8/18/2021

Comments on Impacts of *Alice:* USPTO Submission

by

Richard Gruner*

INTRODUCTION

These comments describe impacts on stakeholders in the patent system of the patent law morass created by the United States Supreme Court in *Alice Corporation Pty. Ltd. V. CLS Bank International et. al.*[1] In *Alice*, the Supreme Court rejected then prevailing tests for patentable subject matter, articulated a need for fundamentally different approaches, yet provided no meaningful guidance about what those approaches should be. Parties throughout the patent world have described *Alice* as a disaster for the patent system,[2] rendering the incentives and legal

* Richard Gruner is the former Director of the Center for Intellectual Property at the University of Illinois Chicago School of Law. Professor Gruner is a member of the New York and California state bars and a graduate of the University of California, Irvine (PhD, Criminology, Law and Society 2008), Columbia University School of Law (LL.M. 1982), USC School of Law (J.D. 1978), and California Institute of Technology (Caltech) (B.S. 1975). He is the co-author (with Shubha Ghosh and Jay Kesan) of TRANSACTIONAL INTELLECTUAL PROPERTY: FROM STARTUPS TO PUBLIC COMPANIES (Carolina Acad. Press 4th ed. 2018) and INTELLECTUAL PROPERTY: PRIVATE RIGHTS, THE PUBLIC INTEREST, AND THE REGULATION OF CREATIVE ACTIVITY (West Acad. Pub. 3d ed. 2016).

[1] 573 U.S. 208, 134 S. Ct. 2347, 189 L. Ed. 2d 296 (2014).

[2] The *Alice* standard has implications for key technologies in modern society and broad aspects of the patent system. The following summary of *Alice's* implications by Jay P. Kesan and Runhua Wang captures both these dimensions of the significance of the decision:

> While the *Alice* test for eligible subject matter is most applicable to computer-implemented inventions (i.e., computer software), lower court decisions post-*Alice* show that none of the patent claims in any technology area are spared from review under the *Alice* framework (e.g., an improved high-performance computer memory system). Business methods that are software-implemented and involve the Internet often develop new types of e-commerce. Patents on business methods, a subject area similar to the patent at issue in *Alice*, may be eligible for patent protection, unless they merely involve an abstract idea and are insufficiently tied to a particular real-world implementation. Ognjen Zivojnovic believes that *Alice* kills all pure business methods patents because all business methods patents merely recite an abstract economic practice and simply employ a general purpose computer to implement the business method. …
>
> In addition to software and business methods, *Alice* has negatively impacted patent eligibility in biotechnology (e.g., biocomputing and bioinformatics). Hallie Wimberly suggests that Congress or the Supreme Court should broaden the scope of patent subject matter eligibility because of the high burden placed on biotechnological inventions after *Alice*. The Biotechnology Industry Organization (BIO) and Pharmaceutical Research and Manufacturers of America (PhRMA) both argue that the restrictions on eligible subject matter after *Alice* should be loosened.

constraints of patent law – indeed the scope of the patent system itself – without meaningful boundaries for almost a decade.

The Twin Disasters of *Alice* for Patent Law and Technology Development

A. *Alice* in a Nutshell

Alice addresses judicially created exceptions to patentable subject matter – that is, the types of advances that can – if other patent law requirements are met – qualify for patent protections. Standards for patentable subject matter derive from two authoritative sources – the Patent Clause of the United States Constitution and the Patent Act – as supplemented by a number of judicial opinions. This subsection briefly summarizes these authoritative underpinnings and then notes the added contribution of *Alice.*

1. The Constitutional Bedrock

Patent rights, including patent subject matter limitations, are bounded by provisions of the Constitution granting Congress the authorization to create such rights. The Patent and Copyright Cause of the Constitution grants Congress the power to enact legislation "promot[ing] the progress of … useful arts, by securing for limited times to inventors the exclusive right to their respective … discoveries."[3] This language limiting the legitimate purposes of patent legislation -- and, hence, the legitimate scope of patent rights serving those purposes -- implies several restrictions on patentable subject matter.[4] A patentable advance must be a "discovery" (not a pre-existing natural item or previously known artificial item) created by an inventor (by defining an artificial item or "invention") that contributes to practical tools and related knowledge (thereby promoting the "useful arts").[5]

The *Alice* test impacts the entire lifecycle of a patent, including patent application preparation, patent prosecution in the U.S. Patent and Trademark Office (PTO), and patent enforcement in the courts and in post-issuance proceedings in the PTO. This creates significant uncertainties in all of these proceedings.

Jay P. Kesan & Runhua Wang, *Eligible Subject Matter at the Patent Office: An Empirical Study of the Influence of* Alice *on Patent Examiners and Patent Applicants,* 105 MINN. L. REV. 527, 532-34 (2020) (citations omitted).

[3] United States Constitution, Article I, Section 8, Clause 8. Congress has broad discretion in crafting legislation (and associated intellectual property rights) that will further the purposes of this constitutional language. *See Eldred v. Ashcroft,* 537 U.S. 186, 222 (2003) (in interpreting Congress's powers under parallel provisions of the Constitution dealing with copyright laws, the Supreme Court noted that "[a]s we read the Framers' instruction, the Copyright Clause empowers Congress to determine the intellectual property regimes that, overall, in that body's judgement, will serve the ends of the Clause.").

[4] *See* Graham v. John Deere Co., 383 U.S. 1, 5 (1966) (noting that the provisions of the Patent and Copyright clause of the Constitution are "both a grant of power and a limitation. [The authority given Congress to enact patent laws] is limited to the promotion of advances in the 'useful arts.'"). *See also* Edward C. Walterscheid, *"Within the Limits of the Constitutional Grant": Constitutional Limitations on the Patent Power,* 9 J. INTELL. PROP. L. 291, 297 (2002).

[5] *See generally* Richard S. Gruner, *Intangible Inventions: Patentable Subject Matter for an Information Age,* 35 LOY. L.A. L. REV. 355, 413-67 (2002) (arguing that "useful arts" should be interpreted to encompass intangible advances in information processing); Richard S. Gruner, *In Search of the Undiscovered Country: The Challenge of Describing Patentable Subject Matter,* 23 SANTA CLARA COMPUTER & HIGH TECH. L.J. 395, 396-405, 427-439 (2007)(noting the importance of an open ended interpretation of the "useful arts" – bounded only by the need for a patentable advance to provide utility to innovation users – as a means to ensure continuing relevance of patent incentives to developing and unpredictable lines of useful innovation).

2. Statutory Implementation

Pursuant to this Constitutional power, Congress has enacted a series of Patent Acts.[6] The portions of the current Patent Act addressing patentable subject matter are contained in section 101 which provides that "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 [the remainder of the Patent Act]."[7]

Courts have generally applied broadly inclusive interpretations to this statutory language on patentable subject matter[8] with the aim of including diverse lines of technology development within the incentives of the patent system.[9] For example, in considering the patentability of human-engineered bacteria, the Supreme Court found that these usual "inventions" were patentable subject matter twice over, constituting both new "items of manufacture" and "compositions of matter".[10] The Court noted that, in passing the Patent Act, "Congress intended statutory subject matter to 'include anything under the sun that is made by man.'"[11] Commentators have noted that this view suggests seemingly anything artificially created and practically useful might qualify as patentable subject matter.[12]

3. Judicially Developed Exceptions

Over time, a series of judicially created exceptions to patentable subject matter have restricted the breadth of patentable advances. Specifically, laws of nature (such as Einstein's theory of relativity), natural phenomena (such as the breaking of white light into component

---

[6] For an overview of the succession of Patent Acts enacted by Congress, see Donald S. Chisum, CHISUM ON PATENTS §§ 1-7 (Matthew Bender ed., 2021).

