

ABSTRACT IDEAS: THE TIME HAS COME FOR CONGRESS TO ADDRESS THE PATENTABILITY OF SOFTWARE AND BUSINESS METHOD INVENTIONS

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ABSTRACT

What is an abstract idea? Is it merely an idea that cannot exist in concrete form? Or is there more to it? The term “abstract” is generally defined as “existing in thought or as an idea but not having a physical or concrete existence.” If this is the correct definition, then how can something physical be abstract? For almost five years now, the United States Patent and Trademark Office (USPTO), the courts, and even some of the most experienced patent practitioners have wrestled with this question.

*On June 19, 2014, the United States Supreme Court handed down its decision in *Alice Corp. v. CLS Bank International*, significantly curtailing the issuance of software and business method patents during the midst of the world-wide Digital Revolution. What was considered a narrow issue before the Court, unexpectedly turned into what most scholars might consider to be the most disruptive Supreme Court decision regarding subject-matter eligibility in the history of the U.S. patent laws.*

*On certification before the Court was the issue of whether a generic-computer implementation of using a third-party intermediary to mitigate settlement risk was a patent-eligible invention, or instead a patent-ineligible abstract idea. In answering this question affirmatively as to the latter, the Court seemingly moved closer to putting an end to the issuance of software and business method patents. To make matters even worse, the Court was reluctant to offer much guidance for determining whether different patents and patent applications claiming similar subject-matter were still patent-eligible. Since the *Alice* decision, however, the United States Court of Appeals for the Federal Circuit, in addition to the USPTO, have found ways to slowly revive the issuance of such patents, as well as provide some clarity as to what constitutes a patent-ineligible abstract idea. In addition, members of Congress have proposed solutions to the problem in the form of amending 35 U.S.C. § 101; however, getting members of Congress to back amendments to the patent law has proven to be another challenge. Thus, in light of these circumstances, including the fact that the United States is moving into the fourth phase of the Digital Revolution, this paper discusses why Congressional action is needed to determine just what type of inventions are patent eligible so as to “Promote the Progress of Science and the Useful Arts” as mandated by the United States Constitution.*

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“No organic law can ever be framed with a provision specifically applicable to every question which may occur in practical administration. No foresight can anticipate, nor any document of reasonable length contain express provisions for all possible questions.” – Abraham Lincoln

I. A BOOK WITH NO PICTURES: AN INTRODUCTION AND ROADMAP

Beginning with the invention of the transistor¹ in 1947, and followed shortly by the first computer in 1951, the Digital Revolution has caused the United States

1. Transistors, more simply put, “are tiny switches that can be triggered by electric signals[.] [t]hey are the basic building blocks of microchips” used in today’s digital electronic devices. Robert Coolman, *What is a Transistor?*, LIVE SCIENCE (May 31, 2014), <https://www.livescience.com/46021-what-is-a-transistor.html>.

of America to undergo “one of the most significant and radical societal, cultural, and economic revolutions of its short history—quite possibly of all human history.”² However, innovation did not end with the invention of the computer; instead, it was just the beginning. Over the next several decades, computers changed from expensive, room-sized appliances that were available for only the biggest enterprises, into universal, household commodities.³ In 1994, the world was introduced to the first ever smartphone that would eventually lead to Apple’s development of the iPhone in 2007, exploding the usage of smartphones and changing the lives of many Americans by giving them the ability to stay connected with friends and family like never before.⁴ And just when the technology seemed too good to be true, cars started driving themselves in 2012, or at least with the assistance of a computer, that is.⁵

Other than possibly your cranky grandfather and his buddies who just prefer the “good-old days,” most Americans would likely agree that the Digital Revolution has made life easier in many aspects. For instance, rather than sending a letter in the mail, or trying to reach a friend on her land-line telephone, email and the widespread usage of cell phones have made communicating with others easier than ever before. Additionally, innovation stemming from the Digital Revolution has enabled almost anything to be performed on or assisted by a computer. As an example, many Americans can now file their tax returns on a computer, as well as submit their return electronically over the internet to the IRS. The IRS may then directly deposit or “wire” an individual’s tax refund into his or her bank account without ever sending a check in the mail.

To put it in another context, the Digital Revolution has created opportunities for programmers to engineer ways to enable a computer to assist in various routine processes. Some of these processes can be as simple as filing your tax return, as in the above example. Thus, the challenge that has been created is how do we help these programmers protect their innovations?

The patent laws of the United States were designed to encourage innovation by rewarding inventors with a limited time monopoly in exchange for the disclosure of their new invention.⁶ One of the requirements for obtaining a patent, however, is that an invention be new or “novel.”⁷ Thus, inventors claiming entitlement to a patent for a software or business method innovation may commonly be denied such a grant, as the only thing the inventor may have accomplished is to implement

2. Anurag Harsh, *The Digital Revolution and its Impact on Industry, Consumers, and Government*, HUFFPOST (Aug. 11, 2016, 4:15 PM), https://www.huffingtonpost.com/entry/the-digital-revolution-and-its-impact-on-industry-consumers_us_57acdc9de4b0ae60ff020c2d.

3. *Id.*

4. See *A Brief History of the Digital Revolution*, SCIENCE & TECHNOLOGY FACILITIES COUNCIL, <https://stfc.ukri.org/files/digital-revolution-infographic/> (last visited Oct. 30, 2019).

5. *Id.*

6. See U.S. CONST. art. I, § 8, cl. 8; JOHN M. GOLDEN, F. SCOTT KIEFF, PAULINE NEWMAN, & HENRY E. SMITH, *PRINCIPLES OF PATENT LAW: CASES AND MATERIALS* 35–40 (7th ed. 2018).

7. 35 U.S.C. §§ 101–102 (2018).

a well-known practice that is “long prevalent in our system of commerce” on a computer.⁸ Under current Supreme Court jurisprudence, this type of invention has come to be known as an unpatentable “abstract idea” that is not in compliance with 35 U.S.C. § 101,⁹ even though “novelty” is determined under 35 U.S.C. § 102.¹⁰ The problem that seems to have arisen in the United States courts and the patent office, however, is determining *what exactly constitutes an unpatentable abstract idea*.

Because many scholars and economists believe we are now heading into the “fourth wave” of the Digital Revolution,¹¹ it is paramount that Congress clear the air, once and for all, as to what type of inventions are eligible to receive a United States patent within the software and business method art fields. That is the focus of this paper. First, this paper explores the history and origins of the abstract idea exception to patent subject-matter eligibility. Next will follow an examination of recent Supreme Court precedent on the abstract idea exception during the early progression of the Digital Revolution, followed by a recap of the Supreme Court’s landmark decision in *Alice Corporation v. CLS Bank International*. The paper then surveys post-*Alice* statistics in e-commerce and computer-related art units in the USPTO, in addition to discussing the current struggles of the U.S. patent system in these related fields. The paper concludes with a discussion of the current state of the law for patentable subject-matter followed by a model amendment to 35 U.S.C. § 101.

II. DOWN THE RABBIT-HOLE: SUBJECT-MATTER ELIGIBILITY AND THE ABSTRACT IDEA EXCEPTION

The Progress Clause of the United States Constitution grants Congress the exclusive 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.”¹² Under this grant of power, Congress passed the Patent Act of 1790, made clarifications and simplified the U.S. patent system in the Patent Act of 1952, and—most recently—made significant changes to the patent laws in the Leahy-Smith America Invents Act (AIA) in 2011.¹³ In addition to these changes, Congress has made minor amendments to the patent laws from time to time in

8. See *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 219–20 (2014) (quoting *Bilski v. Kappos*, 561 U.S. 593, 611 (2010)).

