE & CASE TECH. NEWSFLASH (Aug. 28, 2018), <https://www.whitecase.com/publications/article/months-after-berkheimer-and-aatrix-business-usual> (noting that between 2014 and 2017, district courts assessed patent-eligible subject matter in more than 400 opinions and in many cases found the patent invalid and since 2017, district courts are still finding a lack of patent-eligible subject matter at a similar rate).

134. See 19 U.S.C. § 1337(a)(1)(B) (2012) (authorizing the ITC to determine whether imported products infringe U.S. patents).

135. Many ITC cases are also accompanied by parallel district court proceedings. See Jacob S. Sherkow, *Administering Patent Litigation*, 90 WASH. L. REV. 205, 217 (2015) (“Patented import investigations before the ITC, for example, routinely affect parallel district court litigation.”).

5. *When these institutions decide patent-eligible subject matter*

Patent-eligible subject matter can be assessed at a number of points during a patent's life. Before the patent is issued, the inquiry is made during patent prosecution regarding the patent eligibility of the invention described in the patent application. After a patent is granted, patent-eligible subject matter is one ground on which to invalidate the issued patent, either in litigation or administratively. This subsection describes in more detail the various inflection points at which eligibility is assessed and when the three primary institutions described above come into play.

Subject matter eligibility is first assessed during patent prosecution by a member of the examining corps at the Patent Office.¹³⁶ If the patent examiner determines the application is lacking in patent-eligible subject matter and is not persuaded by the applicant's arguments to the contrary, the applicant may appeal the rejection to the PTAB that, among other things, reviews rejections issued by examiners.¹³⁷ The PTAB can also consider whether a patent application is directed to patent-eligible subject matter *sua sponte*, if the patent application is before the body on appeal from a rejection under some other requirement of patentability, such as novelty or non-obviousness.¹³⁸ An applicant may appeal a negative determination of the PTAB to the Federal Circuit (and ultimately may seek certiorari at the Supreme Court);¹³⁹ this is the posture of the *Bilski v. Kappos* case.¹⁴⁰

During an examination, if an examiner determines a patent application satisfies the requirements of patentability, the patent is

136. See *In re Bilski*, 545 F.3d 943, 950 n.1 (Fed. Cir. 2008) (“[A]n examiner should generally first satisfy herself that the application's claims are drawn to patent-eligible subject matter.”), *aff'd sub nom.* *Bilski v. Kappos*, 561 U.S. 593 (2010).

137. See 35 U.S.C. §§ 6(b), 134(a). The PTAB can affirm an examiner's rejection or reverse and remand to the examining corps for additional proceedings. See 37 C.F.R. § 41.50(a)(1) (2011).

138. See Courtenay C. Brinckerhoff, *PTAB Enters Sua Sponte Patent Eligibility Rejections*, PHARMAPATENTS (Feb. 6, 2018), <https://www.pharmapatentsblog.com/2018/02/06/ptab-enters-sua-sponte-patent-eligibility-rejections> (listing *Ex Parte Patterson*, No. 2016-001355 (P.T.A.B. Nov. 30, 2017), as an example of such an action).

139. See 35 U.S.C. §§ 141, 145. An unhappy applicant can also file a civil action in the U.S. District Court for the Eastern District of Virginia, but this route is generally not taken in patent-eligible subject matter cases. See § 145.

140. See *Bilski v. Kappos*, 561 U.S. 593, 599–600 (2010) (noting the procedural posture of the case from an examiner's rejection to an appeal before the Board of Patent Appeals and Interferences (the predecessor to the PTAB), to the Federal Circuit (en banc), and ultimately to the Supreme Court).

then granted.¹⁴¹ However, patent-eligible subject matter may still be raised in attempts to invalidate an issued patent. Challenges to issued patents may take the form of administrative review, via post-grant review proceedings brought before the PTAB.¹⁴² Alternatively, an alleged infringer may raise the defense of patent invalidity before a district court by claiming an issued patent is drawn to ineligible subject matter.¹⁴³ Whether the initial decision on eligibility comes from the PTAB or a district court, the losing party may appeal the case to the Federal Circuit and ultimately the Supreme Court.¹⁴⁴ The *Alice* case arose from a district court case where CLS Bank sought declaratory judgment that the patent at issue was invalid or not infringed.¹⁴⁵

As the above description demonstrates, the various institutions consider patent-eligible subject matter at a variety of sequential, and sometimes overlapping, points along a patent's life. Complicating matters further is that these paths or tracks are not exclusive of one another; for example, a patent may survive one challenge to its eligibility during patent examination and be subject to another challenge as an issued patent. Alternatively, a patent may survive a validity challenge in the courts, but be found invalid for lack of patent-eligible subject matter by the PTAB.¹⁴⁶ Not only are patent-eligible

141. See *General Information Concerning Patents*, U.S. PAT. & TRADEMARK OFF. (Oct. 2015), <https://www.uspto.gov/patents-getting-started/general-information-concerning-patents> ("If, on examination of the application, or at a later stage during the reconsideration of the application, the patent application is found to be allowable, a Notice of Allowance and Fee(s) Due will be sent to the applicant.").

142. Patent-eligible subject matter may be raised as part of either a PGR or CBM. See 35 U.S.C. §§ 321–329 (2012); *id.* § 318 (Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011)).

143. See, e.g., *Roche Molecular Sys., Inc. v. Cepheid*, No. 14-cv-03228-EDL, 2017 WL 6311568, at *1 (N.D. Cal. Jan. 17, 2017) (noting that Cepheid responded to the charge of patent infringement by claiming the allegedly infringed patent was ineligible for protection); *Vanda Pharm. Inc. v. Roxane Labs., Inc.*, 203 F. Supp. 3d 412, 417 (D. Del. 2016) (same); *Celsis In Vitro, Inc. v. CellzDirect, Inc.*, 83 F. Supp. 3d 774, 776 (N.D. Ill. 2015) (noting that Cellzdirect sought summary judgment for patent invalidity due to ineligible subject matter), *vacated*, *Rapid Lit. Mgmt. Ltd. v. CellzDirect, Inc.*, 827 F.3d 1042 (Fed. Cir. 2016). An issued patent may also be reviewed by the ITC during infringement lawsuits brought before that body.

144. See 28 U.S.C. § 1295 (2012) (providing Federal Circuit jurisdiction over appeals from district court decisions arising under patent law, as well as over appeals from the PTAB).

145. See *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 214 (2014) (explaining that CLS Bank sought declaratory judgment, which the District Court granted, but the Federal Circuit reversed).

146. While not limited to § 101 challenges, Gene Quinn and his fellow authors provide interesting statistics. 168 of the 220 patents studied were found not invalid by

subject matter challenges not exclusive, they may even happen in parallel.¹⁴⁷ For example, administrative invalidation proceedings are often brought at the PTAB simultaneously to the same allegation being made in court as a defense to patent infringement claims.¹⁴⁸ Finally, eligibility decisions along different paths may have inconsistent preclusive or estoppel effects.¹⁴⁹ The estoppel picture is even more convoluted, given that multiple different parties may have standing to challenge subject matter eligibility in the variety of institutions. For example, while a justiciable case or controversy must exist for patent eligibility to be determined by a court, anyone other than the patentee is entitled to file an administrative invalidation action before the PTAB.¹⁵⁰

Regardless of which institution, be it the examining corps or the PTAB at the Patent Office, or one of the many levels of courts, and

the courts, but were found invalid by the PTAB. Fifty-eight of the patents invalidated by the PTAB were found invalid on the exact same grounds as those raised before the courts that had found them to be not invalid. Gene Quinn et al., *PTAB Facts: An Ugly Picture of a Tribunal Run Amok*, IP WATCHDOG (Jan. 8, 2018), <http://www.ipwatchdog.com/2018/01/08/ptab-facts-ugly-picture-tribunal-run-amok>.

147. See Anne Layne-Farrar, *The Other Thirty Percent: An Economic Assessment of Duplication in PTAB Proceedings and Patent Infringement Litigation 2* (June 28, 2017) (unpublished manuscript), <http://www.crai.com/sites/default/files/publications/The-Other-30-Percent-An-Economic-Assessment-of-Duplication-in-PTAB-Proceedings-and-Patent-Infringement-Litigation.pdf>. Based on multiple studies, Layne-Farrar reports 86.7% of inter partes review (IPR) and CBM proceedings are also being litigated in district courts. See *id.* Of these, stays were granted in 70% of the cases, leaving 30% of proceedings to continue in parallel. See *id.*

148. See *id.*

149. For example, issued patents can be challenged before the PTAB or district courts. For issues originally brought before the PTAB, estoppel depends on the type of proceeding. If the patent-eligible subject matter challenge was raised via PGR, the party seeking PGR may not, if a final written decision is issued, request another proceeding before the Patent Office, district court, or ITC based on “any ground that the petitioner raised or reasonably could have raised” during the PGR. See Jason Mock, *Post-Grant Proceedings at the USPTO and the Rising Tide of Federal Circuit Appeals*, 25 FED. CIR. B.J. 15, 21 (2015). For a CBM on the other hand, subsequent proceedings at a district court are estopped only if the arguments were actually raised, while subsequent proceedings at the Patent Office are estopped under the same “raised or reasonably could have been raised” standard as PGR. *Id.*; see also Steven Pollinger & Craig Tolliver, *How Many Bites at the Apple After a PTAB Challenge?*, LAW360 (July 25, 2017, 12:00 PM), <https://www.law360.com/articles/945865>.

150. There are some exclusions to who may file an administrative invalidation proceeding. For example, 37 C.F.R. § 42.101 states that “[a] person who is not the owner of a patent may file” an *inter partes* review petition, unless (a) the petitioner has already filed a court action challenging validity; (b) the petition is filed more than a year after the petitioner was served with a complaint alleging infringement; or (c) the petitioner is estopped on some other ground. 37 C.F.R. § 42.101 (2016).

regardless of where in a patent's life subject matter eligibility is being considered, the test being imposed creates a high level of confusion and uncertainty. The next section describes the mess this system is causing.

C. The Resulting Mess of Patent-Eligible Subject Matter

As a consequence of these varied institutions developing patent-eligible subject matter jurisprudence, in parallel by multiple actors and without much guidance from the top, the current status of subject matter eligibility is, as noted in the introduction, a real mess.¹⁵¹ There are at least three problems related to the multiple institutions that have contributed to the chaos. These problems include: (1) that the institutions have developed the doctrine without care; (2) that the institutions have declined to fully develop the doctrine; and (3) that the institutions, as well as the parties that appear before them, are misusing the doctrine of patent-eligible subject matter. Each of these problems is discussed below.

First, various institutions are developing the doctrine of patent-eligible subject matter without care or attention to the Constitution or existing patent law. As noted above, the examining corps is generally simply following the doctrine developed by the PTAB and the courts, but these two institutions, and the courts especially, seem to have largely imagined the doctrine out of thin air, with little consideration given to the history of the doctrine and purpose of patent law.¹⁵² Both historically and in developing the 1952 Patent Act, the drafters repeatedly explained for what types of "inventions" or "discoveries" patents are available.¹⁵³ The Constitution expressly states, and innumerable commentaries written since have discussed, the purpose for granting patents—to promote the useful arts and sciences—that should inform the types of inventions that are patent-eligible subject

151. See *supra* notes 7–12 and accompanying text.

152. See Lefstin et. al, *supra* note 90, at 554 (citing Brief of Professors Jeffrey A. Lefstin & Peter S. Menell as Amici Curiae in Support of Petitioner for a Writ of Certiorari, *Sequenom, Inc. v. Ariosa Diagnostics, Inc.*, 136 S. Ct. 2511 (2016), 2016 WL 1605520)).

153. See 35 U.S.C. §§ 100(a), 101 (2012) (defining "invention" as "invention or discovery" and authorizing one who "invents or discovers" to apply for a patent); Act of February 21, 1793, Ch. 11, 1 Stat. 318–323 (1793) (also referring to "invention or discovery" and "inventor or discoverer"); Act of 1790, Ch. 7, 1 Stat. 109–112 (1790) (authorizing a patent to any person who "invented or discovered any useful art, manufacture, engine, machine, or device . . . if they shall deem the invention or discovery sufficiently useful and important").

matter.¹⁵⁴ Yet, these historical (or even contemporary) guideposts are not referenced by the case law generated by the PTAB and the courts, nor is there any nod to the purpose of patent law. Rather, some of the recent patent-eligible subject matter cases are not about promoting the purpose of patent law at all. Instead, they are a ham-handed attempt to solve an unrelated (and not necessarily real) problem related to patent licensing firms, pejoratively known as “patent trolls.”¹⁵⁵

Similarly, the current case law does not address the statutory structure of the provisions that accompany § 101. The statute that gives rise to patent-eligible subject matter speaks directly to other requirements of patentability, stating “[w]hoever invents . . . any new and useful process, machine, manufacture, or composition of matter . . . may obtain a patent therefor, subject to the conditions and requirements of this title.”¹⁵⁶ But even though the statute itself contemplates these other requirements, the two-part test’s search for an “inventive concept” or “something more” clearly imports one or more of a panoply of other patentability requirements, such as novelty or non-obviousness, that are provided in other provisions of the Patent Act. By ignoring the history and purpose, as well as other functional provisions of the Patent Act, the various institutions have unnecessarily interjected confusion into the doctrine.