[7] 35 U.S.C. § 101. These provisions envision four types of patentable advances: 1) processes (including sequences of steps producing a useful result), 2) machines (such as devices that work on other items such as machines used to manufacture products), items of manufacture (including things like cans or tires made via manufacturing processes), and compositions of matter (including chemical compounds and pharmaceutical drugs). A fifth, overarching category includes improvements in items within the prior four categories, providing a reminder that improvements of preexisting items can qualify for patents if other patent law requirements are met (although the resulting patents will only cover and restrict the improved versions of the items).

[8] *See, e.g., Diamond v. Chakrabarty*, 447 U.S. 303, 308-309 (1980) (noting that, by "choosing such expansive terms as "manufacture" and "composition of matter," modified by the comprehensive "any," Congress plainly contemplated [in drafting patentable subject matter standards] that the patent laws would be given wide scope" and further observing that the legislative history of present patentable subject matter tests also support broadly inclusive interpretations since these tests were based on Thomas Jefferson's view that "ingenuity should receive liberal encouragement", quoting 5 WRITINGS OF THOMAS JEFFERSON 75–76 (Washington ed. 1871)).

[9] *See* Richard S. Gruner, *In Search of the Undiscovered Country: The Challenge of Describing Patentable Subject Matter*, 23 SANTA CLARA COMPUTER & HIGH TECH. L.J. 395, 396-405, 427-439 (2007)(arguing in favor of such a broad interpretation as a means to ensure patent-based encouragement of innovation amidst uncertainty about where useful innovation will come from and what forms it will take).

[10] *Diamond v. Chakrabarty*, 447 U.S. 303, 309-310 (1980) (holding that "respondent's micro-organism plainly qualifies as patentable subject matter. His claim is not to a hitherto unknown natural phenomenon, but to a nonnaturally occurring manufacture or composition of matter….").

[11] *Id.* at 309 (quoting S. REP. NO. 82-1979 (1952); H.R. REP. NO. 82-1923H.R. REP. NO. 82-1923 (1952), reprinted in 1952 U.S.C.C.A.N. 2394, 2399).

[12] *See, e.g.*, Matthew G. Sipe, *Patent Law 101: The View from the Bench*, 88 GEO. WASH. L. REV. ARGUENDO 21, 22 (2020).

colors via a prism), and abstract ideas (such as the notion that "2+2=4") have been judicially recognized as unpatentable subject matters.[13] Controversies surrounding these exceptions have been extensive and litigation over the scope of these exceptions to patentability now dominate subject-matter considerations.[14] In patentability controversies, the exception hole has swallowed the patentable donut.

5. The Contribution of *Alice*

The *Alice* opinion sought to define a standard for determining whether an advance falls within the judicially-created exceptions to patentable subject matter for laws of nature, natural phenomena, and abstract ideas. The Supreme Court set out a two-part test for assessing if patent claims cover patent ineligible subject matter: first, "determine whether the [patent] claims at issue are directed to one of those patent-ineligible concepts," and, second, if so, additionally examine "the elements of each claim both individually and 'as an ordered combination' to determine whether [there are] additional elements [that nevertheless] 'transform the nature of the claim' into a patent-eligible application."[15]

In short, the Court indicated that analysts should 1) see if a patent involves a problem (that is, determine if the patent appears to include excluded subject matter because it is directed to one of the excluded items) and 2) try to fix the problem if found (by determining if there is "something more"[16] that transforms the excluded item into a patent-eligible application). Unfortunately, the Court offered little guidance on the nature of the problem or how to pursue a fix. Specifically, the Court described neither what would make a patent "directed to" one of the excluded categories nor the features that would suffice as "something more" distinguishing a patentable advance from an excluded law of nature, natural phenomena, or abstract idea.

Understandably, given the lack of guidance in *Alice*, ensuing confusion in applying the standard has been widespread and the results inconsistent. Federal courts have had considerable difficulties in applying the *Alice* test to achieve similar results for similar inventions, ruling for example that a mathematically defined process for hedging against risks of price fluctuations in

---

[13] *See Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014). *See also Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (observing that "a new mineral discovered in the earth or a new plant found in the wild is not patentable subject matter. Likewise, Einstein could not patent his celebrated law that $E=mc^2$; nor could Newton have patented the law of gravity. Such discoveries are 'manifestations of . . . nature, free to all men and reserved exclusively to none.'"; citations omitted).

[14] For summaries of recent attacks on patent validity under judicially-created exceptions to patentable subject matter, see Robert Sachs, Alice*: Benevolent Despot or Tyrant? Analyzing Five Years of Case Law Since* Alice v. CLS Bank*: Part I*, IPWATCHDOG (Aug. 29, 2019), https://www.ipwatchdog.com/2019/08/29/alice-benevolent-despot-or-tyrant-analyzing-five-years-of-case-law-since-alice-v-cls-bank-part-I.; Robert Sachs, Alice*: Benevolent Despot or Tyrant? Analyzing Five Years of Case Law Since* Alice v. CLS Bank*: Part II*, IPWATCHDOG (Sept. 3, 2019), https://www.ipwatchdog.com/2019/09/03/alice-benevolent-despot-or-tyrant-analyzing-five-years-of-case-law-since-alice-v-cls-bank-part-ii/id=112769/.

[15] *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 217 (2014) (quoting *Mayo Collaborative Services v. Prometheus*, 566 U.S. 66, 78-79 (2012)).

[16] "[I]n applying the § 101 exception, we must distinguish between patents that claim the "'buildin[g] block[s]'" of human ingenuity and those that integrate the building blocks into something more, thereby "transform[ing]" them into a patent-eligible invention." *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 217 (2014) (quoting *Mayo Collaborative Services v. Prometheus*, 566 U.S. 66, 78, 89 (2012)).

commodities markets was an "abstract idea" ineligible for patenting,[17] while a logic design for organizing and improving searchability of a "self-referential" database was patent eligible.[18] Courts, examiners at the United States Patent and Trademark Office (USPTO), and patent specialists have struggled to make principled distinctions between advances such as these and to provide meaningful guidance about the likelihood that particular advances will qualify as patentable subject matter.

B. What *Alice* Left Behind: A Wake of Ambiguity, Unpredictability, and Disruption

The central problem with *Alice* is that its "standard" is vacuous -- the emperor without clothes.[19] No matter how often we call this a "standard" it is not one – it is rather a notation of a problem without any indication of how to solve it. The *Alice* opinion stands out adversely among judicial rulings in at least four respects:

1) the opinion swept away several prior standards[20] without meaningful analysis or criticism of their adverse qualities (from which some understanding of the goals of a new standard might have been gained);

2) the purported *Alice* "standard" is framed in remarkably ambiguous terms[21] which invited broad, narrow, derivative and creative reinterpretations by courts and others struggling to find meaning in the terms;

3) the remainder of the Court's opinion in *Alice* provided little guidance on how to add meaning to the standards mentioned, allowing lower courts to adopt highly diverse approaches as arguably consistent with *Alice* and producing a fragmented (and

[17] *See Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 218-21 (2014) (describing, as consistent with the *Alice* standard, the patentability analysis and result concerning the price hedging method at issue in *Bilski v. Kappos*, 561 U.S. 593, 612 (2010)).

[18] *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1330 (Fed. Cir. 2016).