9. See *id.* at 218.

10. 35 U.S.C. § 102 (2018). In fact, many advocates argue that the United States patent system should substantially limit the abstract idea exception of § 101 altogether, reasoning that recent Supreme Court jurisprudence has disturbed the once-bright line between section 101 *patent-eligibility* analysis and sections 102, 103, and 112 *patentability* analysis. See, e.g., Kevin A. Rieffel, *What is Director Iancu Proposing the USPTO do for §101 Analysis?*, IPWATCHDOG (Sept. 25, 2018) (emphasis added), <https://www.ipwatchdog.com/2018/09/25/director-iancu-proposing-uspto-§101-analysis/id=101682/>.

11. Harsh, *supra* note 2; see also John Zysman & Martin Kenney, *The Next Phase in the Digital Revolution: Intelligent Tools, Platforms, Growth, Employment*, 61 COMM. ACM 54, 55 (2018) (discussing how the fourth (current) phase of the Digital Revolution is characterized by “cloud computing facilitated by the increasing abundance of inexpensive computational power, storage, and transmission resources.”).

12. U.S. CONST. art. I, § 8, cl. 8.

13. See *A Brief History of the Patent Law of the United States*, LADAS & PARRY (May 7, 2014), <https://ladas.com/education-center/a-brief-history-of-the-patent-law-of-the-united-states-2/>.

order to “harmonize our patent laws with those of other countries and to address transborder activity that affects the commercial value of U.S. patents.”¹⁴

What constitutes patentable subject-matter is codified in 35 U.S.C. § 101, which states that “[w]hoever 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”¹⁵ Section 101 is commonly referred to as the gatekeeper for patentability,¹⁶ asking the threshold question of whether the “inventions claimed [are] of a *kind* contemplated by Congress as possibly patentable *if* they turn out to be new, useful, and unobvious within the meaning of those terms as used in the statute.”¹⁷ Additionally, § 101 is considered to be a “dynamic provision designed to encompass new and unforeseen inventions,”¹⁸ and the operative language of § 101, except for one word,¹⁹ has never been amended since 1793—three years after the original Patent Act of 1790.²⁰ Despite this, however, the Supreme Court has repeatedly held that § 101 contains an important, implicit exception: laws of nature, natural phenomena, and abstract ideas are not patentable.²¹

The Court’s reasoning for these three judicial exceptions is that laws of nature, natural phenomena, and abstract ideas are “the basic tools of scientific and technological work.”²² Thus, granting a patent that would enable the monopolization of such principals may place an impediment on innovation rather than promoting it, thereby frustrating the main objective that the patent laws were designed to promote: the progress of science and the useful arts.²³ For instance, the exception pertaining to laws of nature would have prevented Isaac Newton from obtaining a patent for discovering the law of gravity.²⁴ Likewise, the natural phenomena exception would bar a discoverer of a new plant found in the wild from

14. LYDIA P. LOREN & JOSEPH S. MILLER, *INTELLECTUAL PROPERTY LAW: CASES & MATERIALS* 124 (6th ed. 2018).

15. 35 U.S.C. § 101 (2018).

16. See, e.g., Dennis Crouch, *The Gatekeeping Function of Patent Eligibility as Part of a More Complete Understanding of § 101 Principles*, PATENTLY-O (Apr. 24, 2016), <https://patentlyo.com/patent/2016/04/wexler-gatekeeping-eligibility.html>.

17. *In re Bergy*, 596 F.2d 952, 963–64 (C.C.P.A. 1979) (Rich, J.) (emphasis in original).

18. *J.E.M. Ag. Supply, Inc. v. Pioneer Hi-Bred Int’l, Inc.*, 534 U.S. 124, 135 (2001).

19. See LOREN & MILLER, *supra* note 14, at 165. In the Patent Act of 1952, the word “art” was traded for the word “process.” *Id.*

20. *Id.* at 124.

21. See, e.g., *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576 (2013) (naturally occurring DNA is product of nature and not patent eligible but cDNA is not naturally occurring and therefore patent eligible); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012) (patent invalid because claimed underlying laws of nature); *Bilski v. Kappos*, 561 U.S. 593 (2010) (held applicants’ method was an unpatentable abstract idea); *Diamond v. Diehr*, 450 U.S. 175, (1981) (process which employed mathematical equation still patentable because do not seek to pre-empt use of equation itself but the process); *Diamond v. Chakrabarty*, 447 U.S. 303 (1980) (human-made micro-organism is patentable).

22. *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972).

23. *Cf. id.*

24. *Chakrabarty*, 447 U.S. at 309.

obtaining a patent.²⁵ However, there is simply no easy example to describe the Court's most hotly-debated judicial exception to patentability: abstract ideas.

So why do we not know what constitutes an abstract idea? Surely there must be a definition for "abstract idea" buried somewhere in prior Supreme Court opinions. After all, the abstract idea exception has "deep roots" in Supreme Court jurisprudence, dating as far back as the 19th century.²⁶ The exception first seemed to appear, at least in the Supreme Court,²⁷ during its December term of 1852 in the case of *Le Roy v. Tatham*.²⁸ In that case, the Court stated that an abstract principle is one that is "considered apart from any special purpose or practical operation;"²⁹ it is "a fundamental truth; an original cause; a motive."³⁰ Although this notion of abstract principles first appeared in the 1850s, the Supreme Court did not seem to revisit using the term "abstract" itself for over a hundred years.³¹ In fact, it was not until 1972 when the "abstract idea" exception to patentability finally reappeared before the Supreme Court in the case of *Gottschalk v. Benson*,³² which will be discussed in further detail below. Since *Benson*, however, the abstract idea exception has arisen much more frequently in Supreme Court cases concerning issues of patent subject-matter eligibility, where it has become common practice for the Court to regularly state that abstract ideas are one of the three judicial exceptions to patentability.³³

Despite this extensive history, the Supreme Court has been reluctant to offer modernized analysis tools for determining whether a specific patent claim is directed to an abstract idea.³⁴ And while the Court originally defined an abstract idea as "a fundamental truth; an original cause; [or] a motive,"³⁵ the technological advancements of the Digital Revolution seem to have rendered this definition

25. *Id.*

26. MPEP § 2106.04(a) (9th ed. rev. Jan. 2018); see also *Bilski v. Kappos*, 561 U.S. 593, 601–602 (2010) (citing *Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 174–175 (1853)).

27. The judicial exception against claiming abstract ideas dates as far back as 1840 when considering cases that never reached the Supreme Court; the earliest of these cases was *Wyeth v. Stone*. See 30 F. Cas. 723 (C.C.D. Mass. 1840) (No. 18,107). In *Wyeth*, the patent specification described an apparatus for cutting ice, as well as a multi-step process for using the apparatus to cut ice. *Id.* at 725. The patent further had two claims, with one claim directed to the "apparatus and machinery to cut ice, described in the specification," and the other claim directed to "an exclusive title to the art of cutting ice by means of any power, other than human power." *Id.* at 727. Justice Story, riding circuit, ruled the second claim to be "utterly unobtainable," because it was "a claim for an art or principle in the abstract, and not for any particular method or machinery, by which ice is to be cut. *No man can have a right to cut ice by all means and methods.*" *Id.* (emphasis added).

28. See *Le Roy*, 55 U.S. (14 How.) at 176.

29. *Id.* at 185.

30. *Id.* at 175.