Although the PTAB and courts of all levels are responsible for developing patent-eligible subject matter without regard for the purposes of patent law and the underlying statutory structure, the Supreme Court bears a special responsibility for the mess. While the PTAB, the district courts, and even the Federal Circuit generally approach their decisions in a workmanlike fashion, the Supreme Court is supposed to consider the law more broadly, especially with respect to the Constitution. And on other occasions, in addition to addressing

154. See U.S. CONST. art. I, § 8, cl. 8 (“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.”). See generally Sean B. Seymore, *Making Patents Useful*, 98 MINN. L. REV. 1046, 1076 (2014) (“[T]he USPTO only awards patents for inventions that add to the public storehouse of knowledge and support the patent system’s broader mission of promoting scientific progress and extending the frontiers of knowledge.”).

155. See *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 719 (Fed. Cir. 2014) (Mayer, J., concurring) (extolling the virtues of patent-eligible subject matter as providing a “bulwark against vexatious infringement suits”); see also Robert P. Merges, *The Trouble with Trolls: Innovation, Rent-Seeking, and Patent Law Reform*, 24 BERKELEY TECH. L.J. 1583, 1586 (2009) (“Some believe the troll label is a meaningless epithet, applied only to a plaintiff in a patent lawsuit with whom one has a legal conflict.”).

156. 35 U.S.C. § 101.

the specific patent law doctrine before it, the Supreme Court has often taken the opportunity to inject a constitutional bent to their analysis. For example, in a rather straightforward case to interpret and flesh out the law of non-obviousness under 35 U.S.C. § 103, the Supreme Court waxed extensively about the constitutional underpinnings of the doctrine.¹⁵⁷ Yet, in cases of patent-eligible subject matter that could have significant effects on innovation and beyond, the Court has not delved deeply into the purposes the law is meant to serve.

Second, these institutions have declined to fully develop patent-eligible subject matter. For many years, rejections or invalidations under § 101 simply did not occur. Prior to the *Mayo* decision, patent-eligible subject matter was rarely considered an issue.¹⁵⁸ If it was taught in a Patent Law course in law school, it generally did not even warrant a full class period. In practice, it was considered an oddity—something rarely seen.¹⁵⁹ Because it was not a common occurrence, there really was very little development of patent-eligible subject matter jurisprudence before 2010.

However, after *Mayo*, the number of invalidations based on patent-eligible subject matter “skyrocketed.”¹⁶⁰ Once it became clear that patent eligibility was going to become a more important issue in patent law, the institutions deciding the issue did not take the opportunity to fill in what was a really large void, based on decades where subject matter eligibility was simply not considered. The flood of cases that have followed each of the Supreme Court’s opinions did not answer the questions that were already at issue in these cases; they simply left a larger pool of questions to be answered. Where is the line between discovery and invention? Are algorithms all ineligible abstract ideas? What is the relationship between preemption and patent eligibility? What is the relationship between patent eligibility and the remaining

157. See *Graham v. John Deere Co.*, 383 U.S. 1, 5–6 (1966).

158. See Shai Jalfin, *6 Years Later: The Effects of the Mayo Decision on Diagnostic Methods*, IP WATCHDOG (July 19, 2018), <https://www.ipwatchdog.com/2018/07/19/6-years-later-effects-mayo-decision-diagnostic-methods> (differentiating *Mayo* and its aftermath from the precedent set in 1981 by *Diamond v. Diehr* and noting that in the six years since *Mayo*, method patents are frequently and successfully challenged).

159. The Author still remembers her shocked reaction to the Federal Circuit’s opinion in *In re Nuijten*, 500 F.3d 1346, 1355–57 (Fed. Cir. 2007), where the Federal Circuit held an invention to be ineligible subject matter under § 101. Other commentators similarly look backwards on this case. See, e.g., Gene Quinn, *Remembering Nuijten and Comisky [sic] 5 Years Later*, IP WATCHDOG (Sept. 19, 2012), <http://www.ipwatchdog.com/2012/09/19/remembering-nuijten-and-comisky-5-years-later>.

160. See Lefstin et al., *supra* note 90, at 561.

requirements of patentability? What exactly is encompassed by those judicially created exceptions: laws of nature, natural phenomena, and abstract ideas? Moreover, since nearly all inventions are based in some respect on these judicially created exceptions, where is the line between those and patent-eligible advancements?¹⁶¹

Part of the problem is that various courts have specifically declined to answer these questions, leaving the doctrine undeveloped. The Supreme Court bears the greatest responsibility for passing the buck in these cases, as it has purposefully avoided answering the most basic of these questions. For example, in the *Alice* case, the Court stated that it “need not labor to delimit the precise contours of the ‘abstract ideas’ category in this case” because it was similar to the concept at issue in *Bilski*.¹⁶² Given the circumstances where the Court (and nearly everyone else) believes the doctrine to be incomprehensible and difficult to apply, it is unthinkable for the Court to dodge the question.

Further adding to the confusion is the fact that other developed countries, which previously held stricter limitations on what types of inventions could be patented, are now significantly more generous on patent-eligible subject matter than the United States.¹⁶³ Because of this, the various institutions that decide subject matter eligibility cannot draw on the precedent from these other countries as guidance. With no guidance from the Supreme Court on the many open questions and very few avenues for seeking direction from elsewhere, the doctrine of patent-eligible subject matter remains woefully undeveloped.

Third, the institutions that decide patent-eligible subject matter, as well as the parties that appear before these institutions, are taking advantage of the undeveloped law to misuse the doctrine. This misuse of the law then leads to more confusion and continues to obfuscate, rather than illuminate the doctrine, as is so clearly needed. The misuse of the law comes in two main activities: claim-drafting gymnastics and using patent law as a sword.

Claim-drafting gymnastics refers to efforts by patent attorneys to draft claims in patent applications that will either satisfy the two-part test for subject matter eligibility or, more preferable, avoid a subject

161. *See id.*

162. *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 221 (2014) (stating also that “[b]oth [*Alice* and *Bilski*] are squarely within the realm of ‘abstract ideas’ as [the Court has] used that term”).

163. *See Madigan & Mossoff, supra* note 10, at 957–58 (identifying inventions that were rejected in the United States as lacking patent-eligible subject matter but allowed in patent systems in China and the European Union).

matter eligibility analysis altogether. Innovative firms are finding it more difficult to obtain patents under the current patent-eligible subject matter test, and thus claim drafting is becoming increasingly expensive as patent attorneys look for strategic and creative ways to cover the clients' important inventions.¹⁶⁴ But while creative claim drafting may make for happy clients, engaging in claim-drafting gymnastics to avoid eligibility determinations ends up harming patent law on two fronts. First, the cleverly drafted claims may end up looking nothing like what is traditionally expected for inventions of that type, which defeats some of the notice functionality of patent claims. Second, by avoiding the inquiry into patent eligibility, these claims actually rob the doctrine of some of the nuanced analysis that is missing at present. As long as the institutions refrain from providing actual clarity about what constitutes patent-eligible subject matter, the doctrine is going to be based on analogies to previously decided cases. For inventions that a company thinks are innovative and important enough to spend additional resources to patent (using claim-drafting gymnastics), it would be more useful for innovation considered broadly for these institutions to actually reason, decide, and explain subject matter eligibility.

Both institutions and parties are also using patent law, and particularly patent-eligible subject matter, as a sword. The idea here is that rather than viewing patent law as a means to protect innovative technology and encourage inventive activity, patent law is being used to thwart companies engaging in these behaviors. For example, firms that do not rely on patent protection and instead use other firms' innovative technology (either lawfully under license or unlawfully as infringers) have been using patent eligible subject matter to invalidate patents covering that technology.¹⁶⁵ The uncertainty of the doctrine makes it difficult for innovative firms to defend their issued patents,

164. See Gene Quinn, *Why Does it Cost so Much to Prepare Patent Applications?*, IP WATCHDOG (May 7, 2016), <http://www.ipwatchdog.com/2016/05/07/why-cost-so-much-patent-application> (noting part of the reason behind increased costs in patent claim drafting is because Supreme Court precedent regarding subject matter eligibility has resulted in patents becoming easier to challenge).

165. See, e.g., *Praxair Distrib., Inc. v. Mallinckrodt Hosp. Prods. IP Ltd.*, 890 F.3d 1024, 1037 (Fed. Cir. 2018) (holding that patents directed to methods of distributing nitric oxide for pharmaceutical applications were not patentable because they described procedures not functionally related to the substrate on which the printed matter was applied); *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322, 1324 (Fed. Cir. 2017) (finding a patent for coding and decoding image data an abstract idea rendering the patent ineligible); *In re Brown*, 645 F. App'x 1014, 1015 (Fed. Cir. 2016) (per curiam) (holding that a method of cutting hair is not patent-eligible subject matter).

while the reasonable chance that a patent may be invalidated makes this option attractive to technology users. Why take a license when there is a very good probability that the patent will be deemed invalid? Similarly, the institutions that decide patent-eligible subject matter are perversely using the doctrine as a trap door or an early exit, rather than a porous filter as it was intended. That is, rather than serving as a low threshold or gateway to other patentability inquiries, such as novelty or non-obviousness, courts and the Patent Office are using patent-eligible subject matter early and often to avoid having to get to the more difficult and more resource intensive inquiries into the other patentability requirements.

Because technology users are using the doctrine as a sword to have patents invalidated, it is common to see patent-eligible subject matter raised early in a lawsuit—as early as a motion to dismiss before discovery.¹⁶⁶ The institutions, in return, are perfectly happy to end a patent lawsuit or invalidation proceeding, at this early stage. Some commentators laud this use, stating that patent-eligible subject matter “serve[s] an important *procedural* function by providing a mechanism to quickly and cheaply knock out patents that are plainly invalid.”¹⁶⁷ These frequent, and often very quick, invalidations of patents (or rejections of patent applications) at an early stage of inquiry is also contributing to the lack of development of the doctrine as well as the resulting chaos.

The state of the patent-eligible subject matter doctrine is unlikely to course correct without intervention in some form because, first, it has been developed without regard to history, purpose, or other remaining provisions of the Patent Act and, second, because the institutions and parties responsible are misusing the doctrine in ways that sustain its underdeveloped nature. Put simply, without fixing patent-eligible subject matter and the resulting chaos caused by the doctrine, innovative firms making research and development investment decisions may be unlikely to proceed in the shadow of this

166. See *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1368 (Fed. Cir. 2018) (“Patent eligibility has in many cases been resolved on motions to dismiss or summary judgment. Nothing in this decision should be viewed as casting doubt on the propriety of those cases.”); see also Ana Friedman, *Section 101 Motions to Dismiss Still Alive in District Courts*, IP WATCHDOG (Dec. 14, 2018), <https://www.ipwatchdog.com/2018/12/14/section-101-motions-dismiss> (surveying recent district court decisions granting Rule 12(b)(6) motions to dismiss under § 101).

167. See Gugliuzza & Lemley, *supra* note 68, at 777.

uncertainty.¹⁶⁸ In this environment, is it any wonder the United States is failing on the innovation front? Something has to change.

II. REFORM EFFORTS TO FIX PATENT-ELIGIBLE SUBJECT MATTER WILL NOT SUCCEED

Rarely has any doctrine brought together diverse stakeholders in patent law to stand unified on any given issue. Patent-eligible subject matter is one of those unusual times, as stakeholders of all stripes are arguing for reform.¹⁶⁹ A number of high profile stakeholders, including the American Bar Association (ABA), the Intellectual Property Owners Association (IPO), and the American Intellectual Property Law Association (AIPLA), have offered various reform proposals for patent-eligible subject matter, as have other commentators including David Kappos, former director of the Patent Office. While all of these groups have definitive views on how patent-eligible subject matter should be fixed, very few have focused on whether their proposals will advance innovation in a meaningful way. More problematic is that, as noted above, successful reform requires consideration of what institution or institutions are best situated to develop and apply the doctrine. While these various reform efforts have definite suggestions of how to improve patent-eligible subject matter, none has discussed which institution should do so.

A. American Bar Association

The ABA, and specifically the Intellectual Property Law section (ABA-IPL), submitted a letter in response to the Patent Office's

168. See Davis, *supra* note 4 (sharing David Kappos' remarks at the American Bar Association Intellectual Property Law Conference, where Kappos stated that companies have halted investment into medical diagnostic research and development, and one company even removed "diagnostics" from its name to comfort investors).