[19] Sadly, this analogy is not original to the author. Circuit Judge Jay Plager has described recent jurisprudence based on the *Alice* standard in similar terms. *See Interval Licensing LLC v. AOL, Inc.*, 896 F.3d 1335, 1353-54 (Fed. Cir. 2018) (Plager, J., concurring in part and dissenting in part).

[20] For a brief overview of the judicially developed patentable subject matter standards that preceded and were displaced by the *Alice* test, see Mark A. Lemley, Michael Risch, Ted Sichelman, & R. Polk Wagner, *Life After* Bilski, 63 STAN. L. REV. 1315, 1317-1322 (2011).

[21] The ambiguity of the standard is highlighted by the fact that two of its key terms – the features that make a patent "directed to" patent ineligible subject matter and the "something more" that can qualify an invention as patentable subject matter – had no antecedents in patent law and were not defined in *Alice.*

The Court itself added to confusion over the first of these terms, noting in *Alice* that all inventions are in some sense based on abstract ideas (thereby suggesting that all inventions are directed to abstract ideas) and then using the characteristic of being directed to an abstract idea as a means for identifying a subset of patents raising patentable subject matter problems (thereby suggesting that not all patents are directed to abstract ideas). *See Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 217 (2014).

The Court's reference to "something more" distinguishing unpatentable subject matter from patentable inventions was ambiguous because it was a truism. It added no meaning or content to the Court's standard. If abstract ideas and patentable inventions are given different treatment in the law, it follows that they must have distinguishing features. The relevant concern is not whether "something more" is required beyond an abstract idea to constitute a patentable advance but rather what is the "something more"? The Court gave no answer. *See id.*

unpredictable) body of subsequent caselaw[22] from which neither later courts nor patent specialists can draw much direction; and

4) this realm of ambiguity is especially important because it damages a field where legal certainty is unusually significant – that is, because it undercuts the relative certainty and predictability about patent rights needed to create forward-looking patent incentives encouraging technology development and guide commercial processes in the face of patent enforcement threats.[23]

C. Meaning for the Patent System

1. A Chorus of Criticism

A wide variety of parties have criticized the impacts of *Alice* on the patent system. A few highlights are presented here.[24] This subsection summarizes observations of leading individuals in the patent field. Subsection 2 describes additional empiric studies providing systematic evidence of the failures of *Alice.*

a. Judicial Views

Several present and past judges on the Federal Circuit Court of Appeals – the court having greatest experience with the *Alice* test and patent litigation generally -- have been highly critical of the *Alice* standard. The following are a few examples.

> "[T]he *Mayo/Alice* regime … creates impossible confusion. … The current state of [patent] eligibility must be characterized as chaotic." – Former Chief Judge Paul R. Michel, Federal Circuit Court of Appeals[25]

> "In my view, recent cases are unclear, inconsistent with one another and confusing. I myself cannot reconcile the cases. That applies equally to Supreme Court and Federal Circuit cases. Nor can I predict outcomes in individual cases with any confidence since the law keeps changing year after year. If I, as a judge with 22 years of experience

[22] The pervasive confusion wrought by the *Alice* standard was summarized by Administrative Patent Judge Hung H. Bui as follows: "Since *Alice*, ... the Federal Circuit, the district courts, and the United States Patent & Trademark Office (USPTO) have all struggled to implement the Supreme Court's *Alice* two-step framework in a predictable and consistent manner. … However, none of [the resulting] precedential decisions provides sufficient guidance as to what aspect of a claimed invention suffices for the claim to transition from ineligible to eligible." Hung H. Bui, *A Common Sense Approach to Implement the Supreme Court's Alice Two-Step Framework to Provide "Certainty" and "Predictability"*, 100 J. PAT. & TRADEMARK OFF. SOC'Y 165, 165-66 (2018).

[23] "[I]f the core function of patent law is to incentivize research, development, and innovation, the landscape of those incentives must be clear *ex ante* to the relevant stakeholders, from solo inventors to major laboratories. As it stands [due to the ambiguity of the *Alice* standard], the landscape is poorly defined, even *ex post*, and even to the adjudicators. At a minimum, then, the status quo under § 101 appears untenable." Matthew G. Sipe, *Patent Law 101: The View from the Bench*, 88 GEO. WASH. L. REV. ARGUENDO 21, 30 (2020).

[24] For a more complete collection of views on the *Alice* standard, see U.S. Patent & Trademark Office, USPTO Patent Eligible Subject Matter: Report on Views and Recommendations from the Public (2017), https://www.uspto.gov/sites/default/files/documents/101-Report_FINAL.pdf.

[25] Paul R. Michel, Testimony Before the Subcommittee on Intellectual Property, United States Senate Committee on the Judiciary (June 4, 2019), https://www.judiciary.senate.gov/imo/media/doc/Michel%20Testimony.pdf (last visited on 8/20/2020).

deciding patent cases on the Federal Circuit's bench, cannot predict outcomes based on case law, how can we expect patent examiners, trial judges, inventors and investors to do so?" – Former Chief Judge Paul R. Michel, Federal Circuit Court of Appeals[26]

"The [*Alice*] test … is indeterminate and often leads to arbitrary results. … Despite the number of [Federal Circuit] cases that have [applied the *Alice* standard] and attempted to provide practical guidance, great uncertainty yet remains. And the danger of getting the answers to [patentable subject matter] questions wrong is greatest for some of today's most important inventions in computing, medical diagnostics, artificial intelligence, the Internet of Things, and robotics, among other things." – Richard Linn, Senior Circuit Judge, Federal Circuit Court of Appeals[27]

"There is almost universal criticism among commentators and academicians that the 'abstract idea' idea has created havoc in the patent law. … Something as simple as a declaration by the Court that the concept of 'abstract ideas' has proven unworkable in the context of modern technological patenting, and adds nothing to ensuring patent quality that the statutory requirements do not already provide, would remove this distraction from the salutary system of patent issuance and enforcement provided by the Congress in the 1952 Patent Act." -- Jay Plager, Circuit Judge, Federal Circuit Court of Appeals[28]

b. Administrative Officials' Views

Several present and past officials within the United States Patent and Trademark Office (USPTO) have also been highly critical of the *Alice* standard as evidenced by the following comments.

Current tests for determining if an advance is a patent ineligible abstract idea "confound the most sophisticated practitioners in our patent system" because "[p]eople simply don't know how to draw the[] distinctions" specified in the tests. -- Andrei Iancu, Director, United States Patent and Trademark Office[29]

[26] Brief of the Honorable Paul R. Michel (ret.) as Amici Curiae Supporting Petitioners, Athena Diagnostics, Inc. v. Mayo Collaborative Servs., 140 S. Ct. 855 (2020) (No. 19-430), at *13-14 (quoting *The State of Patent Eligibility in America, Part I: Hearing Before the Subcomm. on Intellectual Property of the S. Comm. on the Judiciary*, 116th Cong. 2 (2019) (testimony of Hon. Paul R. Michel)).

[27] *Smart Sys. Innovations, LLC v. Chicago Transit Auth.*, 873 F.3d 1364, 1377-78 (Fed. Cir. 2017) (Linn, J., dissenting in part).

[28] *Interval Licensing LLC v. AOL, Inc.*, 896 F.3d 1335, 1353-55 (Fed. Cir. 2018) (Plager, J., concurring in part and dissenting in part)(commenting additionally that the "inventive concept" construct now part of patentable subject matter tests carries forward the deficiencies of prior case law that "provided no discernable boundaries for decision-making in specific cases, resulting in an incoherent legal rule that led to arbitrary outcomes.").