31. Cf. *id.*; *Gottschalk v. Benson*, 409 U.S. 63 (1972).

32. *Benson*, 409 U.S. at 67–68.

33. See, e.g., *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208 (2014); *Ass'n for Molecular Pathology v. Myriad Genetics Inc.*, 569 U.S. 576 (2013); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012); *Bilski v. Kappos*, 561 U.S. 593 (2010); *Diamond v. Diehr*, 450 U.S. 175 (1981); *Diamond v. Chakrabarty*, 447 U.S. 303 (1980); *Parker v. Flook*, 437 U.S. 584 (1978).

34. MPEP § 2106.04(a) (9th ed. rev. Jan. 2018) (citing *Amdocs (Isr.) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1294 (Fed. Cir. 2016)); *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1334 (Fed. Cir. 2016) ("Despite this long history, the courts have declined to define abstract ideas.").

35. *Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 175 (1852).

unhelpful.³⁶ In *Benson* itself, the Court stated that “[t]he technological problems tendered . . . before us indicate to us that considered action by the Congress is needed.”³⁷

Although these technological problems with the abstract idea exception have been known for more than 40 years,³⁸ in the absence of clear guidance from the Supreme Court, the United States Patent and Trademark Office (USPTO) and the federal courts have been left to determine whether patent claims are directed to an abstract idea by referring to earlier court precedent and comparing a claimed concept to concepts previously identified as ineligible by the courts.³⁹ In other words, a sort of “patentability by analogy” analytical approach has developed. Additionally, the unavailability of modernized analysis tools has led to uncertainty in the field as to the future validity of software and business method patents because all inventions, at least at some level, “embody, use, reflect, rest upon, or apply . . . abstract ideas.”⁴⁰ Indeed, the Director of the USPTO, Andrei Iancu, has advocated that the current state of the law regarding whether an invention is truly a patent ineligible abstract idea “confound[s] the most sophisticated practitioners in our patent system . . . [because] people simply don’t know how to draw these distinctions.”⁴¹

III. A LONG TALE WITH A KNOT: SCOTUS PRECEDENT ON ABSTRACT IDEAS

As noted above, the judicial exception that abstract ideas are not patent eligible first arose in 1852 in the case of *Le Roy v. Tatham*.⁴² Although the abstract idea exception had not fully shown its face in the Supreme Court all that often—if at all—since the time of its first introduction,⁴³ the Digital Revolution seemingly opened the door for the judicial exception to act as a catch-all for software and business method patents.

The first Supreme Court case of the Twentieth Century that featured the abstract idea exception as applied to a software-related invention was *Gottschalk v. Benson*.⁴⁴ There, the Court considered patent claims directed to a method of converting “binary-coded decimal (BCD) numerals into pure binary numerals” with

36. See 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50, 52 (Jan. 7, 2019) (discussing how it has been difficult for courts and practitioners to classify subject-matter as abstract or non-abstract, and how similar subject-matter has been classified as abstract in some cases and non-abstract in other cases).

37. *Gottschalk v. Benson*, 409 U.S. 63, 73 (1972).

38. See *id.* at 63.

39. MPEP § 2106.04(a) (9th ed. rev. Jan. 2018).

40. See *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 71 (2012).

41. 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/>.

42. See *Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 175 (1852).

43. *Id.*; *Gottschalk v. Benson*, 409 U.S. 63 (1972).

44. See *Gottschalk*, 409 U.S. at 67–68.

the aid of a computer.⁴⁵ Although the claimed method varied the steps of the ordinary arithmetic procedure for converting BCD to pure binary, the method was not limited to any particular art, technology, machinery, or end use.⁴⁶ The mathematical procedures embodied by the claims could be carried out by “existing computers long in use” with no additional or new machinery necessary; the procedures could even be performed without a computer.⁴⁷ After reasoning that the algorithm embodied by the claims had no “practical application except in connection with a digital computer” and, as such, would in effect be “a patent on the algorithm itself,” the Court held the patent invalid.⁴⁸

The next case considered by the Court featuring the abstract idea exception came just a few years later.⁴⁹ In *Parker v. Flook*, the Court considered claims for a method of calculating and updating an “alarm limit”—a number used during catalytic conversion processes to determine whether an abnormal operating condition is present.⁵⁰ The claimed method at issue comprised essentially three steps: (1) measuring “the present value of a process variable”; (2) using an “algorithm to calculate an updated alarm-limit value”; and (3) updating the actual alarm-limit to the calculated alarm-limit value.⁵¹ Since the claims embodied a mathematical algorithm, the Court noted that for the invention to pass the abstract idea threshold, the “process itself, [and] not merely the mathematical algorithm, must be new and useful.”⁵² Applying this test, the Court reasoned that the only thing novel in the claims was the algorithm itself, and thus held that the claims, “considered as a whole, [contained] no patentable invention.”⁵³

A short three years later, however, in *Diamond v. Diehr*, the Court upheld allegedly abstract patent claims for a computer assisted method of curing rubber.⁵⁴ The claims at issue in *Diehr* recited steps for curing rubber in a mold, wherein the temperature inside of the mold was constantly monitored and fed into a computer.⁵⁵ The computer would then repeatedly recalculate the cure time using the “Arrhenius equation” and, when the recalculated time equaled the elapsed time, the computer would signal a device to open the mold.⁵⁶ Although the claims “admittedly [employed] a well-known mathematical equation,” the Court reasoned that the patent only sought to foreclose others from using that equation in conjunction with all of the other novel steps of the invention.⁵⁷ Those novel steps were asserted as being: (1) the continuous measuring of the mold cavity temperature; (2) the continuous feeding of this data into a digital computer; (3) the continuous recalculation of the rubber cure time by the digital computer; and (4)

45. *Id.* at 64.

46. *Id.*

47. *Id.* at 67.

48. *Id.* at 71–72.

49. *See Parker v. Flook*, 437 U.S. 584, 589 (1978).

50. *Id.* at 585.

51. *Id.*

52. *Id.* at 591.

53. *Id.* at 594.

54. *Diamond v. Diehr*, 450 U.S. 175, 191–93 (1981).

55. *Id.* at 178–79.

56. *Id.*

57. *Id.* at 187.

the digital signaling by the computer to open the mold cavity.⁵⁸ Accordingly, the Court held that the claims were eligible for patent protection under § 101 and not merely directed to an abstract idea.⁵⁹

By this point, if you are having trouble reconciling the Court's decision in *Flook* with its decision in *Diehr*, you are not alone.⁶⁰ In *Flook*, calculating an updated alarm-limit value using an algorithm, and then updating the alarm limit was not patentable;⁶¹ however, in *Diehr*, calculating a time at which to open a mold based on a fundamental law of nature—and then opening the mold at that time—was patentable.⁶² Although one way to reconcile these cases would simply be to consider the majority and dissenting Justices of each of these decisions,⁶³ it is important to recognize the minor, but ultimately decisive factual differences between each case. For instance, the claims in *Flook* were directed to updating and generating entirely digital data, whereas the claims in *Diehr* were directed to a mechanical process whereby a computer and digital data were used in order to determine the exact time to open a mold. Thus, the claims in *Diehr* were directed to a more physical “process,” whereas the claims in *Flook* were more analogous to a “mental process” at that point in time in Supreme Court jurisprudence.⁶⁴

After the *Diehr* decision in 1981, the Supreme Court would not return to address the abstract idea category of judicial exceptions for nearly thirty years.⁶⁵ In the meantime, the United States Court of Appeals for the Federal Circuit was founded in 1982 as the result of a merger of the United States Court of Customs and Patent Appeals and the appellate division of the United States Court of

58. *Id.* at 178–79.