169. To be fair, not everyone wants to "fix" patent-eligible subject matter. For example, the Electronic Freedom Foundation, a notably anti-patent organization, indicated that no changes should be made to the patent-eligible subject matter regime, so as to eliminate vague or overbroad patents that hinder innovation. See *Patents: The Patent System is Broken*, ELECTRONIC FRONTIER FOUND., <https://www.eff.org/issues/patents> (last visited May 20, 2019); see also Adi Kamdar et al., *Defend Innovation: How to Fix Our Broken Patent System*, ELECTRONIC FRONTIER FOUND. 1 (2015), <https://www.eff.org/files/2015/02/10/eff-defend-innovation.pdf>. Similarly, the Internet Association and the Computer and Communications Industry Association have advocated for maintaining the status quo. See WILLIAM G. JENKS, COMMENTS OF THE INTERNET ASSOCIATION AND THE COMPUTER & COMMUNICATIONS INDUSTRY ASSOCIATION REGARDING THE LEGAL CONTOURS OF SUBJECT MATTER ELIGIBILITY (PART 2) 1, 2 (2017).

request for comments on patent-eligible subject matter.¹⁷⁰ The ABA is “the largest voluntary professional association in the world” and claims the ABA-IPL section is “the largest intellectual property law association with approximately 20,000 members.”¹⁷¹ The section “advance[s] the development of intellectual property laws, and their fair and just administration” and claims to serve as “the forum for rich perspectives and balanced insight on the full spectrum of IP law.”¹⁷²

The ABA’s proposal begins from the premise that the Supreme Court overreaches with its two-step test and improperly eliminates patent protection for inventions that are practical applications of otherwise ineligible laws of nature or abstract ideas.¹⁷³ The ABA’s proposal tries to rein in the Supreme Court, limiting ineligible subject matter to cases where the claims would preempt other parties’ uses of all practical applications of the particular law of nature or abstract idea.¹⁷⁴ Although some court opinions on patent-eligible subject matter nod to preemption, the ABA’s proposal makes it explicit. The ABA Resolution provides that a claim

may be denied eligibility under this section 101 on the ground that the scope of the exclusive rights under such a claim would *preempt the use by others of all practical applications of a law of nature, natural phenomenon, or abstract idea*. Patent eligibility . . . shall not be negated when a *practical application* of a law of nature, natural phenomenon, or abstract idea is the subject matter of the claims upon consideration of those claims as a whole, whereby each and every limitation of the claims shall be fully considered and none ignored.¹⁷⁵

The ABA’s proposal makes some positive changes to patent-eligible subject matter. It would codify the long-standing judicially-created exceptions for laws of nature, natural phenomenon, and abstract ideas.

170. See Letter from Donna P. Suchy, Section Chair, ABA-IPL, to the Honorable Michelle K. Lee, Under Sec’y of Commerce for Intellectual Prop. and Dir. of the U.S. Pat. & Trademark Off. (Mar. 28, 2017), <https://patentdocs.typepad.com/files/letter-5.pdf> (responding to Patent Office’s invitation for written comments listed at 81 Fed. Reg. 71485. (Oct. 17, 2016)).

171. See *id.*

172. See *About Us*, ABA-IPL, https://www.americanbar.org/groups/intellectual_property_law/about-us (last visited May 20, 2019).

173. See Letter from Donna P. Suchy, *supra* note 170 (arguing that recent Supreme Court decisions have overturned the careful balance prior decisions struck “between preventing the patenting of pure laws of nature, natural phenomena, or abstract ideas themselves, while authorizing the patenting of their application in particular fields”).

174. See *id.*

175. *Id.* (emphasis added).

It specifically requires analysis of the invention as a whole, rather than parsing and considering individual claim elements as either ineligible subject matter, conventional activities, or inventive concepts.¹⁷⁶ Finally, the ABA's proposal moves the analysis away from importing questions of novelty and non-obviousness into patent-eligible subject matter, turning the inquiry on preemption instead.¹⁷⁷ While each of these changes would represent a shift in the right direction, many of the same issues would still arise under the ABA's proposed reforms, such as what exactly constitutes an abstract idea and when and how does estoppel apply. Additionally, the ABA's proposal introduces a new area of under-developed (or undeveloped) law that will simply continue the level of confusion about the doctrine: what constitutes and how do we assess preemption?¹⁷⁸

B. *Intellectual Property Owners Association*

The IPO is "a trade association for owners of patents, trademarks, copyrights and trade secrets" in "all industries and all fields of technology."¹⁷⁹ Among their other priorities, IPO "advocates for effective and affordable IP ownership rights."¹⁸⁰ Not surprisingly, IPO is generally viewed as more pro-patent rights than the ABA-IPL, which holds itself out as balanced.

The IPO's proposal suggests adding additional paragraphs to § 101. These paragraphs include a new subsection (b) which states: "A claimed invention is ineligible . . . if and only if the claimed invention as a whole . . . exists in nature independently of and prior to any human activity, or exists solely in the human mind" and a new subsection (c) which exhorts that subject matter eligibility under § 101 should be determined independent of other requirements of patentability in §§ 102, 103, and 112.¹⁸¹

The IPO proposal has some features in common with the ABA proposal discussed above. For example, it suggests that the courts should focus on the invention as a whole, rather than dissecting it into

176. *See id.* at 3.

177. *See id.*

178. *See id.*

179. *About IPO*, INTELL. PROP. OWNERS ASS'N, <https://www.ipo.org/index.php/about-ipo> (last visited May 20, 2019).

180. *Id.*

181. INTELL. PROP. OWNERS ASS'N, PROPOSED AMENDMENTS TO PATENT ELIGIBLE SUBJECT MATTER UNDER 35 U.S.C. § 101 1 (Feb. 7, 2017), https://www.ipo.org/wp-content/uploads/2017/02/20170207_IPO-101-TF-Proposed-Amendments-and-Report.pdf.

the ineligible component (the abstract idea, law of nature, or natural phenomenon) and the rest of the claim.¹⁸² However, the IPO proposal does not hinge its analysis on preemption. Instead, it tries to flesh out what exactly is problematic about laws of nature, natural phenomena, and abstract ideas and uses that to frame ineligible subject matter. This makes some sense because the concern about allowing patents on laws of nature or natural phenomena is that the invention exists without any sort of human intervention or activity—that is, it was not truly invented. Similarly, with respect to abstract ideas, the concern is that a patent may cover something that is merely in the human mind—difficult to demarcate and enforce. The comments that accompany the IPO proposal highlight these provisions requiring some level of human effort and an aspect of physicality,¹⁸³ thus addressing the concerns that underlie the judicially created exceptions. While it is laudable to statutorily codify the judicial exceptions to patent-eligible subject matter, the IPO proposal does not fully ameliorate the confusion that abounds in this space.

C. *American Intellectual Property Law Association*

The American Intellectual Property Law Association (AIPLA) is “a national bar association constituted primarily of lawyers in private and corporate practice, in government service, and in the academic community” covering all aspects of intellectual property.¹⁸⁴ AIPLA is “an innovator, powerful advocate, and visible global leader in intellectual property law.”¹⁸⁵ Because AIPLA represents both intellectual property owners and users,¹⁸⁶ it is generally considered more IP-neutral than IPO, for example. AIPLA suggests that the problem with patent-eligible subject matter determinations is with the “unnecessary and overreaching” judicially-created exceptions to the plain language of § 101.¹⁸⁷

182. *See id.*

183. *See* Lefstin et al., *supra* note 90, at 563.

184. AM. INTELL. PROP. L. ASS’N, ANNUAL REPORT (2017) [hereinafter ANNUAL REPORT], https://www.aipla.org/docs/default-source/annual-reports/aipla_annualreport-2016_17.pdf.

185. *Who We Are*, AM. INTELL. PROP. L. ASS’N, <https://www.aipla.org/about/about-us> (last visited May 20, 2019).

186. *See* ANNUAL REPORT, *supra* note 184.

187. *See* Letter from Mark L. Whitaker, President, Am. Intell. Prop. L. Ass’n to the Honorable Michelle K. Lee, Under Sec’y of Commerce for Intell. Prop. & Dir. of the U.S. Patent & Trademark Office (Jan. 18, 2017), https://www.uspto.gov/sites/default/files/documents/comments_aipla_jan182017.pdf.

In May 2018, AIPLA and IPO united to issue a joint proposal on patent-eligible subject matter.¹⁸⁸ The joint proposal retains the original text of § 101, indicates that the sole exceptions to patent-eligible subject matter are if the invention exists in nature independent of human activity or is performed solely in the human mind, and then it tries to shift patent-eligible subject matter away from the other requirements of patentability, but noting that eligibility should not be based on other statutory sections (i.e., §§ 102, 103, and 112) or whether there is an inventive concept.¹⁸⁹ For all of the reasons discussed above for the separate proposals, this joint proposal is also problematic.

D. Other Proposals

Other commentators have suggested patent-eligible subject matter in the United States be harmonized with other major patent systems, such as the European Patent Convention. The European Patent Convention includes a laundry list of patent eligible and ineligible inventions.¹⁹⁰ While an enumerated list like this would offer a greater degree of certainty, it would require regular updating and may not adequately protect new and emerging technology.¹⁹¹ For example, Paragraph 2 of Article 52 of the European Patent Convention states that “(a) discoveries, scientific theories and mathematical methods; (b) aesthetic creations; (c) schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers; [and] (d) presentations of information” “shall not be regarded as inventions.”¹⁹² Paragraph 3, however, notes that “Paragraph 2 shall exclude the patentability of the subject-matter or activities referred to therein only to the extent to which a . . . patent application or . . . patent relates to such subject-matter or activities as such.”¹⁹³ Similar proposals include a technological arts test, which would ask whether the claimed invention contributes to the

188. See *Joint AIPLA-IPO Proposal on Patent Eligibility*, AM. INTELL. PROP. L. (last visited May 20, 2019).

189. See *id.*

190. See Convention on the Grant of European Patents art. 52, Oct. 5, 1973, 1065 U.N.T.S. 254, [http://documents.epo.org/projects/babylon/eponet.nsf/0/029F2DA107DD667FC125825F005311DA/\\$File/EPC_16th_edition_2016_en.pdf](http://documents.epo.org/projects/babylon/eponet.nsf/0/029F2DA107DD667FC125825F005311DA/$File/EPC_16th_edition_2016_en.pdf) [hereinafter *European Patent Convention*].

191. See, e.g., Taylor, *Amending Patent Eligibility*, *supra* note 11, at 2198–201.

192. See *European Patent Convention*, *supra* note 190, art. 52(2).

193. See *id.* art. 52(3).

technological arts, solves a technological problem, or otherwise falls within the technological arts.¹⁹⁴

Influential individuals in the patent field have also offered more radical suggestions to reform patent-eligible subject matter. For example, David Kappos, former director of the Patent Office from 2009–2013, has argued for a different type of reform, suggesting that § 101 simply be abolished: “It’s time to abolish Section 101, and the reason I say that is that Europe doesn’t have 101 and Asia doesn’t have 101 and they seem to be doing just fine in constraining patent-eligible subject matter.”¹⁹⁵ Robert Sachs, original author of the Bilski Blog and long-time Silicon Valley patent attorney, has similarly argued for abolishing § 101, or in the alternative only considering patent-eligible subject matter after the other patentability requirements have been met.¹⁹⁶

Alternatively, Kappos and other intellectual property heavy-hitters have suggested Congress should step in to fix the “total chaos” caused by the Supreme Court’s patent-eligible subject matter cases.¹⁹⁷ However, a congressional solution that enumerates patent-eligible (or patent-ineligible) inventions is likely to be fraught with constant suggestions for amendments to add or subtract from the list,¹⁹⁸ similar to the problem identified above with respect to the European Patent Convention’s list of non-inventions. Although it would be difficult to design a legislative solution that appeases the variety of stakeholders involved, Kappos suggests that this would still be better than the current situation.¹⁹⁹

None of the proposals described above will solve the problem of patent-eligible subject matter. Some suggestions fail to address already known areas of confusion in the existing law. For example, some of the proposals leave the judicially created exceptions of abstract ideas, laws of nature, and natural phenomena intact or try to codify these

194. See Lefstin et al., *supra* note 90, at 564–65.

195. Davis, *supra* note 7.

196. See Robert Sachs, *Twenty-Two Ways Congress Can save Section 101*, BILSKI BLOG (Feb. 12, 2015), www.bilskiblog.com/blog/2015/02/twenty-two-ways-congress-can-save-section-101.html. Sachs also has advocated for a return to the useful, concrete, and tangible result test instituted by the Federal Circuit in the late 1990s. *Id.*

197. See Davis, *supra* note 4. Kappos argued that the Supreme Court’s decisions “lack clear guidelines,” necessitating a legislative solution. *Id.* Marian Underweiser, IBM Corp.’s senior counsel for intellectual property law, policy, and strategy, suggested that Congress may need to step in “[i]f we’ve decided the case law is not going anywhere and we can’t wait for the Supreme Court to fix it, yes, we’re going to have to go to Congress . . . [m]any of us have reached the conclusion that we have no choice.” *Id.*

198. See *id.* (paraphrasing Robert Armitage, former Eli Lilly & Co. general counsel).

199. See *id.*

exceptions in other, but not more definitive, language, like “existing in nature” or existing “solely in the human mind.” These proposals fail to flesh out questions about what these terms mean and where the line is, for example, between an ineligible abstract idea and an eligible invention that includes an abstract idea. Other proposals introduce new areas of confusion, such as introducing the notion of “preemption.”

All of these proposals are based on the notion that Congress must step in to fix patent-eligible subject matter. Even if Congress had the appetite to do so, which is never a guarantee with all of its other concerns, none of these proposals enacted by Congress would yield a complete solution to the problem of patent-eligible subject matter. A great number of questions would still exist after any of these proposals were adopted and none of the proposals suggest how these questions might be answered. Without addressing this issue, and specifically which institution or institutions might be the correct one to fully develop the doctrine of patent-eligible subject matter, no proposal is actually going to fix the mess. This Article seeks to provide a complete answer.