[29] Kevin E. Noonan, *Director Iancu Produces Glimmer of Patent Eligibility Hope*, JD SUPRA (Sept. 25, 2018), https://www.jdsupra.com/legalnews/director-iancu-produces-glimmer-of-36294/ (quoting U.S. Patent and Trademark Office Director Andrew Iancu).

> Court rulings have left patentable eligibility "a real mess, and you could use stronger words than that." – David J. Kappos, former Director, United States Patent and Trademark Office[30]

> "Like … Sisyphus, we [search for abstract ideas and related invention features in applying the *Alice* standard] because we must -- even if those constructs fail[] and fail[] again, year after year." -- Hung H. Bui, Administrative Patent Judge at the Patent Trial and Appeal Board (PTAB)[31]

c. Practitioners' Views

Practitioners have also strongly criticized the *Alice* standard and pointed out its adverse implications for innovation. For example, the Chair of the Section of Intellectual Property Law of the American Bar Association has observed that:

> the Supreme Court has injected ambiguity into the subject matter eligibility determination. In particular, the current jurisprudence on patent eligibility under section 101 is confusing, creates uncertainty as to the availability and enforceability of patent assets, arguably risks the incentive to innovate provided by patents in technologies in which U.S. industry has historically led the world, and potentially places the U.S. in a less advantageous position on patent protection than our leading competitor nations. Indeed, the uncertainty that has resulted from recent Supreme Court precedent and its progeny may create the risk that investment by U.S. businesses in certain new technologies will be discouraged by virtue of the Court's interpretation of the definition of what may be patented, as found in 35 U.S.C. § 101.[32]

d. Innovators' Views

Leading innovators – including the nation's number one patent recipient, the IBM Corporation – have condemned the *Alice* standard as difunctionally indeterminant. IBM representatives described the *Alice* test as "unworkably ambiguous."[33] IBM's experience has convinced it that "[t]he identification of an 'abstract idea' is … too abstract an exercise to be of any value towards reaching a rational decision on whether an invention is patentable subject matter."[34]

Ryan Davis, *Kappos Calls for Abolition of Section 101 of Patent Act*, Law360 (04/12/16) available at https://www.law360.com/articles/783604/kappos-calls-for-abolition-of-section-101-of-patent-act (quoting former U.S. Patent and Trademark Office Director David J. Kappos).

[31] Hung H. Bui, *A Common Sense Approach to Implement the Supreme Court's Alice Two-Step Framework to Provide "Certainty" and "Predictability"*, 100 J. PAT. & TRADEMARK OFF. SOC'Y 165, 165-66 (2018).

[32] Letter from Donna P. Suchy, Section Chair. American Bar Association Section of Intellectual Property Law to The Honorable Michelle K. Lee, Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office (January 18, 2017), https://www.uspto.gov/sites/default/files/documents/RT2%20Comments%20ABA-IPL.pdf.

[33] U.S. Patent & Trademark Office, USPTO Patent Eligible Subject Matter: Report on Views and Recommendations from the Public 30 n. 272 (2017), https://www.uspto.gov/sites/default/files/documents/101-Report_FINAL.pdf.

[34] *Id.* at 30 n. 277.

In a similar vein, officials from a group of research-focused companies (InterDigital, Fallbrook Technologies Inc., and Digimarc Corporation) voiced several particular objections to the *Alice* standard:

> [T]he Supreme Court has established a test for patent subject matter eligibility (SME) that has left the state of SME law in disarray and confusion. Specifically, the current law (1) is unworkable because there is no definition of "abstract idea" that is sufficiently precise to serve as a legal standard, (2) is contrary to the actual language of the Patent Act, (3) confusingly conflates SME with obviousness, and (4) is unnecessary in view of the numerous other recent judicial and legislative changes that address overly broad and vague patents.[35]

e. Commentators' Views

In 2017, the USPTO gathered and published the views of commentators and other members of the public regarding patent eligible subject matter standards.[36] Many persons were highly critical,[37] one concluding that the Supreme Court had "failed to [provide] objective, predictable criteria ... to determine whether a claim is drawn to eligible or ineligible subject matter."[38] The *Alice* test was described as a "nightmare,"[39] "unworkable,"[40] "fail[ing] to define crucial terms,"[41] and creating "[in]sufficient certainty to serve as a legal standard for anything, let alone the important determination of whether an invention is patent eligible."[42]

Scholars have also raised many criticisms of the *Alice* test, describing it as "a foggy standard cloaked as a rule,"[43] "too philosophical and policy based to be administrable,"[44] "rife with indeterminacy,"[45] and raising a "crisis of confusion."[46] The "abstract idea" concept

---

[35] Letter from Jannie K. Lau, Executive Vice President, General Counsel and Secretary, INTERDIGITAL, INC., Jeffrey A. Birchak, Assoc. General Counsel, VP Intellectual Property and Asst. Secretary, Fallbrook Technologies Inc., & Joel Meyer Executive Vice President, Intellectual Property, Digimarc Corporation to The Honorable Michelle K. Lee, Under Secretary of Commerce for Intellectual Property and Director of U.S. Patent and Trademark Office (January 18, 2017), https://www.uspto.gov/sites/default/files/documents/RT2%20Comments%20InterDigital%20Inc.pdf.

[36] U.S. Patent & Trademark Office, USPTO Patent Eligible Subject Matter: Report on Views and Recommendations from the Public (2017), https://www.uspto.gov/sites/default/files/documents/101-Report_FINAL.pdf.

[37] Comments on the Supreme Court's patentable subject matter jurisprudence were not uniformly negative. Some commentators noted possible benefits of this jurisprudence in 1) weeding out overly broad patents, 2) requiring claiming of specific innovation designs rather than results, 3) empowering patent litigants in battles with patent assertion entities, and 4) aiding domestic American companies by increasing competition over the development and implementation of unpatentable technologies in the United States. *See id.* at 23-27.

[38] *Id.* at 29-30.

[39] *Id.* at 30.

[40] *Id.*

[41] *Id.*

[42] *Id.*

[43] Michael Risch, *Nothing Is Patentable*, 67 FLA. L. REV. F. 45 (2015).

[44] Dennis Crouch, *Eligibility: Explaining the IPO Legislative Proposal*, PATENTLY-O (Feb. 9, 2017), https://patentlyo.com/patent/2017/02/eligibility-explaining-legislative.html.

[45] 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).

[46] David O. Taylor, *Amending Patent Eligibility*, 50 U.C. DAVIS L. REV. 2149, 2164 (2017).

incorporated in the *Alice* standard is "multiply ambiguous",[47] resulting in a patentable subject matter standard that "has plunged into a seemingly ever widening maelstrom of uncertainty."[48] In the face of this uncertainty, "the [Supreme Court] has provided little guidance with respect to the readjusted contours of the newly invigorated doctrine, and as a consequence, judges and the PTO have been thrown into a state of confusion with respect to the proper application of the doctrine; the high degree of uncertainty is even more problematic for patent attorneys and their clients."[49]

Summarizing the frustration of many observers with both the indeterminacy of the *Alice* standard and the failure of courts to provide additional useful guidance despite almost a decade of opportunities, Gene Quinn, founder of the IP Watchdog legal blog and long-time patent system observer, suggested wryly that, rather than continuing to use the Supreme Court's *Alice* test, "[w]hy don't we just tie a rope around the necks of the inventors and see if they float? Such an approach would be almost more enlightened than the hide the ball test we have now. At least we'd all know the rules!"[50]

2. Systematic Evidence of Failure

Several empiric studies have examined the impact of *Alice* on decisions and behaviors of stakeholders in the patent system. This subsection summarizes the results of this research.

a. Impacts on Patent Applicants

Potential impacts on patent applicants due to *Alice* include changes in research patterns (as lines of research previously thought to be valuable based on patenting opportunities are marked down in value because patents may not be available) and changes in intellectual property protection strategies for completed research (as innovators adjust protection approaches to rely more often on trade secret protections in the absence of clearly available patent protections or adjust the wording of patent applications to emphasize features that will, hopefully, produce better results under the *Alice* standard).