59. *Id.* at 191.

60. See *Parker v. Flook*, 437 U.S. 584, 598–99 (1978) (Stewart, J., dissenting) (stating that the process was patentable subject-matter because the “present claims do not preempt the formula or algorithm contained therein”); *Diamond v. Diehr*, 450 U.S. 175, 219–20 (1981) (Stevens, J., dissenting) (arguing that the patent was ineligible subject-matter because “the invention claimed in the patent . . . makes no contribution to the art that is not entirely dependent upon the utilization of a computer in a familiar process . . .”).

61. *Flook*, 437 U.S. at 594.

62. *Diehr*, 450 U.S. at 191.

63. In *Flook*, Justice Stevens penned the majority opinion and was joined by Justices Brennan, Blackmun, Marshall, Powell, and White. *Flook*, 437 U.S. at 584. On the other hand, Justice Stewart dissented and was joined by Chief Justice Burger and Justice Rehnquist. *Id.* However, in *Diehr* Justice Rehnquist authored the majority opinion in which Chief Justice Burger and Justices Powell, Stewart, and White joined. *Diehr*, 450 U.S. at 175. Additionally, Justice Stevens dissented in *Diehr* and was joined by Justices Brennan, Marshall, and Blackmun. *Id.* Thus, while the three dissenting Justices in *Flook* stuck to their guns to become part of the majority in *Diehr*, Justices Powell and White provided the critical swing votes. *Id.*; *Flook*, 437 U.S. at 584.

64. *Cf.* *Diamond v. Diehr*, 450 U.S. 175, 194–201 (1981) (Stevens, J., dissenting) (discussing the recent history and shifts in patent law as software-related innovations were beginning to emerge, including the characterization of software as a mere “mental process”).

65. *Id.*; *Bilski v. Kappos*, 561 U.S. 593 (2010). In *Bilski*, the Supreme Court relied upon the abstract idea exception to invalidate a patent directed to a method of hedging risk as applied to the energy market. *Bilski*, 561 U.S. at 609, 612.

Claims.⁶⁶ The Federal Circuit was established under Article III of the United States Constitution, granting the court nationwide jurisdiction in a variety of areas, including patents.⁶⁷ In fact, nearly all intellectual property cases heard by the Federal Circuit involve patents.⁶⁸ However, when conflicting views began to arise within the Federal Circuit as to the Supreme Court's use of the abstract idea exception as a catch-all,⁶⁹ in addition to how the Court's newly introduced *Mayo* test⁷⁰ should be applied with respect to software and business method inventions, the Court was quick to step in and set the record straight.⁷¹

IV. A MAD TEA PARTY: ALICE CORP. V. CLS BANK INTERNATIONAL

In *Alice Corp. v. CLS Bank International*, the United States Supreme Court relied upon the abstract idea exception to invalidate a patent that merely claimed a method of doing business; and that method was carried out by a general-purpose computer.⁷² Although the relatively narrow issue before the Court was whether a generic-computer implementation of using a third-party intermediary to mitigate settlement risk was a patent-eligible invention,⁷³ the Court's decision created widespread uncertainty about the future validity of software and business method patents.⁷⁴

66. *Court Jurisdiction*, UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT, <http://www.ca9.uscourts.gov/the-court/court-jurisdiction> (last visited Oct. 30, 2019).

67. *Id.*

68. *Id.*

69. In *Bilski*, Justice Stevens concurred in the Court's judgment as far as he "agree[d] that petitioners [sought] to patent an abstract idea," but raised the issue that the Court "does not show how this conclusion follows . . . from our case law." *Bilski*, 561 U.S. at 619–20. Justice Stevens reasoned that the "patent now before us is not for '[a] principle, in the abstract,' or a 'fundamental truth.'" *Id.* at 619. Nor does it claim the sort of phenomenon of nature or abstract idea that was embodied by the mathematical formula [sic] at issue in *Gottschalk v. Benson* . . . and in *Flook*." *Id.* at 619–20. Furthermore, Justice Stevens reasoned that the Court asserted the conclusion that the claims were directed to an abstract idea without providing "a satisfying account of what constitutes an unpatentable abstract idea." *Id.* at 621.

70. In *Mayo*, a case arising shortly after *Bilski*, the Supreme Court formulated what is currently known as the *Mayo* test for determining whether a patent is directed to ineligible subject-matter. See *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 77–80 (2012). However, the patent claims at issue in *Mayo* were directed to administering thiopurine drugs for the treatment of various autoimmune diseases, thus falling into the laws of nature judicial exception. *Id.* at 77–78. The *Mayo* test is discussed in further detail below in Section IV.

71. See *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 215–16 (2014) (discussing the multiple concurring and dissenting opinions in the Federal Circuit's en banc decision before granting certiorari).

72. See *id.* at 214–15.

73. Robert Sachs, *Two Years After Alice: A Survey of the Impact of a "Minor Case" (Part 1)*, BILSKI BLOG (June 16, 2016), <https://www.bilskiblog.com/2016/06/two-years-after-alice-a-survey-of-the-impact-of-a-minor-case/>.

74. James Cosgrove, *Alice: Three Years On*, JURISTAT (July 19, 2017), <https://blog.juristat.com/2017/7/19/alice-three-years-on> (discussing that the Supreme Court's decision in *Alice* case was "a landmark decision that significantly altered the way the courts and the [USPTO] handle software patents").

The claims of the '479 patent⁷⁵ at issue in *Alice* were directed towards facilitating an exchange of financial obligations between two parties by using a computer system as a third-party intermediary in order to mitigate “settlement risk”— i.e., the risk that only one party to an agreed-upon financial exchange will satisfy its obligation.⁷⁶ The process described by the claims provided that the intermediary system would create “shadow” credit and debit records mirroring the actual and real-time balance of capital in a party’s real-world bank account as transactions are entered.⁷⁷ As such, the intermediary system would intercept certain transactions and allow “only those transactions for which” a party’s shadow record indicated there was sufficient capital to satisfy.⁷⁸ In this way, at the end of the day, the intermediary system would instruct relevant financial institutions to execute only the “permitted” transactions, thus “mitigating the risk that only one party will perform the agreed-upon exchange.”⁷⁹

In invalidating these patent claims, the Court extended the *Mayo* test, which it had previously formulated to determine the eligibility of patent claims involving laws of nature and natural phenomena, to the abstract ideas category of the judicial exceptions, making clear that the *Mayo* test should be applied in all § 101 cases.⁸⁰ Under the *Mayo* test, first it must be determined whether the claims at issue are directed to one of the judicial exceptions, and if so, the question then becomes— when considering each claim element individually and as an ordered combination— whether additional elements exist to transform the nature of the claim into a patent-eligible application.⁸¹ As the Court noted, this second step is often regarded as a search for an “inventive concept” to ensure the patent in practice amounts to significantly more than a patent upon the judicial exception itself.⁸²

Applying the *Mayo* test, the Court first held that the claims were directed to the abstract idea of “intermediated settlement,”⁸³ reasoning that intermediated settlement is “a fundamental economic practice long prevalent in our system of commerce,”⁸⁴ and further noting that organizing transactions between parties is a “method of organizing human activity.”⁸⁵ As to the second part of the *Mayo* test, the Court held that the claims failed to transform the abstract idea into a patent-eligible invention, reasoning that “an instruction to apply the abstract idea of

75. Also at issue in the *Alice* case were three other patents held by petitioner Alice Corporation: the '510 patent, the '720 patent, and the '375 patent. *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 212 n.1 (2014). The Court further noted that the parties agreed upon claim 33 of the '479 patent to be representative of the other method claims at issue in the case. *Id.* at 213 n.2.