III. A RADICAL SOLUTION: TAKE PATENT ELIGIBLE SUBJECT MATTER AWAY FROM THE PATENT OFFICE

The doctrine of patent-eligible subject matter is clearly a mess. Multiple institutions make decisions about subject matter eligibility at a variety of different stages during a patent’s life. The situation is complex, and unfortunately, rather than solving the problem, most of the proposed solutions to fix patent-eligible subject matter are simply restatements of the current test or, perhaps worse, add additional terms and concepts that no one understands. To overcome what seems like an intractable problem, it is time to propose a radical solution. This Article proposes that patent-eligible subject matter determinations should not be undertaken by the Patent Office.²⁰⁰ To state this proposition more clearly, before a patent is issued, the question of patent-eligible subject matter should not be considered by the examiner or the PTAB—a patent should be granted so long as it meets the other requirements of patentability, including utility, novelty, non-obviousness, and adequate disclosure. After a patent is issued, patent-eligible subject matter should not be the basis for any

200. For an entirely contrary viewpoint on this matter, see John M. Golden, *Patentable Subject Matter and Institutional Choice*, 89 TEX. L. REV. 1041, 1041 (2011) (arguing that patent-eligible subject matter decisions should be “primarily entrusted to the [Patent Office], rather than, as it is now, to the courts”).

post-grant review. Instead, to the extent that patent-eligible subject matter is at issue, the question must be taken to the courts.

Although this proposal may seem backwards, there are principles in both institutional design and administrative law that support it. More importantly, there are a number of significant advantages that could be realized if the courts, and not the Patent Office, are deciding patent-eligible subject matter. Additionally, recent comments given by the Director Iancu,²⁰¹ demonstrate that this proposal could be fairly easily implemented. Each of these topics—institutional design bases, administrative law support, ancillary benefits, and operationalization of this proposal—are discussed below.

A. *Institutional Design*

Institutional design, broadly, is a framework for understanding institutions and the roles they play.²⁰² Like most aspects of the legal system, the institutional design surrounding patent-eligible subject matter arose in a rather ad hoc fashion, as the courts and the Patent Office took the lead in various respects with respect to the doctrine.²⁰³ However, in focusing on successful reform, it makes sense to consider institutional design principles and whether the system is meeting its goals in the face of the variety of inputs.²⁰⁴ This section first discusses goals for the patent system in analyzing patent-eligible subject matter and then considers a variety of metrics to assess what institution or institutions would be best suited to achieve the goals described.

1. *Goals for a patent-eligible subject matter system*

To determine which institution or institutions are best suited for any particular purpose, it is important to specify some sort of baseline or

201. See *infra* notes 303–06 (detailing Director Iancu’s remarks at the Intellectual Property Owners Association 46th Annual Meeting).

202. See, e.g., Robert E. Goodin, *Institutions and Their Design*, in *THE THEORY OF INSTITUTIONAL DESIGN* 1, 2 (Robert E. Goodin ed., 1996).

203. See Max Stul Oppenheimer, *Defending Breakthrough Innovation: The History and Future of State Patent Law*, 20 *UCLA J.L. & TECH.* 1, 11 (2016); see also William Lucy, *Persons in Law*, 29 *OXFORD J. LEGAL STUD.* 787, 788 (2009) (“In common law (and perhaps other) legal systems, features of institutional design are just as likely to have evolved piecemeal as to be the products of advanced planning.”).

204. See Laura K. Abel, *The Role of Speech Regarding Constraints on Attorney Performance: An Institutional Design Analysis*, 19 *GEO. J. ON POVERTY L. & POL’Y* 181, 185 (2012) (citing Goodin, *supra* note 202).

goal.²⁰⁵ Because the patent system exists to promote the “Progress of Science and the useful Arts,”²⁰⁶ i.e., promote innovation, the normative goal for the patent system, and particularly patent eligibility, must be innovation.²⁰⁷ Or, more specific to this Article, what institution can best address patent-eligible subject matter to promote or increase innovation? Technological innovation, the type of innovation at the heart of the patent system involves the invention of a new product or process, as well as “putting the invention into productive use.”²⁰⁸ It is this second step, putting the invention to productive use, which leads to societally desired long-term improvements in growth and well-being across a wide range of metrics, including economic growth.²⁰⁹ Innovation policy would involve the preferencing of systems and rules that encourage the development and deployment of technological inventions to the benefit of society.²¹⁰

While defining innovation may be complicated, a more difficult question may be how we measure innovation. Measuring long-term improvements in growth and well-being is not an easy task. Even measuring the amount of development and deployment of technological inventions is tricky, especially because innovation is often a time-consuming endeavor and because inventions often build upon earlier inventions that were helpful to advance the technology but may not have been readily or successfully deployed.²¹¹ In the absence of a concrete measure of innovation, another angle would be to look at what types of things help or hinder innovation. For example, if patents are intended to incentivize innovation, patent policy must

205. See Einer R. Elhauge, *Does Interest Group Theory Justify More Intrusive Judicial Review?*, 101 YALE L.J. 31, 48–50 (1991) (arguing that institutional analysis must start from a normative baseline).

206. See U.S. CONST. art. I, § 8, cl. 8.

207. See *I/P Engine, Inc. v. AOL Inc.*, 576 F. App'x 982, 996 (Fed. Cir. 2014) (per curiam) (“[T]he constitutional grant of authority ‘[t]o promote the Progress of Science and useful Arts’ . . . ‘is both a grant of power and a limitation’ . . . Section 101’s vital role . . . is to insure that patent protection promotes, rather than impedes, scientific progress and technological innovation.” (internal citations omitted)).

208. See Stuart Minor Benjamin & Arti K. Rai, *Fixing Innovation Policy: A Structural Perspective*, 77 GEO. WASH. L. REV. 1, 8 (2008).

209. See *id.* (“A major goal of any society should be to increase people’s well-being or welfare, broadly defined.”).

210. See *id.* at 9.

211. See *id.* at 10–11.

pay attention to the “ever-shifting reality of the scientific and technical challenges faced by innovators.”²¹²

It would be ideal if there were concrete, agreed-upon goals by which to assess institutional designs for patent-eligible subject matter. Given the complexities of patent law generally, and the convolution of the various institutions that administer patent law, it is surprising that aspects of institutional design are not more frequently discussed by patent law scholars. The institutional design of the Federal Circuit has been examined,²¹³ as has the deference between the Patent Office and the Federal Circuit.²¹⁴ However, the literature does not fully explore the relationship between the various institutions concerning broader legal issues.²¹⁵

The goals for “fixing” patent-eligible subject matter have, unfortunately, not been clearly elucidated. Certainly, having a test that is not regularly denounced for its difficulty to apply would be a good starting point, but does that necessarily incentivize innovation? The statutory categories—processes, machines, manufactures, and compositions of matter—are probably helpful because they set patentable inventions apart from creations that do not qualify for patents, such as copyrighted works or trademarks. The judicially created exceptions—law of nature, natural phenomena, and abstract idea—are also probably useful, because patents on gravity, elm trees, or long division would not enhance innovation.

What else can be said about patent-eligible subject matter as far as it promotes the progress of science and the useful arts? This Article suggests three primary goals to promote innovation, each focusing on different stakeholders within the patent ecosystem. First, innovative companies need to be able to obtain reliable and effective patent rights

212. See Arti K. Rai, *Engaging Facts and Policy: A Multi-Institutional Approach to Patent System Reform*, 103 COLUM. L. REV. 1035, 1046 (2003).

213. See, e.g., Rochelle Cooper Dreyfuss, *The Federal Circuit: A Continuing Experiment in Specialization*, 54 CASE W. RES. L. REV. 769, 797–98 (2004) (noting the tension between having a specialized appellate bench and the degree of fact-finding deference owed in each particular case); R. Polk Wagner & Lee Petherbridge, *Is the Federal Circuit Succeeding? An Empirical Assessment of Judicial Performance*, 152 U. PA. L. REV. 1105, 1114–17 (2004) (concluding that the Federal Circuit has successfully manifested Congress’s desire for a central manager for patent law).

214. See generally Melissa F. Wasserman, *The Changing Guard of Patent Law: Chevron Deference for the PTO*, 54 WM. & MARY L. REV. 1959, 1959–60 (2013).

215. See, e.g., Wasserman, *supra* note 80, at 385 (noting that “the existing literature does not fully explore how the institutional design of the [Patent Office] and its relationship with the Federal Circuit affect the Agency’s official positions on substantive law”).

for their inventions. Second, the public needs to have access to the goods made possible when these companies commercialize these inventions. Third, future innovators need to have access to technological information made public through available goods and patent disclosures. With these three goals in mind, we can start to consider what institution or institutions may be best to assess patent-eligible subject matter.

2. *Metrics for assessing institutional design*

To promote innovation, the baseline goals of a system for patent-eligible subject matter may include (1) providing reliable and effective patent rights, (2) encouraging commercialization of inventions, and (3) fostering disclosure of technological information via the market and the patent system. Institutional design would thus consider which institution or institutions would make it more likely that these goals are achieved. Although there are a number of metrics that could be used to assess an institution's abilities, this Article focuses on four particular metrics: competencies, priorities, redundancies, and trust and respect. Based on these metrics, a strong case emerges that, to promote the goals associated with innovation as described above, patent-eligible subject matter decisions are best left to the courts.

a. *Competencies*

To determine which institutions are best suited for any given task, it is important to look at each institution's strengths, as well as the tasks we are seeking it to perform. The unique strength of the Patent Office is technological knowledge. As noted above, the examining corps is composed of scientists and engineers trained in patent law.²¹⁶ The PTAB is comprised of lawyers, many of whom were also trained in science or engineering.²¹⁷ PTAB judges are also generally considered experts in patent law.²¹⁸ Structural features of the Patent Office reflect and emphasize the technological focus of that institution, including the Patent Office's organization by technology type (technical art units),²¹⁹ an elaborate classification scheme, which sorts documents by

216. See ENGINEERS AND SCIENTISTS, *supra* note 77.

217. 35 U.S.C. § 6(a) (2012) ("The administrative patent judges shall be persons of competent legal knowledge and scientific ability . . .").

218. See Michael Goodman, *What's So Special About Patent Law?*, 26 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 797, 842 (2016).

219. See *Patent Technology Centers Management*, U.S. PAT. & TRADEMARK OFF., [https://www.uspto.gov/patent/contact-patents/patent-technology-centers-](https://www.uspto.gov/patent/contact-patents/patent-technology-centers)

technical field,²²⁰ and the requirement of technical training for attorneys who are admitted to the Patent Bar, allowing them to correspond with the Patent Office.²²¹

On the other hand, the courts are generally staffed by lawyers trained in law, most of whom are not trained in science or engineering. Some judges, particularly those at the Federal Circuit and district courts that see a lot of patent cases, purposefully hire clerks that are trained in science or engineering. Additionally, judges may have access to special masters or other expert sources with scientific backgrounds. While not scientists, judges are, however, experts in law and policy.

Given these areas of strength, it then becomes a question of what we are asking that institution to do. Many inquiries in patent law are driven by questions of fact or are mixed questions of law and fact. Factual issues in patent law are where the strengths of the Patent Office are critical. Take, for example, the fact question of novelty.²²² Determining whether a claimed invention is the same as a technology described in the prior art, such as in a previously published journal article, often requires an understanding of the technology involved. Questions of law based on underlying facts also tend to require technological inquiries.²²³

management (last visited May 20, 2019) (outlining the organizational structure of USPTO's patent management system).

220. See U.S. PAT. & TRADEMARK OFF., OVERVIEW OF THE U.S. PATENT CLASSIFICATION SYSTEM (USPC) I-1 (2012), <https://www.uspto.gov/sites/default/files/patents/resources/classification/overview.pdf> ("The USPC is a system for organizing all U.S. patent documents and many other technical documents into relatively small collections based on common subject matter.").

221. See U.S. PAT. & TRADEMARK OFF., GENERAL REQUIREMENTS BULLETIN FOR ADMISSION TO THE EXAMINATION FOR REGISTRATION TO PRACTICE IN PATENT CASES BEFORE THE UNITED STATES PATENT AND TRADEMARK OFFICE 4 (2018), https://www.uspto.gov/sites/default/files/documents/OED_GRB.pdf ("An applicant applying for the examination must demonstrate . . . that he or she possesses the scientific and technical training necessary to provide valuable service to patent applicants.").

222. See, e.g., Kevin Casey et al., *Standards of Appellate Review in the Federal Circuit: Substance and Semantics*, 11 FED. CIR. B.J. 279, 361–62 app. A (2002) (citing *Glaverbel Soci t  Anonym  & Fosbel, Inc. v. Northlake Mktg. & Supply, Inc.*, 45 F.3d 1550, 1554 (Fed. Cir. 1995)) ("Whether an invention meets the novelty requirement of 35 U.S.C. § 102 is a question of fact reviewed for clear error or substantial evidence.").

223. For example, consider the inquiry into non-obviousness. See *id.* at 363–64 (highlighting the fact questions that underlie the determination of non-obviousness).