A number of systematic studies have attempted to gauge the impact of the *Alice* standard on patent applications and the work of patent examiners at the United States Patent and Trademark Office (USPTO). The most extensive was completed by Jay P. Kesan and Runhua Wang in 2020.[51] Kesan and Wang evaluated patent applications and USPTO office actions over the five-year period between 2012 and 2016, roughly two years before and after the *Alice* decision in 2014. Patent applications concerning technologies in the manufacturing sector were

[47] Kevin Emerson Collins, *Bilski and the Ambiguity of "An Unpatentable Abstract Idea,"* 15 LEWIS & CLARK L. REV. 37, 41 (2011).
[48] John M. Golden, Flook *Says One Thing,* Diehr *Says Another: A Need for Housecleaning in the Law of Patentable Subject Matter*, 82 GEO. WASH. L. REV. 1765, 1770 (2014).
[49] Christopher M. Holman, *Patent Eligibility Post*-Myriad*: A Reinvigorated Judicial Wildcard of Uncertain Effect*, 82 Geo. Wash. L. Rev. 1796, 1798 (2014).
[50] Gene Quinn, *It Is Time to Define the Term "Abstract Idea,"* IPWATCHDOG (May 18, 2017), http://www.ipwatchdog.com/2017/05/18/time-define-term-abstract-idea/id=83393/.
[51] *See* Jay P. Kesan & Runhua Wang, *Eligible Subject Matter at the Patent Office: An Empirical Study of the Influence of* Alice *on Patent Examiners and Patent Applicants,* 105 MINN. L. REV. 527 (2020).

used as the control group because these applications are rarely rejected under the abstract ideas exclusion to patentable subject matter and are therefore very unlikely to be affected by *Alice*. The study compared the office action results for patent applications in the control group with those for patent applications in three other technology areas -- business methods, bioinformatics, and software.[52]

Looking at patent application filings, Kesan and Wang found post-*Alice* drops in several technology areas, suggesting a diminished attraction of patent rewards and corresponding drops in patent-based innovation incentives. According to Kesan and Wang, "[p]atent applicants in all three technology areas decreased their reliance on the patent system and filed fewer patent applications as compared to the time period before *Alice*."[53]

In some technology areas, the drops in application numbers were dramatic. For example, Kesan and Wang found the following impacts of *Alice* on patent applications related to business methods:

> Patent applicants filed fewer patent applications in business methods after *Alice*. In [USPTO Technology Center (TC)] 3600 for general business methods, the number of patent application filings per month on average decreased by 38.16% in the twelve months after the *Alice* decision (June 2014-June 2015) compared to the same length of time before the *Alice* decision (May 2013-May 2014). The median for the patent filing numbers per month was 9,018 before the *Alice* decision, and it decreased to 5,445 after the *Alice* decision. The degree of the decrease was higher for patent applications in the business methods of finance and e-commerce. In finance, the average number of patent application filings per month decreased by 57.63% in the thirteen months after the *Alice* decision. In e-commerce, the average number of patent application filings per month decreased by 79.11% after the *Alice* decision. Within e-commerce, after the *Alice* decision, the average number of patent application filings in cryptography per month decreased by 67.41%, and the average number of patent application filings in health care per month decreased by 86.41%.[54]

Applications also went down substantially in the bioinformatics field:

> Patent applicants in bioinformatics … became pessimistic about filing more patent applications after *Alice*. The average number of patent applications filed in bioinformatics … decreased by 74.21% per month during the nineteen months after the *Alice* decision (June 2014 to December 2015) compared to the same length of time before the *Alice* decision (January 2013 to May 2014).[55]

These large drops in applications indicate that, at the very least, *Alice* was viewed as a sea change in patent eligibility in certain technology fields. Patents for advances in these fields – attractive in substantial numbers before *Alice* – dropped in perceived value after *Alice*. The

[52] *See id.* at 534-35.
[53] *Id.* at 604.
[54] *Id.* at 596.
[55] *Id.* at 594-95.

impacts of patent incentives in these fields (as well as of patent restrictions via patent rights enforcement) changed equally dramatically with *Alice.* Yet, the policy bases and need for these large changes in patent impacts were not clearly explained by the Court in its opaque discussions of reasoning in *Alice.* Indeed, it is not clear if these impacts – including both large drops in patent applications and differential impacts on several key technologies – were even appreciated by the Court as probable consequences of its *Alice* ruling.

b. Impacts on Patent Examiners

Additional studies have attempted to identify the impact of *Alice* on the work of examiners at the USPTO. These studies have measured both reductions in patent applications following *Alice* (particularly in applications for certain technologies) and changes in office actions adopted by USPTO examiners after *Alice*.[56]

In one of the most detailed studies of examiner behaviors post-*Alice*, Kesan and Wang's study (already introduced in subsection (a) above) used statistical analyses to measure differences in USPTO office actions before and after *Alice.*[57] They focused on office actions concerning three types of advances – innovations in business methods, bioinformatics, and software. Employing difference-in-difference statistical regression methods, Kesan and Wang found that *Alice* resulted in more patentable subject matter rejections in the software, business methods, and biotechnology areas. The patterns of rejections they observed suggested that *Alice* added material confusion to patent prosecution processes, at least for some technologies. According to Kesan and Wang, "[o]ur causal empirical study of the *Alice* decision reveals how that case impacted both patent examiners and patent applicants, increasing the transaction costs associated with patent prosecution and creating uncertain outcomes in patent allowance."[58] Their empirical results "portray a murky picture of how *Alice* plays out in different technology sectors -- quite unworkable in several sectors, yet providing predictable guidance in a few areas."[59]

Kesan and Wang found a disconnect in some technology fields between how examiners applied *Alice* and how patent applicants projected results under the test. Efforts by the USPTO to interpret *Alice* and instruct examiners on how to apply the *Alice* standard may have inadvertently increased confusion on the part of patent applicants. The result was greater difficulty on the part of applicants in responding to and overcoming initial adverse results in patent examination processes by making curative changes in patent applications. Kesan and Wang described this impact as follows for patent applications covering business methods:

---

[56] Office actions are rulings by examiners on whether a patent should issue. *See generally* United States Patent and Trademark Office, *Responding to Office Actions* (2020), https://www.uspto.gov/patents/maintain/responding-office-actions. In early stages of examiners' patent reviews, negative office actions are often tentative (described by the USPTO as "initial rejections" or "non-final office actions" as distinct from "final rejections") and can be overcome by either arguments persuading an examiner that an initial rejections was unfounded or by making changes to the relevant patent application that remove the grounds for rejection.

[57] *See id.* at 534-35.

[58] *Id.* at 604.

[59] *Id.* at 536.