76. *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 212 (2014).

77. *Id.* at 213.

78. *Id.*

79. *Id.* at 214.

80. *Id.* at 217–18.

81. See *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 217–18 (2014).

82. *Id.*

83. *Id.* at 218.

84. *Id.* at 219.

85. *Id.* at 220 (citing *Bilski v. Kappos*, 561 U.S. 593, 599 (2010)).

intermediated settlement using some unspecified, generic computer . . . is not ‘enough’ to transform an abstract idea into a patent-eligible invention.”⁸⁶

Thus, although the Court re-affirmed and extended the *Mayo* test to the abstract idea category of patent claims, the Court offered little insight to define what exactly constitutes a patent-ineligible abstract idea. But why didn’t the Court invalidate the patent on § 102 novelty grounds? After all, intermediated settlement is a practice “long prevalent in our system of commerce.”⁸⁷ Instead, the Court decided to go a different route by invalidating the patent with the abstract idea catch-all.⁸⁸ And in effect, the *Alice* decision has had serious repercussions for the prosecution of software and business method patents, which we will briefly examine in the next section.

V. OFF WITH THEIR HEADS: POST-ALICE SOFTWARE AND BUSINESS METHOD PATENTS

Although some believe that the Court intended the decision in *Alice* to be a relatively narrow holding, the case has been interpreted broadly by the federal courts and the USPTO, thereby having a vast impact on the validity question for software and business method patents.⁸⁹ First, this section will examine prosecution statistics for computer technology and e-commerce related art units of the USPTO, with emphasis on the rate of § 101 rejections issued before and after the *Alice* decision. Second, this section will discuss the challenges with the most common application of the *Mayo* approach: analogizing claims at issue with claims previously held to be eligible by the courts to determine whether a claimed invention recites statutory subject-matter.

A. Prosecution Statistics Post-Alice

Before the *Alice* decision, § 101 eligibility-based rejections made up only 30.8% “of all rejections issued in the e-commerce art units” of the USPTO.⁹⁰ Two years after the *Alice* decision, however, the percentage of § 101 rejections had nearly tripled to 81.7% of all rejections issued in those same art units.⁹¹ Additionally, the percentage of § 101 rejections citing *Alice* has generally increased every quarter since May of 2014.⁹² Potentially more troubling, however, is that applicants responding to an *Alice* rejection in a final office action choose to file a request for continued examination (RCE) only 65.1% of the time, while 18.4% choose to abandon their application all-together.⁹³

86. *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 226 (2014) (citing *Gottschalk v. Benson*, 409 U.S. 63, 64 (1972)) (emphasis removed).

87. *Id.* at 219.

88. *Id.* at 212.

89. See *Sachs*, *supra* note 73 (discussing how the Court considered *Alice* a “minor” case that addressed a “relatively narrow issue”).

90. *Cosgrove*, *supra* note 74.

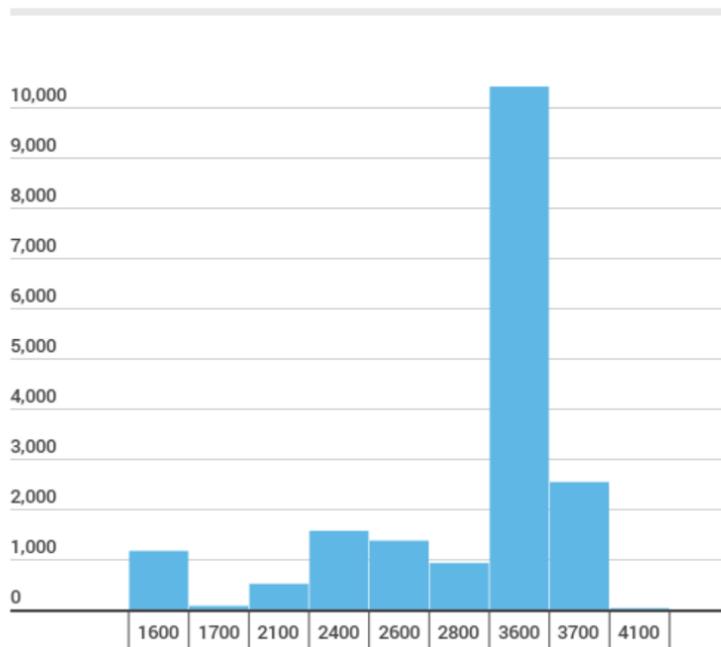
91. *Id.*

92. *Id.*

93. *Id.*

Although eligibility-based rejections citing *Alice* can be found all over the various technology centers⁹⁴ of the USPTO,⁹⁵ roughly two-thirds of them are found in technology center (TC) 3600 as shown in Figure 1 below.⁹⁶ As the home of art units covering business methods, this technology center was hit particularly hard by *Alice*.⁹⁷

Applications with Alice Rejections (by tech center)



94. The structure of the USPTO for examining patent applications is broken down, first, by technology center (TC), and second, by art unit within a given TC. *Cf. Cosgrove, supra* note 74 (discussing *Alice* based rejection statistics for art units in the 3620s, 3680s, and 3690s within TC 3600). For instance, TC 2800 provides examination for patent applications directed to semiconductors, electrical and optical systems and components, etc., whereas TC 3700 examines applications including mechanical engineering, manufacturing, and products. *Patent Technology Centers Management*, UNITED STATES PATENT AND TRADEMARK OFFICE, <https://www.uspto.gov/patent/contact-patents/patent-technology-centers-management> (last visited Oct. 30, 2019). Building on this, Art Unit 2811 of TC 2800 examines patent applications relating to memory and semiconductors, while Art Unit 2831 of TC 2800 examines applications relating to electrical circuits and systems. *TC 2800 Management Roster*, UNITED STATES PATENT AND TRADEMARK OFFICE, <https://www.uspto.gov/patent/contact-patents/tc-2800-management-roster> (last visited Oct. 30, 2019).

95. *Cosgrove, supra* note 74.

96. Sarah Garber, *Avoiding Alice Rejections with Predictive Analytics*, IPWATCHDOG (May 31, 2016), <https://www.ipwatchdog.com/2016/05/31/avoiding-alice-rejections-predictive-analytics/id=69519/>.

97. *Id.*

Figure 1

Looking further into TC 3600, the vast majority of *Alice* rejections (92.4%) are issued by the 3620s, 3680s, and 3690s e-commerce art units, with almost half of these (40.4%) being found in the 3620s alone.⁹⁸ Additionally, the average *Alice* rejection rate per application across all art units in the 3620s, '80s, and '90s is 75.2%.⁹⁹ And while applicants throughout the 3620s, '80s, and '90s “can likely expect an *Alice* rejection, the *Alice* rejection rate” varies by art unit.¹⁰⁰ For instance, “the art unit with the highest *Alice* rejection rate” at 85.8% of all applications is Art Unit 3625, while Art Unit 3685 claims the lowest *Alice* rejection rate at 41.41%, which is quite a bit below average for TC 3600.¹⁰¹ Accordingly, and as a result of these statistical differences between art units, getting an application placed in a specific art unit (such as 3685) could potentially be a huge advantage for applicants seeking an e-commerce related patent.