Patent-eligible subject matter was long thought to be a pure question of law,²²⁴ which in part led to its rather enthusiastic use for invalidating patents.²²⁵ As a question of law, this task may fall more squarely in the competencies of the courts than the Patent Office. Recently, however, the Federal Circuit changed its stance on this long-held understanding that patent-eligible subject matter is a pure question of law. In *Berkheimer v. HP Inc.*,²²⁶ decided on February 8, 2018, the court acknowledged that patent eligibility “is a question of law which may contain disputes over underlying facts.”²²⁷ However, the underlying fact questions are not the essence of the patent-eligible subject matter inquiry. Instead, these fact questions go to the second prong of the *Alice* test: “Whether something is well-understood, routine, and conventional to a skilled artisan at the time of the patent is a factual determination.”²²⁸ While some commentators herald this opinion as making patent invalidation, especially at the early stage of litigation, more difficult,²²⁹ it does not change the fact that many patent-eligible subject matter decisions are generally driven by law, policy and preference choices, not the factual inquiry regarding the presence of routine or conventional technology.

Even with the recent introduction (or acknowledgement, at least) of a factual component of patent-eligible subject matter inquiries, it is true that not all facts are created equal. Some facts are “adjudicative facts” in that they “help the decision-maker establish what happened at a particular time and place.”²³⁰ Other facts are “legislative facts” that “help a decision-maker decide questions of law and policy.”²³¹ Most questions related to patentability are adjudicative facts—facts where

224. See *id.* at 361 app. A (citing *AT&T Corp. v. Excel Commc'ns, Inc.* 172 F.3d 1352, 1355 (Fed. Cir. 1999)) (“[S]tatutory subject matter under [§ 101] is a question of law reviewed *de novo*.”).

225. See *supra* Section I.C.

226. 881 F.3d 1360 (Fed. Cir. 2018).

227. See *id.* at 1368.

228. See *id.* at 1369.

229. See, e.g., Gene Quinn, *Berkheimer v. HP: Federal Circuit Says Patent Eligibility a Factual Determination Inappropriate for Summary Judgment*, IP WATCHDOG (Feb. 16, 2018), <http://www.ipwatchdog.com/2018/02/16/berkheimer-hp-eligibility-factual-determination> (“*Berkheimer* is also equally important . . . because it stands for the proposition that questions of fact can and do underline patent eligibility determinations. This is important . . . because it will make summary judgment more difficult for infringers . . .”).

230. Golden, *supra* note 200, at 1055 (quoting RICHARD J. PIERCE JR. ET AL., ADMINISTRATIVE LAW AND PROCESS § 3.6.1 (3d ed. 1999)).

231. *Id.*

the law will depend on questions of science or technology.²³² Patent-eligible subject matter, on the other hand, is nearly all legislative fact.²³³ At bottom, the real questions and open issues behind patent-eligible subject matter are questions of law and policy—what exactly is meant by the statutory categories, the judicially-created exceptions, and where the lines are drawn between them. While inquiries regarding science and technology are squarely within the wheelhouse of the Patent Office, matters of law and policy remain the forte of the courts.

The questions that exist about patent-eligible subject matter are generally related to two themes—what exactly are the judicially created exceptions and what is the difference between an application of these exceptions and a claim directed to the exception itself. The first question would seem to be a matter of law—and specifically, statutory interpretation, a particular competency for courts. Moreover, the courts are the instigators of the exceptions in the first place; the courts are the correct institution to tell us what they meant. The second question would seem to be a matter of law and policy—how to best interpret § 101 to effectuate the constitutional requirement of promoting innovation. Courts regularly have to interpret statutes to satisfy constitutional provisions. As noted above, this requires that patent-eligible subject matter focus on effective and reliable patent rights, commercialization of technology, and disclosure in the form of goods and patent documents. None of these issues is squarely based in technology; rather, they are more general questions of law and policy.

While questions of law are best resolved by courts, to the extent that patent-eligible subject matter is also a matter of policy, there can still be disagreement over which institution is best suited for addressing the question. Some scholars have argued that the Patent Office may have particular policy-making strengths over the courts. For example, Arti Rai points out that the Patent Office, in regulating *ex ante*, may be better able to keep a rein on expanding patent rights.²³⁴ This begs the question, in the instant case, of whether reining in expanded patent rights using patent-eligible subject matter promotes innovation. Given

232. *See id.* at 1055–56 (“Inquiries into novelty and nonobviousness typically require painstaking review of prior-art materials that are specifically related to the claimed invention.”).

233. *See id.* at 1058 (“[S]ubject-matter eligibility does not require anything distinctive or specific to the claimed invention. Instead, subject-matter eligibility requires that the claimed invention belong to one or more broadly drawn categories of things deemed potentially patentable.”).

234. *See* Arti K. Rai, *Patent Validity Across the Executive Branch: Ex Ante Foundations for Policy Development*, 61 DUKE L.J. 1237, 1264–65 (2012).

the current state of affairs, it seems the opposite is true, as the overzealous use of patent-eligible subject matter to quash patent applications and issued patents is harming innovation. Jonathan Masur argues that the Patent Office has expertise and institutional resources that the federal courts simply do not have, including “enormous quantities of useful information” that the Patent Office produces.²³⁵ As interesting and wide-ranging as this data is, it is not clear that it is directly related to innovation policy. In fact, although the Patent Office has, as Masur points out, lots of data, unlike other agencies, such as the Federal Trade Commission (FTC) and the Department of Justice Antitrust Division, the Patent Office does not have a rich tradition of economic analysis.²³⁶ This has been changing, however, and the Office of the Chief Economist at the Patent Office has been doing much good work.²³⁷ It is not clear, however, that this data is designed to uncover policy regarding innovation with respect to patent eligibility. Finally, Michael Burstein argues that greater policy decision making by the Patent Office could avoid piecemeal decision-making.²³⁸ In the current instance, however, patent-eligible subject matter as done by the Patent Office is occurring piecemeal and is adding to the bulk of confusion surrounding the doctrine. Thus, although it seems to make sense to argue that this criterion weighs in favor of the Patent Office having the most apt competency, the facts may not be true in application.

Further, the open issues of patent-eligible subject matter are mixed questions of law and policy. While the modern administrative state contemplates specifically that policymaking should be placed in the hands of agencies,²³⁹ the open questions of law compel the decision to be removed from agency determinations and left instead with the institutions that are best suited to interpret the law. As discussed below, the unlimited breadth of the statute and the fact that there has been no additional guidance about how the law should be understood or interpreted actually weighs against giving the issue to an agency to flesh out.

235. Jonathan S. Masur, *Regulating Patents*, in SUPREME COURT REVIEW 275, 279 (Dennis J. Hutchinson et al. eds., 2011).

236. See Rai, *supra* note 212, at 1126.

237. A variety of publications and datasets can be found on the Patent Office’s website on the Office of the Chief Economist’s page. See *Office of the Chief Economist*, U.S. PAT. & TRADEMARK OFF., <https://www.uspto.gov/about-us/organizational-offices/office-policy-and-international-affairs/office-chief-economist> (last visited May 20, 2019).

238. Michael J. Burstein, *Rules for Patents*, 52 WM. & MARY L. REV. 1747, 1748 (2011).

239. See Rai, *supra* note 212, at 1131.

Even assuming *arguendo* that patent-eligible subject matter is an issue of science and technology instead of law and policy, it is not clear that the Patent Office is the best institution to develop its contours. The argument that patent examiners are better suited because of their technical expertise may also be an overstatement. First, there is no requirement that patent examiners remain current in their area of technology. Second, even if an examiner has an advanced degree in a particular field, that examiner will be examining patent applications that fall outside of his area of expertise. The more education an examiner has, the more likely it is that he will handle patent applications outside of his strengths, albeit in the same technology field; perhaps the less-educated, newest examiners are the best technically suited to examine patent applications, but does that make them good at law and policy? Furthermore, particularly for the types of patent applications that fall within the abstract idea section, these are often business methods; but business methods is not a college degree. The examiners that work in any given technology area have varied backgrounds that may defeat the very idea of technical expertise that would make the Patent Office the best arbiter of technology questions. No matter what their scientific expertise, there is no argument that patent examiners would be the best institution to flesh out open areas of law and policy.

One solution, that would seem to get “the best of both worlds,” would be to remove the patent examining corps and leave development of patent-eligible subject matter to the PTAB. After all, as a body of administrative law judges with training in both science and engineering, as well as law, perhaps they would be best suited to work with both the technological and legal nuances required to develop the doctrine. However, one recent study by Gene Quinn indicates that administrative patent judges may not be terribly experienced in either realm. For example, the median number of years of experience at the time of appointment for a PTAB judge was eleven years of experience, with an average of 13.04 years.²⁴⁰ This pales in comparison to federal district court judges (selected from primary patent courts in the United States), who had a median of twenty-three years of experience, and average of 23.38 years of experience, before being appointed to the bench.²⁴¹ More striking, however, than the difference in the median and average years of experience is just how little experience

240. See Quinn, *supra* note 97.

241. See *id.*

some of the PTAB judges had; some were appointed to the PTAB with less than five years of experience.²⁴² Given the typical time to make partner in a law firm is ten years, nearly half of PTAB judges were appointed while they were at best senior associates.²⁴³ As Quinn notes, “[t]he experience level of the PTAB as a whole is shockingly low in comparison to federal district court judges, and the Secretary of Commerce is appointing individuals who could never win confirmation in the United States Senate to be a district court judge” and yet gives these administrative law judges extraordinary power.²⁴⁴ Because PTAB judges are potentially not experts in science and technology and are also not experts in law or policy, it would seem they would be the least well-suited to develop the doctrine of patent-eligible subject matter, whether that issue is classified as a technical issue or, more correctly, as a matter of law and policy.

For these reasons, this Article suggests that the courts may be the more competent institution to carry out the task of fixing patent-eligible subject matter. This Article is not the first to suggest that the Federal Circuit is best suited to handle patent policy.²⁴⁵ After all, interpreting law to suit constitutional requirements is what courts do every day. Additionally, the courts are responsible for crafting the judicially created exceptions, as well as the mess that resulted from the incomplete development of the law surrounding these exceptions.

242. *See id.* Quinn found 12.64% of PTAB judges were appointed five years or less removed from graduating law school, 7.47% had less than four years of experience, and some were appointed with as little as two years of experience. *See id.*

243. *See id.*

244. *See id.* The Chief Judge of the PTAB, David Ruschke, responded to Quinn’s study:

The USPTO has full confidence in the legal and technical capabilities of each Administrative Patent Judge (APJ) appointed to the Patent Trial and Appeal Board (PTAB). All of our judges have specialized technical degrees combined with extensive legal and technical experience, including that gained over many years in private practice, industry, and/or government. The judges clearly possess the required professional and technical qualifications needed to conduct Board proceedings of any type and to issue decisions addressing all issues that come before the Board.

See Gene Quinn, *PTAB Chief Judge Defends APJs as Having Extensive Legal Experience*, IP WATCHDOG (Mar. 8, 2018), <http://www.ipwatchdog.com/2018/03/08/ptab-chief-judge-defends>. Quinn renews and clarifies his study in response to this quote in the same post, arguing that even giving these administrative law judges credit for their time as examiners at the Patent Office or other government service, they still lack any sort of legal experience as would be expected by a person in charge of adjudication. *See id.*

245. *See* Burstein, *supra* note 238, at 1757 (“[T]he Federal Circuit has become the most important expositor of the substantive law of patents in the United States.”).

Even if the courts had not created these exceptions, the open issues for patent-eligible subject matter are questions of law and policy, not science or technology. Understanding and interpreting law, and the related policy issues, is what courts were designed to do. In addition to fitting squarely within courts' areas of expertise, there are ancillary benefits to lodging these decisions with the courts; these benefits are described below.

There are, of course, objections to the courts deciding patent-eligible subject matter beyond the question of their specific competencies. Specifically, concerns have been raised about courts' abilities to address broad issues of innovation policy, timeliness of decision-making, lack of flexibility, and application of *stare decisis* yielding a "substantially incoherent body of precedent."²⁴⁶ However, courts are addressing patent law issues germane to innovation policy all the time. The backlog of the Patent Office, both in terms of the examining corps and the PTAB, means that the Patent Office is rarely much quicker than the courts. And finally, the courts have exhibited as much flexibility and incoherence as the Patent Office on the issue thus far, giving neither institution the edge as far as patent-eligible subject matter doctrine. These concerns, to the extent valid, do not override the benefits of having courts define the outstanding legal contours of patent-eligible subject matter. As far as competencies, the courts seem to be in a better position to determine patent-eligible subject matter.

b. Priorities

Another facet to be considered when looking at institutional design is priorities of each institution. In particular, it should be asked which institution's priorities are most in line with the task at hand. The task, of course, is developing patent-eligible subject matter jurisprudence to best promote innovation (or the progress of science and technology). The priorities of the Patent Office and the courts are, not surprisingly, different from each other.

The Patent Office, according to its mission statement, is to issue valid patents. Specifically, the Patent Office strives to:

Foster[] innovation, competitiveness and economic growth, domestically and abroad by delivering high quality and timely examination of patent . . . applications, guiding domestic and international intellectual property policy, and delivering intellectual

246. These four points come from John Golden's article. See Golden, *supra* note 200, at 1075.

property information and education worldwide, with a highly-skilled, diverse workforce.²⁴⁷

Although the Patent Office mission statement pays lip service to innovation and policy—and even includes these terms in its mission statement—its key priority is examining patent applications and issuing patents. This is evidenced by the metrics the Patent Office uses to illustrate its annual activities—including number of applications examined, number of patents issued, number of employees engaged in such activities, and so on. For many years, patent examiners worked on a system of points based on “counts” earned for issuing office actions and disposing of patent applications.²⁴⁸ Examiners had to earn a certain number of counts and bonus awards were based on counts as well.²⁴⁹ The count system for measuring patent examiner performance has been modified in the last decade, but the focus is still on patent examiners processing patent applications.²⁵⁰ While certain offices within the Patent Office are engaged in policy activities, it is not the bread and butter of the agency.