> Examiners gave more final rejections to applications in business methods under § 101 after the *Alice* decision. In other words, after the *Alice* decision, applicants faced difficulties in successfully overcoming § 101 rejections. For applications that initially received a §101 rejection, *Alice* made it more difficult for them to overcome their initial § 101 rejections. The implementation of the law by the PTO increased the uncertainties in patent eligibility and the difficulties in overcoming these uncertainties to a higher degree. … In [the fields of business methods addressing finance and e-commerce in particular], applicants were not clearly guided by the *Alice* decision, and they did not successfully adjust their patenting strategies, despite filing fewer patent applications. These applicants faced higher patent prosecution expenses because of *Alice* and the PTO's implementation of it.[60]

Kesan and Wang's conclusions regarding increased UPSTO rejections post-*Alice* are consistent with the results of an earlier study by Colleen Chien and Jiun Ying Wu using different data.[61] Chien and Wu considered USPTO office actions between 2008 and mid-July 2017. They found that:

> the data confirm that [section 101 standards including the *Alice* test are] playing an increasingly important role in the examination of software and medical diagnostics patents. More than four years after the *Alice* decision, the role of subject matter does not appear to be receding, remaining an issue in a large share of cases not only at their outset but among applications that go abandoned through the last office action. That patentees cannot tell before they file whether or not their invention will be considered patent-eligible, and perceive that much depends not on the merits of the case but in what art unit the application is placed also presents a challenge to the goal of predictability in the patent system.[62]

In short, uncertainty over the *Alice* standards may have produced substantial differences in outcomes among subgroups of patent examiners, making the assignment of a patent application for review by one technology art unit (a subgroup of examiners) versus another a significant determinant of patent review outcomes. This dimension of uncertainty – stemming from administrative practices within the USPTO that are beyond patent applicant control – further undercuts the projected value of patent rewards and reduces the strength of patent incentives.

A third study by Robert Sachs suggests that patent examiners not only made significantly more rejections post-*Alice* in certain technology areas, but that the reasons for the rejections were frequently opaque to outsiders – making future predictions based on past rejections nearly impossible. This opacity raises questions about whether or not the rejections were meaningfully (and consistently) guided by the *Alice* standard. The findings of this study, reported in the *Bilski* Blog,[63] were as follows:

---

[60] *Id.* at 598.
[61] Colleen Chien & Jiun Ying Wu, *Decoding Patentable Subject Matter*, 2018 PATENTLY-O PAT. L.J. 1 (Oct. 16, 2018), https://patentlyo.com/media/2018/10/Chien.Decoding101.2018.pdf.
[62] *Id.* at 17.
[63] *See* Robert Sachs, *#AliceStorm in June: A Deeper Dive into Court Trends, and New Data on* Alice *Inside the*

> [W]hen it comes to business methods, we see [substantial changes in examiner results]: prior to *Alice*, [patent prosecutors representing patent applicants] overcame … non-final § 101 rejections generally about 62% of the time, leading to final rejection rates in the 23-46% range; thus prosecutors had more or less even odds of getting over the rejection. What is shocking is that after *Alice*, the final rejection rate soared into the 90% range. …
>
> Now I've reviewed several hundred post-*Alice* rejections, and I've talked to a large number of prosecutors. What I've found is that the majority of the non-final § 101 rejections were relatively formalistic, with little actual substantive analysis. Likewise, in a review of 87 office actions issued in November 2014 with § 101 rejections, Scott Alter and Richard Marsh found that 63 percent of those actions were "boilerplate" rejections. In my view, most prosecutors put forward at least a decent argument to show that the claims are not abstract, have at least one significant limitation, and do not preempt the abstract idea. Response arguments to § 101 rejections tend to run longer than response to prior art rejections, and I've seen many that resemble appeal briefs if not legal treatises, all to overcome a one paragraph rejection. They all presented at least enough of an argument to overcome the prima facie case for the rejection. And yet the final rejections keep coming -- and often with little or no substantive rebuttal of the prosecutor's arguments.[64]

Thus, the track record of the USPTO has perpetuated (or even expanded) the ambiguities of *Alice*, giving practitioners little additional information about how to evaluate the patentability of advances, particularly in connection with business method advances and other types of innovations most extensively affected by *Alice.*

c. Impacts on Courts

1) The Federal Circuit – A History of Fragmented Views

Primary evidence of the lack of guidance in *Alice* and other patentable subject matter cases from the Supreme Court lies in the extensive history of fragmented opinions and diverse analytic approaches by members of the United States Court of Appeals for the Federal Circuit in trying to find meaning and consistent patentable subject matter standards in the wake of *Alice.* In a series of cases – many decided in *en banc* proceedings resulting in numerous dissenting and concurring opinions but adding little clarity to the law -- the Federal Circuit has attempted and failed to come to a consistent approach to patentable subject matter exceptions derived from *Alice* and related Supreme Court opinions. Bound to follow Supreme Court precedent, Federal Circuit judges cannot agree on what that precedent means.

USPTO, *BILSKI* BLOG (June 30, 2015), https://www.bilskiblog.com/2015/06/alicestorm-a-deeper-dive-into-court-trends-and-new-data-on-alice-inside-the-uspto.

[64] *Id.*

Despite the centrality of this determination to their function as a specialized court interpreting and clarifying patent law features,[65] the Federal Circuit has failed to define a consistent, workable means to apply the *Alice* standard. The confusion of the Federal Circuit court – despite extensive efforts to gain clarity with the support of diverse litigators specializing in patent law and litigation -- is concrete evidence of the vacuity of the *Alice* standard. And the failure of the Federal Circuit court to gain this clarity has ensured that the confusion and detrimental impacts of *Alice* have been passed on to lower courts and patent practitioners who must try to divine meaning and make predictions from the tea leaves of the all too opaque language of *Alice.*

A good example of the prevailing and continuing confusion at the Federal Circuit over the meaning of *Alice* was evident in a 64 page "order" issued by the court in 2019 concerning *Athena Diagnostics, Inc. v. Mayo Collaborative Services, LLC*.[66] The order announced the denial of a petition for rehearing *en banc* of a split decision by a Federal Circuit panel invalidating a medical diagnostics patent for lack of patentable subject matter.[67] The order denying the *en banc* petition was addressed in eight opinions from various combinations of Federal Circuit judges, four concurring in the denial of the petition and four dissenting in the denial.[68]

Remarkably, among both the judges supporting and opposing the rejection of the *en banc* petition, there was broad agreement that the *Alice* standard and related patentable subject matter case law from the Supreme Court lacked clarity and was compelling judges to embrace rulings that they thought ill advised. The following excerpts from just two of the many opinions in the case suggest the frustration of many members of the court with the lack of guidance judges have been given by the Supreme Court in *Alice* and related patentable subject matter cases.

---

[65] The Federal Circuit court was established, in part, to add clarity to patentable subject matter standards and other features of patent law. For many years, it served this function well. As summarized by Randall R. Rader, then a Circuit Judge on the Federal Circuit court and later Chief Judge:

> [I]n 1982, the Court of Appeals for the Federal Circuit was created. It was put into place to correct the failures of the Supreme Court and to really provide a standard for what is an appropriate advance in the technological arts; an exclusive right. Over the years, the invention standard used by the Supreme Court had become incredibly diaphanous and a "veritable phantom" as it was labeled. The Federal Circuit, I think, has accomplished a great mission in bringing uniformity, predictability, and enforceability to law."

Randall R. Rader, *The Fourth Annual Honorable Helen Wilson Nies Memorial Lecture in Intellectual Property Law*, 5 MARQ. INTELL. PROP. L. REV. 1, 2-3 (2001).

[66] 927 F.3d 1333 (2019).