In addition, while eligibility-based rejections are one thing for a patent applicant, a notice of allowance is another; and the statistics showing how often applicants receive a notice of allowance from art units in TC 3600 are just as staggering and inconsistent. Thus, it is no wonder why critics regard TC 3600 as the place “where patent applications go to die”;¹⁰² and looking at the allowance rates of certain art units, this statement is not far from the truth. For instance, in a time span of eighteen months from January 2015 to July 2016, only fifteen patents were issued by Art Unit 3689, while 597 applications went abandoned—¹⁰³corresponding to an allowance rate of only 2.5%. However, during this same time period, Art Unit 3628 achieved nearly 5 times the allowance rate of Art Unit 3689, even though both of these art units examine the exact same type of application subject-matter.¹⁰⁴ In contrast to Art Unit 3689, Art Unit 3628 allowed seventy-eight patents during the same time frame, while 547 applications went abandoned—¹⁰⁵corresponding to a total allowance rate of 12.5%. Thus, the inconsistencies in *Alice* rejections issued among art units of the USPTO may also be leading to inconsistencies in the amount of total allowed patents among those art units.

Aside from e-commerce and business method art units, *Alice* rejections are also beginning to appear more frequently in computer-related technology centers across the USPTO in general.¹⁰⁶ For instance, prior to the *Alice* decision only 12.3% of office actions issued across TCs 2100, 2400, and 2600 included an eligibility-

98. James Cosgrove, *The Most Likely Units for Alice Rejections*, IPWATCHDOG (Dec. 14, 2015) <https://www.ipwatchdog.com/2015/12/14/the-most-likely-art-units-for-alice-rejections/id=63829/>.

99. *Id.*

100. *Id.*

101. *Id.*

102. Gene Quinn, *E-Commerce Art Units: Where Patent Applications Go to Die*, IPWATCHDOG (July 14, 2016), <http://www.ipwatchdog.com/2016/07/14/where-patent-applications-go-die/id=70913/>.

103. See *id.*

104. See *id.*

105. See *id.*

106. Samuel Hayim & Kate Gaudry, *Eligibility Rejections Are Appearing in Greater Frequency Across All Computer Related Technology Centers*, IPWATCHDOG (May 24, 2018), <http://www.ipwatchdog.com/2018/05/24/eligibility-rejections-greater-frequency-uspto/id=97615/>.

based rejection;¹⁰⁷ and about two-and-a-half years after *Alice* this percentage had increased only slightly to 14.6%.¹⁰⁸ However, by October of 2017, the frequency of *Alice* rejections among these technology centers jumped to 25.0% and then further climbed to 29.3% by December of that same year.¹⁰⁹ Thus, the prevalence of eligibility-based rejections in computer-related TCs doubled across 2017, even though the amount of eligibility-based rejections had remained relatively the same before—as well as for roughly three years after—the Court’s decision in *Alice*.¹¹⁰

This statistical data of § 101 rejections discussed above is likely indicative of a struggle with applying the *Alice* decision in the USPTO, especially as applied to software and business method innovations. Furthermore, as innovation in computer related technology continues to explode in the Digital Revolution, it is very likely that eligibility-based rejections will continue to increase, as well, absent clear direction from a higher authority.

B. Analogizing Claims to Inconsistent Precedent

Another issue of concern after *Alice* is the practice of analogizing the claims of an allegedly abstract patent/application to prior court precedent to determine whether the claims at issue recite statutory subject-matter.¹¹¹ Although the abstract idea exception was created as a result of Supreme Court jurisprudence,¹¹² the Court has reluctantly “declined to define abstract ideas.”¹¹³ Instead, the Court has decided to identify abstract ideas “by referring to earlier precedent, *e.g.*, by comparing a claimed concept to the concepts previously identified as abstract ideas by the courts.”¹¹⁴ As a result, the USPTO, the courts, and practitioners are left to struggle with this “patentability-by-analogy” analytical process as well.¹¹⁵

Although taking a hint from claims held to be eligible in past decisions may provide some insight, and while this strategy has proven effective in many situations, the lack of positive examples to utilize makes for a challenging process to determine whether a patent truly claims statutory subject-matter.¹¹⁶ For instance, starting in 2014, the USPTO has issued updated examiner guidance materials at least once a year regarding how to determine subject-matter

107. *Id.*

108. *Id.*

109. *Id.*

110. *Id.*

111. See Andrew Gabriel, *Doc’s Orders: Analogize to Overcome Patent Eligibility Rejections*, IPWATCHDOG (Feb. 17, 2017), <http://www.ipwatchdog.com/2017/02/17/analogize-overcome-patent-eligibility-rejections/id=78443/>.

112. See *Bilski v. Kappos*, 561 U.S. 593, 601–602 (2010).

113. MPEP § 2106.04(a) (9th ed. rev. Jan. 2018).

114. *Id.*

115. See generally *id.*

116. Cf. Andrew Gabriel, *Doc’s Orders: Analogize to Overcome Patent Eligibility Rejections*, IPWATCHDOG (Feb. 17, 2017), <http://www.ipwatchdog.com/2017/02/17/analogize-overcome-patent-eligibility-rejections/id=78443/>.

eligibility.¹¹⁷ These guidance materials include examples of eligible/ineligible claims, reference sheets, memoranda on court decisions regarding patentable subject-matter, updates to the MPEP, and more.¹¹⁸

The most recent of these examiner guidance updates was issued on January 7, 2019.¹¹⁹ In this release of subject-matter eligibility guidance, which we will discuss in further detail below, the USPTO strongly scrutinized the *Mayo* test and its inherent process of analogizing claims to determine eligibility.¹²⁰ For instance, the USPTO stated that the *Mayo* test was effective for a short period of time after *Alice* was decided, but that “it has since become impractical.”¹²¹ In asserting that the *Mayo* test has become impractical, the USPTO seemed to point fingers at the Federal Circuit for issuing *too many* decisions “identifying subject matter as abstract or non-abstract in the context of specific cases.”¹²² Although significant precedent in a specific area of law is generally welcomed by those looking for a bright-lined rule, the USPTO argued that (1) “similar subject matter has been described both as abstract and not abstract in different cases”; (2) the “growing body of precedent has become increasingly more difficult for examiners to apply in a predictable manner”; and (3) “concerns have been raised that different examiners within and between technology centers may reach inconsistent results” when determining whether claims are abstract.¹²³

As an additional note, courts in the United Kingdom would likely agree with the USPTO. In fact, U.K. courts have explicitly cautioned examiners in relying on the specific facts of any court judgment as support for an objection because “little or no benefit is to be gained by drawing analogies with other cases decided on different facts in relation to different inventions.”¹²⁴ These courts have further rationalized that “[s]imply because it is possible to construct a generalised [sic] category which includes both the claimed invention . . . and a previous decision in which a claim was held to be patentable, does not help.”¹²⁵ Rather, it only “shows that such things can be patentable in some cases but does not show that the invention in [another] case is patentable.”¹²⁶

Taking the prior sections into consideration, it becomes clear that some kind of direction from a higher authority is needed to determine what is statutory subject-matter post-*Alice*. Until Congress or the Supreme Court answers this question, however, the future of software and business method patents will likely continue to be uncertain. But how should this question be answered? While some

117. See generally *Subject Matter Eligibility (Examination Guidance by Date of Issuance)*, UNITED STATES PATENT AND TRADEMARK OFFICE, <https://www.uspto.gov/patent/laws-and-regulations/examination-policy/subject-matter-eligibility-examination-guidance-date> (last updated Jan. 15, 2019).

118. *Id.*

119. 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50, (Jan. 7, 2019) [hereinafter 2019 Revised Guidance].