Courts, on the other hand, are focused on settling disputes under law and clearing their dockets. In doing so, courts strive to preserve “core values” such as the rule of law, which involves ensuring predictability, coherence, and transparency of process, as well as judicial independence and adaptability to changing national and local needs.²⁵¹ Courts have long interpreted law based on policy through case decisions and, in fact, patent-eligible subject matter jurisprudence has much of its background from the courts, including the development of the judicially created exceptions.

There are two reasons why the priorities of the courts may cut against choosing courts as the best institution for developing patent-eligible

247. See, e.g., U.S. PAT. & TRADEMARK OFF., USPTO 2014–2018 STRATEGIC PLAN 2 (2014), https://www.uspto.gov/sites/default/files/documents/USPTO_2014-2018_Strategic_Plan.pdf.

248. See Michael Abramowicz & John F. Duffy, *Ending the Patenting Monopoly*, 157 U. PA. L. REV. 1541, 1549–50 (2009).

249. See *id.*

250. See, e.g., Press Release, U.S. Pat. & Trademark Off., Force Proposes Significant Changes to Examiner Count System (Sept. 30, 2009), <https://www.uspto.gov/about-us/news-updates/uspto-joint-labor-management-task-force-proposes-significant-changes-examine-0> (noting that a key goal of the 2009 modifications to the count system was to “[e]ncourage examiners to identify allowable subject matter earlier in the examination process”).

251. See JUD. CONF. OF THE U.S., STRATEGIC PLAN FOR THE FEDERAL JUDICIARY 2 (2015), <http://www.uscourts.gov/statistics-reports/strategic-plan-federal-judiciary>.

subject matter—case selection and coherency. Case selection is often deemed a limitation for courts in clarifying law. Specifically, courts may only shape law and policy through the cases that are brought before them, and these cases may not present a complete picture of the issues that need to be decided.²⁵² Further, the perspectives heard by the courts are generally only the litigating parties, who do not have the incentives to present all relevant arguments.²⁵³ Finally, the court system does not have the resources to fully evaluate complex economic policy, which is critical for promoting innovation.²⁵⁴ However, these same criticisms are true of the Patent Office as well, because most of the effective patent-eligible subject matter doctrine created via PTAB cases suffers from similar selection problems.

As law and policy develops, courts, at least occasionally, also suffer from lack of coherency. In order for patent-eligible subject matter to develop into a pro-innovation doctrine, there must be some certainty and predictability provided by its application. In this case, it is actually a positive that the courts do focus on rule of law. Consistent, transparent inquiries into subject matter eligibility would provide a valuable tool in developing the doctrine in a meaningful way.²⁵⁵ Courts are actually better suited to developing law policy in this respect than the Patent Office, because *stare decisis* is not in play and many Patent Office decisions (particularly those of the Patent Office examining corps) are not transparent.

Ultimately, what is required to achieve reliable and effective patent rights, encourage commercialization, and foster disclosure of technological information is for some institution to develop a common law of subject matter eligibility. After all, if Congress does not amend the statute, or even if it does, there will remain many open areas within the law that will need to be answered via analogy to the technology described in other patent applications and patents. Deciding these cases

252. See Rai, *supra* note 212, at 1122–23.

253. See *id.* at 1123.

254. See *id.*

255. Chief Judge Leonard Stark of the District of Delaware recently had a “Section 101 Day,” where he rapidly addressed patent-eligible subject matter claims in seven cases in one day. See Matthew Bultman, ‘Section 101 Day’ Yields Quick Ruling on Patent Eligibility, LAW360 (Feb. 28, 2019, 6:58 PM), <https://www.law360.com/articles/1133434>. Judge Stark arrived at the idea because he “had a lot of Section 101 motions” on his docket and he thought “perhaps there may be some efficiencies to be gained by doing something like this experiment” See *id.* Although it does not necessarily evidence a careful and consistent inquiry by a court, it certainly demonstrates that courts are willing to experiment to arrive at a better way to deal with complicated doctrine.

in a way that preserves and enhances the “core values” of the rule of law by developing a predictable and coherent jurisprudence of patent-eligible subject matter is clearly within the priorities of the courts.

c. Redundancy

Another facet to consider when selecting the best institution for a task is redundancy. Redundancies are not themselves a problem; too much redundancy is. When patent-eligible subject matter decisions begin in the Patent Office, they are entitled to three separate layers of appeal as of right.²⁵⁶ On the other hand, when patent eligibility is raised in the district court, there is only one layer of appeal available as of right. By lodging patent eligibility decisions in the courts, rather than the Patent Office, the layers of redundancy are reduced, but not eliminated.

In addition to the extra layers of redundancy associated with the Patent Office deciding patent-eligible subject matter, there is also the fact that many of these redundant determinations will cause a delay in the issuance of the patent. For example, if an examiner determines a patent application claims ineligible subject matter, the applicant can appeal to the PTAB. If still unsatisfied with the PTAB’s determination, the applicant can appeal to the court. This is potentially three levels of decision-making that occur before a patent can be issued. This redundancy has a negative impact on the patentee, because enforceable patent rights extend from the date a patent issues until twenty years from the date of filing.²⁵⁷ The longer a patent application spends in prosecution, meaning the period of give-and-take between the applicant and the examiner, the shorter the effective life of that patent. When a patent application is rejected by the Patent Office and then that rejection is appealed to the PTAB, any patent that issues will have an even shorter effective life. Particularly in the area of business methods (a sub-set of computer technology), appeals are taking a very long time.²⁵⁸ The business-method art unit of the Patent Office had over double the number of appeals filed than other comparable

256. *See supra* notes 136–39 (discussing the different stages at which a patent’s eligibility is assessed and can be appealed).

257. 35 U.S.C. § 154(a)(2) (2012) (stating a patent’s term shall “begin[] on the date on which the patent issues and end[] 20 years from the date on which the application for the patent was filed in the United States” or, if referencing an earlier filed application, from the earliest date).

258. *See, e.g.*, Samuel Hayim & Kate Gaudry, *PTAB is Bogged down by Eligibility Appeals*, IP WATCHDOG (Mar. 5, 2018), <http://www.ipwatchdog.com/2018/03/05/ptab-bogged-eligibility-appeals>.

technologies, but significantly fewer appellate decisions rendered.²⁵⁹ This is due in part to the business-method art unit having a significantly greater backlog of unprocessed, or pending, appeals.²⁶⁰ Not only do these additional layers of redundancy (and associated delay) harm individual patent applicants, they also harm the patent system as a whole because it may hinder commercialization and disclosure of technological information.

By vesting patent-eligible subject matter decisions in the courts, there would be less redundancy and patents should issue more quickly, incentivizing companies to commercialize the technology and bring products to market, as well as disclosing technological information in the form of both patent documents and marketed products. The flipside, however, is that an ultimate decision on patent eligibility may come later, after a company has already commercialized and marketed a product. While this may have negative impact on the company whose patent is invalidated at this later date, innovation more broadly would benefit from the marketed product.

The right amount of redundancy cannot just focus on how quickly final decisions are rendered. There should also be a sense of uniformity. There are multiple dimensions of uniformity, both of which may be better served by the courts rather than the Patent Office. One dimension of uniformity is the idea of “legal uniformity,” meaning that the rights in question should be applied consistently throughout the entire system.²⁶¹ A second dimension of uniformity is “adjudicative uniformity,” meaning that the claims of a particular patent should be construed similarly, regardless of the institution reviewing them.²⁶² Neither of these concepts of uniformity are enhanced by the current system of allowing both the Patent Office and the courts to opine on patent-eligible subject matter. While perhaps none of the institutions that decide patent-eligible subject matter has a particular upper hand when it comes to uniformity, especially given the last decade’s worth of opinions and decisions on the subject, the court system’s expressed desire to develop predictability and coherence through law demonstrates that the courts could create uniformity, if given the right incentives.

Limiting patent-eligible subject matter inquiries to the courts would permit sufficient redundancy to allow errors to be corrected, by appeal

259. *See id.*

260. *See id.*

261. *See* Paul R. Gugliuzza, *Patent Law Federalism*, 2014 WIS. L. REV. 11, 21 (2014).

262. *See id.*

to the Federal Circuit. However, it would remove the excess redundancies that cut into the effective life of a patent and hinder the development of guidance on these issues, as well as limit the ways in which uniformity can be undermined. This in turn should have a positive aspect on innovation.

d. Trust and respect

Last, but certainly not least, an institution chosen for any given task must possess sufficient trust and respect from constituents to fulfill its duties. On the issue of patent-eligible subject matter, many people have expressed lack of faith in both the Patent Office and the courts. Courts have not been seen in especially positive light, particularly with respect to their patent-eligible subject matter decisions; however, if possible, the Patent Office's reputation is even worse. The lack of trust and respect afforded to these institutions can be grouped into two primary categories: the institution's respect for the subject and the likelihood the institution will be subject to capture. In both categories, the lack of trust and respect for the Patent Office is greater than for the courts.

First, for an institution to be afforded the trust and respect necessary to fully develop an area of law, as is necessary to fix patent-eligible subject matter, that institution must first have respect for the subject it is speaking on—in this case, patent law. To be fair, courts are not always the best guardians of patent law, but often when a court raises concerns about the value and purpose of patent law, it is either because the judge does not understand the patent system or because the litigants appearing before the court make respect for the patent system an issue in a case. The Patent Office (and especially the PTAB), on the other hand, have shown disrespect for the very system it was created to execute.

Rather than implementing an institution that supports the patent system, the Patent Office instead has engaged in behavior that demonstrates a significant lack of care for patent law. Commentators have noted that PTAB decisions on a number of issues have been inconsistent,²⁶³ and this is true for patent-eligible subject matter as well. Decisions from elsewhere in the Patent Office, including the examining corps, are similarly all over the board. The lack of consistency is, of course, concerning, but even more troubling is that the PTAB's jurisprudence on patent-eligible subject matter is

263. See, e.g., Benjamin & Rai, *supra* note 103, at 1589 (referencing “complaints by the patent bar” due to inconsistencies among PTAB decisions).

sometimes provided with very little explanation.²⁶⁴ Rather than being able to rely on substantive reasons for why an invention is or is not eligible for patenting, the developing jurisprudence provides only examples—this invention passes muster, these do not.²⁶⁵ This does not demonstrate a concern or respect for patent law and instead may lead applicants and others to distrust the Patent Office as an institution to develop patent law.

Moreover, as noted above, respect for the Patent Office has been harmed by the PTAB's reputation as a "killing field" or "death squad" for patents.²⁶⁶ The Patent Office obviously serves as the initial hurdle for patent applicants and the PTAB may be the final hurdle to cross before a patent application is issued.²⁶⁷ More often, however, the PTAB will decide the end of a patent application's life.²⁶⁸ Even if a patent application makes it out of the Patent Office as an issued patent, the PTAB still comes into play, "killing" these patents in post-grant proceedings.²⁶⁹ It is difficult for applicants and patent owners to trust an institution that has garnered this negative reputation.

Second, an institution that is particularly subject to capture by special interest groups is unlikely to be given the trust and respect necessary for that institution to easily make changes to the law. As between the courts and the Patent Office, it may not be clear which institution is most likely to be subject to capture. Without direct evidence of capture, it is possible to infer capture based on tendencies of an institution to rule in a particular direction. In order for these tendencies to be dispositive evidence of capture, "one would have to

264. See Matthew Bultman, *Fed. Circ. Pushing for More Clarity in PTAB Decisions*, LAW360 (Jan. 11, 2017, 9:23 PM), <https://www.law360.com/articles/880041>. In the area of patent-eligible subject matter, some of the problem could be that rejections are being appealed to the PTAB with scant reasoning from the examiner. See Robert Plotkin, *Software Patents are Only as Dead as Schrödinger's Cat*, IP WATCHDOG (Oct. 6, 2014), <http://www.ipwatchdog.com/2014/10/06/software-patents-are-only-as-dead-as-schrodingers-cat> (reporting Patent Office rejections, based on *Alice*, that provided merely form paragraph reasoning).

265. Guidance at the Patent Office is specifically being given using references to cases where patent eligibility was found or not found. See, e.g., U.S. PAT. & TRADEMARK OFF., JULY 2018: ELIGIBILITY QUICK REFERENCE SHEET: IDENTIFYING ABSTRACT IDEAS I (2018), https://www.uspto.gov/sites/default/files/documents/ieg-qrs_4.pdf.

266. See *supra* notes 105–06 and accompanying text.

267. See, e.g., Hockett & DiLeo, *supra* note 108 (noting that the PTAB occasionally finds patent-eligible subject matter, even where an examiner did not).