[67] The patent covering methods for diagnosing neurological disorders by detecting antibodies to a protein. *See Athena Diagnostics, Inc. v. Mayo Collaborative Servs., LLC*, 915 F.3d 743, 746-49 (Fed. Cir. 2019). The majority (Circuit Judges Lourie and Stoll) concluded that the claims in the patent were directed to a natural law and that the invention described there was indistinguishable from the natural law as steps described in the claimed method only required standard techniques to be applied in a standard way. *See id.* at 755. Judge Newman, writing in dissent, disagreed, finding that the claimed invention involved patentable subject matter because it was a "new and improved technique, for producing a tangible and useful result, [that] falls squarely outside those categories of inventions that are 'directed to' patent-ineligible concepts." *See id.* at 757 (Newman, J., dissenting) (quoting *Rapid Litig. Mgmt. Ltd. v. CellzDirect, Inc.*, 827 F.3d 1042, 1050 (Fed. Cir. 2016)).

[68] The various opinions in this case are summarized in *Athena v. Mayo: A Splintered Federal Circuit Invites Supreme Court or Congress to Step Up On 101 Chaos*, IP WATCHDOG (July 8, 2019), https://www.ipwatchdog.com/2019/07/08/splintered-federal-circuit-invites-supreme-court-review-athena-v-mayo/.

Circuit Judge Hughes (writing on behalf of Chief Judge Prost and Circuit Judge Taranto and concurring in the rejection of the *en banc* petition):

> The multiple concurring and dissenting opinions regarding the denial of *en banc* rehearing in this case are illustrative of how fraught the issue of § 101 eligibility, especially as applied to medical diagnostics patents, is. I agree that the language in *Mayo*, as later reinforced in *Alice*, forecloses this court from adopting an approach or reaching a result different from the panel majority's. I also agree, however, that the bottom line for diagnostics patents is problematic. But this is not a problem that we can solve. As an inferior appellate court, we are bound by the Supreme Court.
>
> I, for one, would welcome further explication of eligibility standards in the area of diagnostics patents. Such standards could permit patenting of essential life-saving inventions based on natural laws while providing a reasonable and measured way to differentiate between overly broad patents claiming natural laws and truly worthy specific applications.[69]

Circuit Judge Moore (writing on behalf of Circuit Judges O'Malley, Wallach, and Stoll and dissenting in the rejection of the *en banc* petition):

> This is not a case in which the judges of this court disagree over whether diagnostic claims, like those at issue in *Athena*, should be eligible for patent protection. They should. None of my colleagues defend the conclusion that claims to diagnostic kits and diagnostic techniques, like those at issue, should be ineligible. The only difference among us is whether the Supreme Court's *Mayo* decision [as further interpreted in *Alice*] requires this outcome. The majority of my colleagues believe that our hands are tied and that *Mayo* requires this outcome. I believe *Mayo* does not. The Patent Act renders eligible the invention or discovery of any new and useful process. 35 U.S.C. § 101. And the patent system exists to promote exactly this sort of specific, targeted application of a life-saving discovery, which is characterized by extraordinarily high initial market entry costs. The claims in this case should be held eligible, and they are distinguishable from *Mayo*.[70]

In short, for reasons that were poorly understood and difficult if not impossible for the many of the judges to explain, the Supreme Court's *Alice* standard (restating the Court's earlier analysis in *Mayo*) compelled a result that a significant portion of the court – perhaps even a majority – felt was unwise with respect to a type of life-saving technology that all felt was valuable.[71] This sort of caselaw by opaque edict would be detrimental in any area of the law; it is particularly

---

[69] *Id.* at 1337 (Hughes, J., concurring) (referring to the Supreme Court's analysis in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. 66 (2012) which was reaffirmed in *Alice*).
[70] *Id.* at 1352 (Moore, J., dissenting).
[71] Despite the many pleas of the Federal Circuit judges writing in *Athena* for clarification of the governing patentable subject matter standards, the Supreme Court ultimately refused to grant certiorari in this case. *Athena Diagnostics, Inc. v. Mayo Collaborative Services, LLC,* 140 S.Ct. 855 (2020).

contemptuous of the incentive and regulatory goals of patent law where certainty about future rewards and commercial constraints lie at the heart of the legal regime.

2) Lower Federal Courts – Inconsistent Results

A comprehensive analysis by Robert Sachs of lower court case law after *Alice* found dramatic changes in court rulings on patentable subject matter.[72] According to Sachs, "[i]n the five years [prior to 2019], 781 unique patents have been held invalid in whole or in part by federal courts. Compared with the five years prior to *Alice*, there has been a 1056% increase in the number of decisions finding ineligible claims, and a 914% increase in the number of invalidated patents."[73]

These sweeping results have been produced amidst extensive uncertainty about governing standards amidst district courts. This uncertainty starts with the lack of clarity they have inherited from the ambiguous tests promulgated by both the Supreme Court and Federal Circuit court. Governed by these ambiguous tests, district courts have not surprisingly produced correspondingly ambiguous and inconsistent analyses that track their counterparts from higher courts. In addition, some district courts have added their own original approaches (a natural reaction in the absence of meaningful guidance from above), with the result that the diversity of approaches at the district court level is even broader than the morass of approaches at the Federal Circuit.

Summarizing the array of district court decisions in the wake of *Alice,* Robert Sachs observed that:

> If you are a rights holder or licensor who depends on the objective certainty of patent rights, then the numbers [of struck down patents emerging from federal district courts] are merely a grim confirmation that bad patents and bad science make for bad law. The consistency that *Alice* brings to litigation is, at best, the epistemic certainty that a patent on just about any kind of technology can be subject to a motion to dismiss for ineligible subject matter -- and that nearly 60% of such attacks succeed in the district courts and are then affirmed over 85% of the time on appeal to the Federal Circuit. You agree with the assessment that *Alice's* edict is a fancy I-know-it-when-I-see-it shorthand for deciding whether patent claims have so-called "inventive merit" -- an approach that Judge Plager described in *Interval Licensing v. AOL* (2018) as providing "no discernable boundaries

[72] *See* Robert Sachs, Alice*: Benevolent Despot or Tyrant? Analyzing Five Years of Case Law Since* Alice v. CLS Bank*: Part I*, IPWATCHDOG (Aug. 29, 2019), https://www.ipwatchdog.com/2019/08/29/alice-benevolent-despot-or-tyrant-analyzing-five-years-of-case-law-since-alice-v-cls-bank-part-I; Robert Sachs, Alice*: Benevolent Despot or Tyrant? Analyzing Five Years of Case Law Since* Alice v. CLS Bank*: Part II*, IPWATCHDOG (Sept. 3, 2019), https://www.ipwatchdog.com/2019/09/03/alice-benevolent-despot-or-tyrant-analyzing-five-years-of-case-law-since-alice-v-cls-bank-part-ii/id=112769/.

[73] Robert Sachs, Alice*: Benevolent Despot or Tyrant? Analyzing Five Years of Case Law Since* Alice v. CLS Bank*: Part I*, IPWATCHDOG (Aug. 29, 2019), https://www.ipwatchdog.com/2019/08/29/alice-benevolent-despot-or-tyrant-analyzing-five-years-of-case-law-since-alice-v-cls-bank-part-I.

for decision-making in specific cases, resulting in an incoherent legal rule that led to arbitrary outcomes."[74]

d. Impacts on Attorneys

Patent attorneys and additional counsel who litigate patents are regularly called upon to predict the patentability of various inventions. Their ability to give reliable answers has been materially undercut by *Alice* and the ensuing uncertainty of patentable subject matter caselaw. To measure the scope of this effect, Jason D. Reinecke sought to test the ability of attorneys to predict judicial outcomes under the *Alice* standards.[75] Reinecke submitted software patent claims to attorneys who were asked to predict how courts would rule regarding subject matter eligibility. Each attorney surveyed was given five patent claims randomly chosen from a group of fifty software claims addressed in decisions of district courts at pleading stages in litigated cases. Reinecke then compared attorneys' predictions to the actual rulings of district courts regarding the presence of patentable subject matter in the patent claims.