120. *Id.*

121. *Id.* at 52.

122. *Id.*

123. *Id.*

124. *Research In Motion UK Ltd. v. Inpro Licensing SARL* [2006] EWHC 70 (Pat) [186] (Eng.).

125. *Lantana Ltd. v. Comptroller-General of Patents* [2013] EWHC 2673 (Pat) [17] (Eng.).

126. *Id.*

believe that the answer should simply be binary,¹²⁷ others, and quite possibly the majority of advocates, believe the answer should be more of a matter of degree.¹²⁸ But if the answer is in the form of a matter of degree, where is the correct place to draw the line as to what constitutes statutory subject-matter? The next section probes this question.

VI. ADVICE FROM A CATERPILLAR: DETERMINING THE CORRECT PLACE TO DRAW THE LINE FOR SOFTWARE AND BUSINESS METHOD PATENTS

Although the *Alice* opinion cast doubt on the future of software and business method patents, the opinion did not absolutely bar such inventions.¹²⁹ In fact, the Court has stated that *Alice* and other prior opinions should not be read too broadly as to completely bar eligibility for software and business method patents.¹³⁰ In saying so, the Court generally reasons that absent direct legislation from Congress, the Court will not outright bar any field of inventions, at least other than those directed toward one of the judicial exceptions.¹³¹

This section will explore the current state of the law for patentable subject-matter, with the intention of finding a reasonable place to draw the line for what constitutes patentable subject matter. First, this section will take an in depth look at case law development in the Federal Circuit. Second, this section will review the most recently issued examiner guidance from the USPTO. Third, the Restoring America's Leadership in Innovation Act's proposed amendment to 35 U.S.C. 101 will be examined. And finally, this section will look at foreign patent systems and how subject-matter eligibility is determined in other jurisdictions.

127. *E.g.*, *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 227 (2014) (Sotomayor, J., concurring) ("I adhere to the view that any 'claim that merely describes a method of doing business does not qualify as a 'process' under § 101.'" (quoting *Bilski*, 561 U.S. at 614); *Bilski v. Kappos*, 561 U.S. 593, 626 (2010) (Stevens, J., concurring) ("Methods of doing business fall outside of the subject matter that has 'historically been eligible to receive the protection of our patent laws,' and likely go beyond what the modern patent 'statute was enacted to protect.'" (quoting *Diehr*, 450 U.S. at 184; *Parker v. Flook*, 437 U.S. 584, 593 (1978)); *Diamond v. Diehr*, 450 U.S. 175, 195 (1981) (Stevens, J., dissenting) (explaining that under the "mental steps" doctrine, well-settled principles of patent law "would have prevented the issuance of a valid patent on almost any conceivable computer program").

128. *E.g.*, *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 217 (2014) ("We tread carefully in construing this exclusionary principle lest it swallow all of patent law."); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 71 (2011) (explaining that "too broad an interpretation" of the judicial exceptions "could eviscerate patent law").

129. *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208 (2014).

130. *See id.* at 221 (explaining that the Court was not attempting to "delimit the precise contours of the 'abstract ideas' category").

131. *See, e.g.*, *Bilski v. Kappos*, 561 U.S. 593, 649 (2010) (Stevens, J., concurring) ("Absent a discernible signal from Congress, we proceed cautiously when dealing with patents that press on the limits of the 'standard written into the Constitution,' for at the 'fringes of congressional power,' 'more is required of legislatures than a vague delegation to be filled in later.'" (quoting *Graham v. John Deere Co.*, 383 U.S. 1, 6 (1996); *Barenblatt v. United States*, 360 U.S. 109, 139–40 (1959)).

A. Case Law Development in the Federal Circuit

In the roughly five years since the Supreme Court decided *Alice*, the Court of Appeals for the Federal Circuit has slowly chipped away at defining more exact boundaries for eligible software or business method patents. Along the lines of the *Mayo* framework, the Federal Circuit has issued instructive, precedential decisions finding patentable subject-matter in both steps of the *Mayo* framework.¹³² This subsection will take an in depth look at developments in case law, first at *Mayo* step one, and then at *Mayo* step two.

i. Emerging Rules at *Mayo* Step One

In trying to reconcile the Supreme Court's jurisprudence amidst the Digital Revolution, where many long-practiced activities are being implemented on a computer, the Court of Appeals for the Federal Circuit has issued various decisions finding patent claims eligible at *Mayo* step one.¹³³ As noted above, step one of the *Mayo* test involves the broad question of whether the claims at issue are "directed to" one of the judicial exceptions, e.g., an abstract idea.¹³⁴ At *Mayo* step one, little to no instruction has been provided with respect to business methods; however, software-related patent claims have been deemed patent eligible in a limited number of ways.¹³⁵

For example, patent claims directed to a specific improvement in computer-related technology are patent eligible and not merely directed to an abstract idea.¹³⁶ In *Enfish* the Federal Circuit considered claims directed to a "self-referential" database that, contrary to conventional techniques, included all data entities in a single table, with column definitions provided by rows in that same table.¹³⁷ Among other things, the patents at issue described multiple advantages over prior art that were made possible by utilizing such a design.¹³⁸ These advantages included an indexing technique allowing for faster searching of data, as well as a self-referential model allowing for more effective storage of complex data types, such as images and unstructured text.¹³⁹ In reasoning that the claims at issue were directed to a specific improvement in the way a computer operates, the court noted that the claimed invention not only improved upon conventional prior art

132. See, e.g., *DDR Holdings, LLC v. Hotels.com*, 773 F.3d 1245, 1257 (Fed. Cir. 2014) (holding that a claimed solution that is "necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks" is patent-eligible); *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1330, 1339 (Fed. Cir. 2016) (finding patent claims directed to a "self-referential" database eligible at *Mayo* step one); *BASCOM Glob. Internet Servs. v. AT&T Mobility LLC*, 827 F.3d 1341, 1348, 1350 (Fed. Cir. 2016) (finding patent claims directed filtering content on the internet patent eligible at *Mayo* step 2).

133. E.g., *DDR Holdings, LLC v. Hotels.com*, 773 F.3d 1245 (Fed. Cir. 2014); *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016); *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299 (Fed. Cir. 2016).

134. *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 217–18 (2014).

135. *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1336 (Fed. Cir. 2016).

136. *Id.*

137. *Id.* at 1330.

138. *Id.*

139. *Id.* at 1331–33.

databases, but that the self-referential data table recited in the claims was a specific type of data structure designed to improve the way a computer stores and retrieves data in memory.¹⁴⁰ As such, the court held that the claims were patent-eligible as being directed to a specific implementation of a solution to an existing problem in the software arts.¹⁴¹

Building off the precedent set forth in *Enfish* and other cases,¹⁴² the Federal Circuit recently issued two precedential decisions finding claims directed to software-related inventions patent-eligible under 35 U.S.C. § 101 and not merely directed to an abstract idea.¹⁴³ Both of these decisions are consistent with a growing body of precedent from the Federal Circuit “confirming that software-based innovations can make ‘non-abstract improvements to computer technology’ and be deemed patent-eligible subject matter [in] the first step of the []*Mayo* analysis.”¹⁴⁴

For instance, in *Finjan*, the claimed invention involved a method of virus scanning that scans an application program, generates a security profile identifying any potentially suspicious code in the program, and links the security profile to the application program.¹⁴⁵ In holding the patent claims eligible, the court reasoned that the claimed method recited specific steps for generating a security profile that identifies both hostile *and* potentially hostile operations to protect a user against both previously unknown viruses and “obfuscated code,” unlike traditional virus scanning, which only recognized the presence of previously-identified viruses.¹⁴⁶ Accordingly, the Federal Circuit held that the claims at issue accomplished a result that realized an improvement in computer functionality and were thus not directed to an abstract idea.¹⁴⁷

Additionally, in *Core Wireless*, the claimed invention involved a graphical user interface (GUI) for mobile devices that displayed an application summary of each application on the main menu while those applications are in an unlaunched state.¹⁴⁸ Additionally, the claims contained precise language delimiting the type of data to be displayed and how to display it, thus improving upon conventional user

140. *Enfish*, 822 F.3d at 1337–39.