268. See, e.g., *supra* note 108 and accompanying text.

269. See, e.g., Madigan & Mossoff, *supra* note 10, at 955 (noting the high "kill rate" of patents during CBM review).

assume that no fair-minded [institution] that had listened carefully to all perspectives on the question of how best to promote innovation could have reached an alternate conclusion.”²⁷⁰ Part of the problem with this analysis, however, is which perspectives have actually been considered by the institution in question. Some argue the Federal Circuit is exposed to a disproportionate level of pro-patent perspectives;²⁷¹ yet, the court has regularly decided patent-eligible subject matter cases against the patent holder. The Patent Office, on the other hand, seems to have been indoctrinated with anti-patent perspectives in the past decade. To succeed in fixing patent-eligible subject matter, the institution entrusted with that task must have the respect necessary from patent applicants and patent owners, among other constituents; the Patent Office’s adoption of anti-patent perspectives has harmed its reputation in this area.

One scholar argues the exact opposite point, namely that patent-eligible subject matter decisions should be primarily entrusted to the Patent Office due to the lack of trust and respect afforded the courts as well as the Patent Office’s specific competencies.²⁷² John Golden points to the “federal judiciary’s historic struggles with subject-matter issues” and Congress’s disinterest as reasons for lodging these determinations in the Patent Office, as well as the Patent Office’s purported expertise and incentives.²⁷³ “The malleability of technology and of techniques of patent claim drafting mean that the policing of such bounds requires not only continuous vigilance, but also continual updating of guidelines for examiners and courts alike.”²⁷⁴ Courts cannot do this for so many reasons, as described above. Congress on the other hand is simply too slow, too uniformed, and too liable to special-interest capture to be able to adequately address patent-eligible subject matter.²⁷⁵

However, Golden’s arguments were made prior to when the Supreme Court increased the level of confusion surrounding patent-eligible subject matter through the *Alice* opinion, and the behavior of the courts and Patent Office in the time between Golden’s article and now have not borne out his supposed bases. For example, Golden indicates that it would be under “extreme circumstances” that the Patent Office (or whomever is determining patent-eligible subject

270. See Rai, *supra* note 212, at 1112.

271. See *id.* at 1114.

272. See Golden, *supra* note 200, at 1044.

273. *Id.*

274. *Id.* at 1083.

275. See *id.* at 1091.

matter) must determine whether additional steps are merely “insignificant extra-solution activity.”²⁷⁶ Based on the way the patent-eligible subject matter doctrine has played out, this is not an extreme solution, but an everyday determination that must be made. Reality has not lived up to Golden’s predictions, and thus his suggestion that the Patent Office is the right institution for developing patent-eligible subject matter falls a bit flat.

As a matter of institutional design, the courts are the best institution to fix patent-eligible subject matter. The courts have the proper competencies for the task at hand—essentially the development of a common law of eligibility. Additionally, the courts’ priorities are better aligned to create a cohesive and predictable doctrine. There is plenty of redundancy in the system if patent-eligible subject matter is left to the courts alone and, in fact, removing the extra layers of redundancy caused by the multiple layers of potential decision points should also improve patent-eligible subject matter law. Finally, as between the courts and the Patent Office, the courts have a slight edge on the trust and respect afforded them to be able to implement a better system.

B. Administrative Law

Although concepts of institutional design support vesting patent-eligible subject matter decisions with the courts, rather than the Patent Office, there is an additional argument against the Patent Office determining subject matter eligibility. Specifically, as a matter of administrative law, there has been no guidance provided to the Patent Office regarding patent-eligible subject matter. While the nondelegation doctrine has significant limitations and has virtually never been used to curtail agency action, § 101 includes so little guidance to the agency that, should the nondelegation ever become a viable argument, patent-eligible subject matter would be a prime candidate for inquiry.

1. Nondelegation doctrine

The nondelegation doctrine is based on the notion that legislative power should be vested in the legislative branch and there are limits to how much, if any, of this legislative power should be able to be ceded

276. *Id.* at 1061–63.

to another branch of government.²⁷⁷ Despite appearing to be a useful doctrine, the nondelegation doctrine does not have any real teeth; Congress simply needs to have provided an “intelligible principle” to guide the delegate’s exercise of power to pass constitutional muster.²⁷⁸

The Supreme Court struck down only two delegations under the nondelegation doctrine, both in 1935.²⁷⁹ One of these delegations “provided literally no guidance for the exercise of discretion, and the other . . . conferred authority to regulate the entire economy on the basis of no more precise a standard than stimulating the economy by assuring ‘fair competition.’”²⁸⁰ Since then, challenged delegations have withstood the inquiry about whether an intelligible principle has been provided, even where the language is quite general.²⁸¹ For example, an intelligible principle has been found when Congress required that agency authority not be “unduly or unnecessarily complicate[d]”;²⁸² that prices be fixed to be “generally fair and equitable”;²⁸³ and that the action is in the “public interest.”²⁸⁴

Although the nondelegation doctrine is generally viewed as a non-starter, modern administrative law scholars have shown how other administrative law doctrines are achieving nondelegation goals by forcing agencies to conform to political accountability, deliberation, and fairness, as would be the case if Congress had not delegated.²⁸⁵ The problem is that it would be difficult to force the Patent Office to

277. LINDA TSANG & JARED P. COLE, CONG. RESEARCH SERV., R44965, PRIVATIZATION AND THE CONSTITUTION: SELECTED LEGAL ISSUES 6 (2017), <https://fas.org/sgp/crs/misc/R44965.pdf>.

278. See, e.g., *J.W. Hampton, Jr. & Co. v. United States*, 276 U.S. 394, 409 (1928) (holding that “[i]f Congress [provides such an] intelligible principle to which the person or body authorized to fix such rates is directed to conform, such legislative action is not a forbidden delegation of legislative power”).

279. See *A.L.A. Schechter Poultry Corp. v. United States*, 295 U.S. 495, 551 (1935); *Panama Refining Co. v. Ryan*, 293 U.S. 388, 433 (1935).

280. *Whitman v. Am. Trucking Ass’ns*, 531 U.S. 457, 474 (2001).

281. See *id.* at 474–75.

282. See *Am. Power & Light Co. v. SEC*, 329 U.S. 90, 104 (1946).

283. See *Yakus v. United States*, 321 U.S. 414, 420 (1944).

284. See *Nat’l Broad. Co. v. United States*, 319 U.S. 190, 225–26 (1943).

285. See, e.g., John F. Manning, *The Nondelegation Doctrine as a Canon of Avoidance*, 2000 SUP. CT. REV. 223, 223 (2001) (noting influence of nondelegation principles on doctrines of administrative deference); Gillian E. Metzger, *Ordinary Administrative Law as Constitutional Common Law*, 110 COLUM. L. REV. 479, 484 (2010) (arguing that nondelegation concerns are behind other modern administrative law doctrines); Cass R. Sunstein, *Nondelegation Canons*, 67 U. CHI. L. REV. 315, 315–16 (2000) (substituting canons of statutory construction to take the place of the unenforced nondelegation doctrine).

act deliberately and fairly under the current formulation of § 101 because it has absolutely no guidance upon which these attributes could even be judged.

2. *An “intelligible principle” for patent-eligible subject matter?*

The authorization for the patent system springs from Article I, Section 8, Clause 8 of the Constitution, giving Congress 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.”²⁸⁶ Thus, there is a direct constitutional delegation to Congress to ensure that science and the useful arts (that is, technology) are promoted. As discussed above, the mandate is essentially to promote innovation. To achieve that mandate, Congress has enacted a series of statutes, specifically the Patent Act, including § 101.²⁸⁷ However, the only information, or guidance, contained in that statute is that patents should cover processes, machines, manufactures, or compositions of matter, and the inventions are subject to the other requirements of the Patent Act. The inventions being rejected under § 101, however, are clearly processes, machines, manufactures, or compositions of matter. To the extent the Patent Office is denying patents on processes, machines, manufactures, or compositions of matter, it is clearly not following the statute—and since the Patent Office (whether it be the examining corps or the PTAB) does not assess whether science and the useful arts are being promoted, or innovation is being encouraged, via its rejections, it is also not fulfilling the Constitution’s goals for the patent system.

To be fair, there is value in delegating decisions of this type to the body best equipped to handle them.²⁸⁸ However, for that to be true, there must be a clear definition of the problem to be solved, and it must be something that the legislature is ill-equipped to handle, while the agency it has been delegated to is better equipped.²⁸⁹ While Congress may not have the technological know-how necessary to determine what types of

286. U.S. CONST. art. I, § 8, cl. 8.

287. 35 U.S.C. § 101 (2012) (“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.”).

288. See David Epstein & Sharyn O’Halloran, *The Nondelegation Doctrine and the Separation of Powers: A Political Science Approach*, 20 CARDOZO L. REV. 947, 950 (1999) (arguing that delegation is “a vehicle for good public policy”).

289. See *id.*

inventions are eligible for patenting, it is not so clear that the question—that is, promotion of innovation and the types of inventions that will achieve that—has been sufficiently defined to delegate it to the agency. Rather, notions of innovation do not seem to be part of § 101 of the Patent Act, beyond that the invention be new and useful, requirements that are covered more completely by other statutory provisions.

Other delegations to the Patent Office that encompass such wide-sweeping and important issues are much clearer in their charges. Consider, for example, the Prioritization Authority granted to the Patent Office in the America Invents Act of 2011.²⁹⁰ Specifically, the delegation provides that the Patent Office “may, subject to any conditions prescribed by the Director [of the Patent Office] and at the request of the patent applicant, provide for prioritization of examination of applications . . . that are important to the national economy or national competitiveness without recovering the aggregate extra cost of providing such prioritization.”²⁹¹ While this delegation calls for complex law and policy-based decisions to be vested in the hands of the Patent Office, it provides substantive values and direction on which these decisions turn, namely importance to the national economy or competitiveness.²⁹²

Additional complex choices delegated to the Patent Office are more substantive-procedural, such as those that direct the Patent Office to promulgate rules and standards for post-grant review proceedings.²⁹³ This delegation too came with instructions; the Patent Office must consider “the effect of any such regulation on the economy, the integrity of the patent system, the efficient administration of the Office, and the ability of the Office to timely complete proceedings.”²⁹⁴ With this level of detail as to the purpose of the delegation, it is easy to

290. Leahy-Smith America Invents Act, 35 U.S.C. § 2(b)(2)(G) (2012).

291. *See id.*

292. Congress did provide even more guidance about what sorts of technology it anticipated being of importance to the national economy of competitiveness. The original draft of the provision identified “green technologies designed to foster renewable energy, clean energy, biofuels or bio-based products, agricultural sustainability, environmental quality, energy conservation, or energy efficiency” as exemplary technologies for prioritization. *See* 157 CONG. REC. S1052-01 (daily ed. Mar. 1, 2011). However, these examples were deleted prior to passage. *See* Sarah Tran, *Policy Tailors and the Patent Office*, 46 U.C. DAVIS L. REV. 487, 498 (2012).

293. *See, e.g.*, 35 U.S.C. § 316(a)(4) (authorizing the Patent Office to develop regulations “establishing and governing inter partes review under this chapter”); § 316(d) (similar for post-grant review).

294. *See id.* § 316(b).

determine whether the Patent Office is fulfilling its delegated role. This is not true for patent-eligible subject matter.

Patent-eligible subject matter is, at this point, truly an open question of law and policy—not a scientific or technical inquiry. To understand that it is a legal point, and not science, driving these determinations, one only needs to look at the reasoning provided by the courts and the Patent Office in recent cases. Inventions are being deemed ineligible for patenting because to patent such an invention “would preempt downstream work” or because it “lacks something more,” both of which arguably, although not necessarily, could be related to promoting science and the useful arts.²⁹⁵ Yet other inventions instead are being deemed ineligible because they are simply not desirable or because of something unrelated to the innovative nature of the invention altogether, like thwarting “patent trolls.”²⁹⁶ Thus, the decisions being made about patent-eligible subject matter have very little to do with promoting innovation, nor does the promotion of innovation even seem to be part of the calculus. This could be because Congress has not provided a sufficient delegation to give the Patent Office the guidance it needs to develop patent-eligible subject matter.

While we generally defer to agencies on matters within that agency’s wheelhouse, the open questions surrounding patent-eligible subject matter have nothing to do with the Patent Office’s expertise. In fact, the Patent Office has actually been called out for their lack of fitness for law and policymaking.²⁹⁷ Specifically, scholars have pointed to the Patent Office’s limited authority, lack of institutional competence, and susceptibility to capture as being reasons why the Patent Office should not be an arbiter of patent policy.²⁹⁸ Further, as discussed above, the Patent Office’s primary area of unique expertise is technological.

295. See *supra* notes 55–56, 62 and accompanying text (discussing preemption and “something more” in relation to the *Alice* decision).

296. See, e.g., David Newman, *FinTech Sector at Risk from Attack on Patentable Subject Matter*, FINTECH WEEKLY (Sept. 7, 2018), <https://www.fintechweekly.com/magazine/articles/fintech-sector-at-risk-from-attack-on-patentable-subject-matter> (listing *Alice* as an “over-reaching anti-troll” remedy).

297. See *supra* Section III.A.2.a for more discussion of this point.

298. See, e.g., DAN L. BURK & MARK A. LEMLEY, *THE PATENT CRISIS AND HOW THE COURTS CAN SOLVE IT* 168 (2009) (noting that the Patent Office has “virtually no policy staff” and has experienced significant political pressure in the past when its leadership has indicated a willingness to “take seriously the agency’s role in setting patent policy”); Ryan Vacca, *Acting like an Administrative Agency: The Federal Circuit En Banc*, 76 MO. L. REV. 733, 755 (2011) (explaining that the Patent Office lacks institutional competence and authority for policymaking).