Reinecke summarized his results as follows:

> [P]atent prosecutors (attorneys who write patents) correctly identified how courts ruled 67.3% of the time. Patent litigators fared much more poorly, only correctly identifying court outcomes 59.7% of the time. Interestingly, patent litigators varied significantly in their inferential abilities. This means that some groups of patent litigators were much better than 59.7% at predicting court outcomes, and some were worse -- with the difference being much more than one would expect due to chance alone.[76]

Reinecke speculated that the differences between results within the litigators surveyed may have stemmed from different litigators' lesser or greater familiarity with software patent claims and subject matter considerations, but he was unable to confirm this distinction with the data he possessed.[77]

The success rates found by Reinecke seem remarkably low.[78] A student who was only right about 67 percent of the time (the success rate for patent prosecutors in Reinecke's study) would receive a "D" grade on an exam. An attorney's clients would hardly be satisfied if they

---

[74] Robert Sachs, Alice*: Benevolent Despot or Tyrant? Analyzing Five Years of Case Law Since* Alice v. CLS Bank*: Part II*, IPWATCHDOG (Sept. 3, 2019), https://www.ipwatchdog.com/2019/09/03/alice-benevolent-despot-or-tyrant-analyzing-five-years-of-case-law-since-alice-v-cls-bank-part-ii/id=112769/ (quoting *Interval Licensing LLC v. AOL, Inc.*, 896 F.3d 1335, 1353-55 (Fed. Cir. 2018) (Plager, J., concurring in part and dissenting in part) and Giles S. Rich, *Principles of Patentability*, 28 GEO. WASH. L. REV. 393, 405 (1960)).

[75] *See* Jason D. Reinecke, *Is the Supreme Court's Patentable Subject Matter Test Overly Ambiguous? An Empirical* Test, 2019 UTAH L. REV. 581 (2019).

[76] *Id.* at 583.

[77] *See id.* at 599.

[78] Reinecke was more sanguine about the results he obtained, concluding that "[t]he results clearly show that the two-step [*Alice*] test is not wholly ambiguous or as impossible to administer as some commentators have suggested. If patent prosecutors can correctly predict court outcomes over two-thirds of the time after spending less than one minute analyzing merely one piece of the puzzle, the two-step test is clearly not impossible to administer coherently." *Id.* at 584. For the reasons mentioned in the main text, a success rate of only 67 percent (and lower for patent litigators) seems far below an acceptable level and appears to be evidence of predictive failure not success.

based multi-million dollar products or licensing schemes on an attorney's advice only to lose most of their profits due to the attorney's errors about one-third of the time. And the success rate of 67 percent found for patent prosecutors does not seem materially higher than would have been obtained by guessing about the patentability of the claims in question – even flipping a coin to guess at patentable subject matter should produce correct answers about 50 percent of the time.[79] Presumably, attorneys should be able to provide more added value than flipping a coin. Yet *Alice* has left even patent specialists with little more predictability about patentable subject matter.

e. Impacts on Patent Holders

Impacts on patent holders from *Alice* include losses of value in pre-existing patents (as patents thought to be enforceable are struck down or called into question) and changes in patent litigation and licensing practices. The practical (and often uncertain) consequences for high-tech patent holders since *Alice* were summarized as follows by Robert Sachs:

> With *Alice*, the snipe hunt for an invention is back, only this time it is typically a proxy for invalidating patents for obviousness, lack of written description or enablement without the costly need for the niceties of evidence. As a technology-savvy patent holder you view the Federal Circuit's decisions [since *Alice*] as inconsistent at best and based on an arbitrary division between claims using a computer as a tool (generally ineligible) and claims for improving the computer itself (generally eligible). Of course, you know that computers are inherently tools to do something useful, and that *Alice*'s mention of "improving a computer" was an example of an eligible transformation, not a requirement of one. Your experience before the USPTO has been similar, and until recently, patent examination of your company's software and/or biotech inventions have been dominated by Section 101 rejections, increasing your prosecution costs and the time to issuance. The value of your patents has dropped -- sometimes to zero -- and some licensees have aggressively attempted to renegotiate their agreements.[80]

f. Impacts on Investors

---

[79] This point assumes that the claims used in this study were split roughly equally between claims that did and did not cover patentable subject matter. Under these conditions, a random guess (the equivalent of following the results of a coin flip) would be right as to the presence of patentable subject matter about 50 percent of the time.

[80] Robert Sachs, Alice*: Benevolent Despot or Tyrant? Analyzing Five Years of Case Law Since* Alice v. CLS Bank*: Part II*, IPWATCHDOG (Sept. 3, 2019), https://www.ipwatchdog.com/2019/09/03/alice-benevolent-despot-or-tyrant-analyzing-five-years-of-case-law-since-alice-v-cls-bank-part-ii/id=112769/. Sachs points out that the implications of *Alice* have not been bad for all companies. In particular, concerns that are more likely to be targets of patent suits than beneficiaries of patent rights may gain from the consequences of *Alice*. In Sachs' view:

> [I]f you are a company that is a target of patent assertions, then these numbers are cause for celebration: [*Alice*] has made the world a better place by reducing your exposure to both the meritless claims of existing patents and -- better yet -- the possible universe of future patents that could have been used against you. If you have had to forego patent protection of your own by not filing, abandoning a few applications here and there, or just dealing with increased prosecution costs, it has been a small price to pay for the increased likelihood of successful outcomes as a defendant in patent litigation.

Id.

A survey by David O. Taylor of impacts of *Alice* on decisions of investors to back innovative enterprises found significant negative impacts in some technology fields.[81] Taylor's findings reflected the views of 475 investors representing at least 422 investment firms.[82] Patent rights were significant to most investors. *Alice* was seen as impacting those rights more in some fields than others. Taylor summarized his results as follows:

> The survey results indicate that investors as a whole believe patent eligibility is an important consideration in deciding whether to invest in a company developing technology. Furthermore, the results indicate that a significant portion of the investors who are familiar with the Supreme Court's cases believe these cases have reduced their firms' investments in technological development in all industries. These investors report primarily decreased investments, but also shifting of investments between industries, and in particular out of life sciences industries.[83]

Survey respondents who were familiar with *Alice* and the Supreme Court's other patentable subject matter cases felt that rulings in these cases adversely affected the value of the investors' present holdings and would curtail decisions to back future innovation. Regarding present investments, "[a]bout 40% of knowledgeable investors indicated that the Court's decisions had somewhat negative or very negative effects on their firms' existing investments, while only about 14% of these investors reported somewhat positive or very positive effects."[84] With respect to future investment decisions, "the percentage of … investors who reported increasing investments as a result of the Supreme Court's known eligibility decisions stood at 8%, significantly below the percentage indicating decreased investments at 49%."[85]

[81] David O. Taylor, *Patent Eligibility and Investment*, 41 CARDOZO L. REV. 2019 (2020).
[82] *Id.* at 2051.
[83] *Id.* at 2088 (citations omitted).
[84] *Id.* at 2070 (citations omitted).
[85] *Id.* at 2074 (citations omitted).