However, decisions about patent-eligible subject matter are not being made based on technology at all. Even if the Patent Office knew the criteria for developing this doctrine (which it does not), it may not have the expertise necessary to do so.

Although Congress could amend § 101 to provide the Patent Office with sufficient guidance to address patent-eligible subject matter, the preceding section on institutional design explains why that option is not likely to prove successful. Additionally, there are ancillary benefits that may appear if we place the decision-making power over patent-eligible subject matter solely with the courts.

C. Ancillary Benefits

In addition to situating patent-eligible subject matter decisions in a better place, given their reliance on law and policy issues and institutional expertise and given the lack of guidance to the Patent Office provided by Congress, there are other potential benefits to taking these decisions away from the Patent Office and placing them solely in the purview of the courts. These benefits include: (1) fewer subject matter challenges, (2) development of a more extensive jurisprudence, and (3) true incentives for the courts to finally get these decisions right.

First, vesting patent-eligible subject matter decisions in the courts will likely result in fewer subject matter challenges, which in turn would be good for innovation for the reasons described above. Because it is more expensive, in terms of both cost and resources, to bring a case to court versus bringing an administrative proceeding before the Patent Office, challenges to patent-eligible subject matter would be brought less frequently and with more deliberation, rather than being every infringer's opening parry. It may seem inapposite that fewer cases would allow for a better development of doctrine, but one of the issues today is that it is nearly impossible to synthesize the sheer magnitude of patentable subject matter decisions that exist. Reading through the unruly mass of cases does not allow anyone to gather a reasonable certainty as to what the law is. Limiting the institutions where subject matter challenges can be brought will consolidate the decisions into a few places (that is, the courts) where *stare decisis* matters and will hopefully end up creating a coherent body of law. Thus, putting the courts in charge of patent-eligible subject matter will improve both the development of the doctrine and the effect of the doctrine on innovation.

Second, and relatedly, by vesting patent-eligible subject matter decisions in the courts, there would (ideally) be a more complete discussion of patentable subject matter jurisprudence from which to

synthesize and understand the doctrine. Courts are held to a higher standard of written reasoning than is the Patent Office due to rules of civil procedure. If the decisions being made in patent-eligible subject matter cases are more detailed, coupled with fewer decisions being rendered under the doctrine, then there could quickly develop a more coherent and clear jurisprudence about what exactly patent-eligible subject matter is (or is not).

This benefit, however, would require some cooperation from the courts. Some studies have shown that the Federal Circuit, for example, has affirmed about 90% of patent-eligible subject matter decisions from lower tribunals post-*Alice*.²⁹⁹ However, the Federal Circuit is not helping to clarify the doctrine of patent-eligible subject matter. Post-*Alice*, the Federal Circuit decided just over half of its patent-eligible subject matter appeals using Rule 36 affirmances, meaning the court says nothing at all.³⁰⁰ Most often, Rule 36 affirmances are used when the Federal Circuit is reviewing a fact specific issue and the trier of fact is entitled to deference, or else where the area of law is well-settled and there is little to be gained from yet another opinion on the topic.³⁰¹ These Rule 36 affirmances, however, do not help develop the doctrine of patent-eligible subject matter. On the other hand, if the courts, and especially the Federal Circuit, are unable to rely on the work of the Patent Office, that is if the courts have to make legal determinations (and fact findings as necessary) in the first instance for patent-eligible subject matter inquiries, courts are more likely to deliver fully explanatory opinions that also will allow for a more coherent development of the doctrine.

Third, and in response to the objection that the courts convoluted patent-eligible subject matter in the first place, removing the determination from the Patent Office would force the courts to (eventually) have to pony-up. Courts have fewer incentives to crystallize the law of patent-eligible subject matter when it can always be punted back to the Patent Office in post-grant proceedings. By removing that option and forcing the courts to always handle the issue, it would be in the best interests of the courts to provide a clear, easy-to-apply rule to patent-eligible subject matter cases to keep these

299. See Gugliuzza & Lemley, *supra* note 68, at 793.

300. See *id.* at 802. The Federal Circuit decided 31.7 percent via precedential opinion and 16.3 percent via nonprecedential opinion. See *id.*

301. See *id.* at 803.

matters from clogging their dockets. Thus, the courts would have the incentive to completely and clearly develop the doctrine.

D. Operationalizing the Proposed Solution

Admittedly, a proposal to take patent-eligible subject matter decisions out of the Patent Office is radical, unpopular, and may not seem likely. However, the Director of the Patent Office, Andrei Iancu, made a number of remarks through Fall 2018 hinting at changes to patent-eligible subject matter determinations at the Patent Office. On January 7, 2019, the Patent Office issued the “2019 Revised Patent Subject Matter Eligibility Guidance” document, implementing many of Director Iancu’s remarks.³⁰² The revised guidelines and the remarks made prior to the publication of the guidelines dovetail nicely with the above solution, as well as the pro-innovation goals described: (1) effective and reliable patent rights, (2) commercialization of technology, and (3) disclosure in the form of goods and patent documents. In fact, Director Iancu specifically discussed innovation and how the Patent Office could act to promote innovative activities. This section discusses some of Director Iancu’s comments and how they may point the way towards operationalizing the solution proposed in this Article.

On September 24, 2018, at the Intellectual Property Owners Association Annual Meeting, Director Iancu discussed new guidance as to how the Patent Office would be handling patent-eligible subject matter determinations. In summary, Director Iancu stated:

. . . eligibility rejections are to be applied only to claims that recite subject matter within the defined categories of judicial exceptions. And even then, a rejection would only be applied if the claim does not integrate the recited exception into a practical application.³⁰³

With this guidance, Director Iancu believes that this clarification would “help drive more predictability back into the analysis while remaining true to the case law that gave rise to these judicial

302. See 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019); see also *U.S. Patent and Trademark Office Announces Revised Guidance for Determining Subject Matter Eligibility*, U.S. PAT. & TRADEMARK OFF. (Jan. 4, 2019), <https://www.uspto.gov/about-us/news-updates/us-patent-and-trademark-office-announces-revised-guidance-determining-subject>.

303. See Andrei Iancu, Director, U.S. Pat. & Trademark Off., Remarks delivered at the Intellectual Property Owners Association 46th Annual Meeting (Sept. 24, 2018), <https://www.uspto.gov/about-us/news-updates/remarks-director-iancu-intellectual-property-owners-46th-annual-meeting>.

exceptions in the first place.”³⁰⁴ Director Iancu’s remarks also provided some guidance regarding the “abstract ideas” exception, pointing to three categories: (1) mathematical concepts like formulas and calculations, (2) methods of organizing human interactions, such as fundamental economic practices, advertising, and sales activities, and (3) mental processes, including forming an observation or judgement.³⁰⁵ Additionally, the presence of one of the judicially-created exceptions would not give rise to the rejection; claims would only be rejected if it is a mere principle. If the exception is practically applied, it is not to be rejected. Most heartening is Director Iancu’s acknowledgement that much of the rest of patent-eligible subject matter inquiry has conflated other requirements of patentability into this threshold analysis:

It is important to note that the first step of our analysis does not include questions about ‘conventionality’ which are addressed in *Alice* Step 2 This helps to ensure that there is a meaningful dividing line between [§] 101 and 102/103 analysis [Similarly, the] analysis also does not deny claims as ineligible merely because they are broad or functionally-stated or result-oriented USPTO examiners know, and will receive further guidance and training on, how to apply well-defined Section 112 principles.³⁰⁶

In another speech, Director Iancu summarized his thoughts on patent-eligible subject matter as follows:

Using Section 101, we just have to capture applications that would otherwise pass muster under Sections 102, 103, and 112, but are on things that we still should not patent. The Supreme Court has noted some specific examples of what we should not patent. We must be careful to not over-read the Court’s exclusions.³⁰⁷

Instead, as he concludes, the question ought to be whether the patent claims are directed toward a defined building block of scientific or technological work or toward a practical application of it.³⁰⁸ Director Iancu has also regularly spoken to bar and industry groups, stating that patent-eligible subject matter should be transparent, that people should

304. *See id.*

305. *See id.*

306. *See id.*

307. *See* Andrei Iancu, Director, U.S. Pat. & Trademark Off., Remarks delivered at the Intellectual Property Business Conference (June 11, 2018), <https://www.uspto.gov/about-us/news-updates/remarks-director-andrei-iancu-ipbc-global-conference>.

308. *Id.*

be able to know what is eligible for patenting, and that the Patent Office should not read the Supreme Court exclusions too broadly.³⁰⁹

These various remarks, and the revised guidelines implementing the ideas raised by Director Iancu, go a long way toward operationalizing the proposed solution above. First, by recognizing that a number of non-patent-eligible subject matter doctrines have been grafted into the § 101 inquiry, and suggesting that those principles, like non-obviousness or enablement, be applied instead of patent-eligible subject matter, Director Iancu is increasing the likelihood that patent applications will be allowed to issue. This is because, unlike the general case with patent-eligible subject matter decisions, applicants regularly amend their claims to overcome other patentability rejections. Applicants will be able to traverse these more aptly-framed non-patent-eligible subject matter concerns, allowing patents to issue, encouraging patentees to commercialize the technology, and enhancing the amount of disclosure available. Second, Director Iancu's remarks focuses the inquiry of patent-eligible subject matter on the technologies that truly raise concern—"basic tools of scientific and technological work" like gravity or calculus or "pure mental processes such as forming a judgment or observation." Unless the claims actually recite subject matter falling squarely within one of those categories, the inquiry into patent-eligible subject matter is complete. That is, unless the patent application claims gravity, or an elm tree—send it through. The implementation of the 2019 Revised Patent Subject Matter Eligibility Guidance document has, in essence, implemented the heart of the solution proposed above. Although the revised guidelines have only been in force for a few months, the early results seem to be positive—fewer patent applications are being rejected for lack of patent-eligible subject matter.³¹⁰

Just having the Patent Office allow more patents to issue, however, is only part of the story. The doctrine surrounding patent-eligible subject matter must still be fixed and, for the reasons laid out above, fixed by the courts. One other reason in support of the proposal is that any changes made at the Patent Office by Director Iancu could be

309. See, e.g., Gene Quinn, *Iancu: People Have a Right to Know What is Patent Eligible*, IP WATCHDOG (June 11, 2018), <https://www.ipwatchdog.com/2018/06/11/iancu-right-know-patent-eligible>.

310. See, e.g., Matthew Bultman, *PTAB Taking Patent Eligibility Revamp to Heart*, LAW360 (Feb. 15, 2019, 6:39 PM), <https://www.law360.com/articles/1130012/ptab-taking-patent-eligibility-revamp-to-heart> (describing the revised guidelines and their effect on the PTAB's reversal rates of examiner determinations of ineligible subject matter).

easily undone by the next Director to hold the office.³¹¹ Perhaps, in an ideal world, Director Iancu's remarks could form the basis of patent-eligible subject matter doctrine going forward, but it is more realistic, at this point, to view his role in the process as sending innovative technology out of the Patent Office where it can benefit society and be reviewed by the courts as needed.

CONCLUSION

Patent-eligible subject matter is a mess, and the state of the doctrine is having a significant negative impact on innovation in this country. A statute that is purposefully broad, to encompass all manners of technological progress, has been mishandled by the Patent Office and the courts such that it is actually hindering innovation. Fixing the mess requires us to step back and ask what institution may be in the best position to deal with the complicated law and policy issues that come from the breadth of such a statute—and that is a question of institutional design. Based on the competencies, priorities, redundancies, and reputations of the various institutions who could be tasked with fixing patent-eligible subject matter, the courts are the best answer.

Not only do courts make the most sense to answer the important open questions about patent-eligible subject matter, but putting this issue squarely before the courts will allow for additional benefits and should promote, rather than hinder innovation. With fewer avenues available for challenging subject matter eligibility, there should be fewer challenges. This allows for more effective and reliable patent rights, but also should permit the doctrine to develop more coherently with less precedent to have to synthesize. Additionally, the courts would have a greater incentive to develop a workable, predictable doctrine if it was understood that the courts would be the institution to regularly apply this doctrine. Again, this should enhance patent rights. By allowing patents to more easily issue at the Patent Office, because applications will not be rejected for lack of patent-eligible subject matter, patent rights will be strengthened and, perhaps more

311. See, e.g., Kevin E. Noonan, *Director Iancu Produces Glimmer of Patent Eligibility Hope*, PATENT DOCS (Sept. 24, 2018), <https://www.patentdocs.org/2018/09/director-iancu-produces-glimmer-of-patent-eligibility-hope.html> (“The past 18 years have seen Directors as varied as Rogan, Dudas, Kappos, Lee, and Iancu, each not just imposing their own nuance to the Office but in almost every case changing the standards under which patents were granted (and more recently, re-examined). This intrinsic uncertainty makes it a certainty that for every Director Kappos or (perhaps) Iancu, we will have a Director Dudas or Lee.”).

importantly, companies will market products based on their technology, which is good for society and innovation.

Take patent-eligible subject matter away from the Patent Office. This is admittedly a radical solution. But as long as we are focused on what words to add or subtract from the statute, rather than seeking paths forward to encourage innovation, we are never going to fix this mess. By looking at the institution who is best to move the ball forward and understand the benefits this choice affords, we can change the debate and may eventually see a way to promote innovation and progress once again.