141. *Id.* at 1339.

142. See *McRO*, Inc. v. Bandai Namco Games Am., Inc., 837 F.3d 1299, 1313 (Fed. Cir. 2016). The Federal Circuit in *McRO* generally held that patent claims directed to automating prior art techniques on a computer, which were previously capable of being performed only by a human, are patent eligible if they enable a computing device to perform—and improve upon—those prior art techniques. See *id.*

143. See, e.g., *Finjan* Inc. v. Blue Coat Sys., Inc., 879 F.3d 1299 (Fed. Cir. 2018); *Core Wireless Licensing S.A.R.L. v. LG Elecs., Inc.*, 880 F.3d 1356 (Fed. Cir. 2018).

144. U.S. PATENT & TRADEMARK OFFICE, MEMORANDUM ON RECENT SUBJECT MATTER ELIGIBILITY DECISIONS (Apr. 2, 2018), <https://www.uspto.gov/sites/default/files/documents/memo-recent-sme-ctdec-20180402.PDF>.

145. *Finjan*, Inc. v. Blue Coat Sys., Inc., 879 F.3d 1299, 1303–04 (Fed. Cir. 2018).

146. *Id.* at 1304–05.

147. *Id.* at 1305–06.

148. *Core Wireless Licensing S.A.R.L. v. LG Elecs., Inc.*, 880 F.3d 1356, 1362–63 (Fed. Cir. 2018).

interfaces to increase the efficiency of using mobile devices.¹⁴⁹ After reasoning that the claims were directed to an improved user interface for electronic devices, rather than the abstract idea of an index, the court held the patent recited statutory subject-matter under § 101.¹⁵⁰

Thus, at least in the past three years since the Federal Circuit decided *Enfish*, the general rule has remained relatively the same: software-related patent claims are eligible for patent protection when they are directed to specific improvements in computer-related technology.¹⁵¹ While this rule seems relatively straightforward and easy to apply, it is important to remember that not all software-related patents strictly claim software that may affect a computer's functionality. For instance, what about business methods that are implemented on a computer? Perhaps this is why the Court provided a fallback argument for such inventions at *Mayo* step two.

ii. Emerging Rules at *Mayo* Step Two

In addition to those cases mentioned above finding statutory subject matter at *Mayo* step one, the Federal Circuit has also issued decisions finding patent claims directed to software and business method inventions eligible at *Mayo* step two.¹⁵² As described above, step two of the *Mayo* test requires examining the elements of each claim individually and as an ordered combination to determine whether the claim contains an "inventive concept."¹⁵³ However, at least as compared to *Mayo* step one, the Federal Circuit seems to have issued fewer decisions finding that a software or business method patent contains an inventive concept.

For example, an inventive concept can be found in the "non-conventional and non-generic arrangement of known, conventional pieces."¹⁵⁴ For instance, in *BASCOM*, the patent claims were generally directed to filtering content on the internet, and, as the court noted, filtering content is an abstract idea because it is a "longstanding, well-known method of organizing human behavior."¹⁵⁵ However, the inventive concept described and claimed in the patent was the installation of a filtering tool at a specific location, remote from end-users, and with customizable filtering features specific to each end-user.¹⁵⁶ After reasoning that the inventor's specifically claimed design gave the filtering tool the benefits of both a filter on a local computer and a filter on an internet service provider's (ISP) server, the court held that the claim elements, taken as an ordered combination, recited a "specific

149. *Id.*

150. *Id.*

151. *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016).

152. *See, e.g., Berkheimer v. HP Inc.*, 881 F.3d 1360 (Fed. Cir. 2018); *BASCOM Glob. Internet Servs. v. AT&T Mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016); *Amdocs (Isr.), Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288 (Fed. Cir. 2016).

153. *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 217–18 (2014) (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2011)).

154. *BASCOM Glob. Internet Servs. v. AT&T Mobility LLC*, 827 F.3d 1341, 1350 (Fed. Cir. 2016).

155. *Id.* at 1348.

156. *Id.* at 1350.

method of filtering Internet content” that was not conventional or generic, and therefore patent eligible.¹⁵⁷

Furthermore, whether a claim element or combination is “well-understood, routine and conventional” to a person having ordinary skill in the art is a question of fact, and merely because something is disclosed in prior art does not mean that it is a well-understood, routine, conventional activity or element.¹⁵⁸ In *Berkheimer*, the invention related to “digitally processing and archiving files in a digital asset management system,” and the patent specification explained that the claimed system eliminated redundant storage of common text and graphical elements, thereby improving system operating efficiency and reducing storage costs.¹⁵⁹ At *Mayo* step one, the court held that the claims were directed to various abstract ideas.¹⁶⁰ However, at *Mayo* step two the court came to a different conclusion, observing that the specification discussed purported improvements and that those very improvements were specifically contained in certain claims of the patent.¹⁶¹ As such, the court held that a genuine issue of material fact existed as to whether those purported improvements were more than well-understood, routine, and conventional activity previously known in the industry, and thus remanded the case for a determination of that question.¹⁶²

Thus, under step two of the *Mayo* test, claims reciting a non-conventional and non-generic arrangement of known, conventional pieces contain an inventive concept and are patent eligible.¹⁶³ Furthermore, whether a claim element or combination of elements is “well-understood, routine and conventional” is a question of fact that does not simply turn on whether something was disclosed in prior art.¹⁶⁴ But aren’t these questions under step two of the *Mayo* test just another way to probe the questions of novelty and nonobviousness that would typically be addressed under §§ 102 and 103? A search for an “inventive concept” certainly sounds like a section 102 or 103 question. And surely any patent claim directed to a non-conventional arrangement of known, conventional pieces that is sufficient to be patent-eligible at *Mayo* step two is also patent-eligible under §§ 102 and 103. Why not just perform the analysis there?

157. *Id.*

158. *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1367–69 (Fed. Cir. 2018).

159. *Id.* at 1362–63.

160. *Id.* at 1366–67. The court held that the claims were directed to the “abstract ideas of parsing and comparing data” (claims 1-3 and 9), “parsing, comparing, and storing data” (claim 4), and “parsing, comparing, storing, and editing data” (claims 5-7) based upon a comparison of these claims to claims held to be abstract in prior Federal Circuit decisions. *Id.*

161. *Berkheimer*, 881 F.3d at 1369–70. The Federal Circuit ruled claims 1-3 and 9 ineligible because they did not include limitations that realized the purported improvements described in the specification, however, the court held that claims 4-7 did contain specific limitations directed to those purported improvements. *Id.*

162. *Berkheimer*, 881 F.3d at 1370–71.

163. *BASCOM Glob. Internet Servs. v. AT&T Mobility LLC*, 827 F.3d 1341, 1350 (Fed. Cir. 2016).

164. *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1367–69 (Fed. Cir. 2018).

B. 2019 Revised Patent Subject-Matter Eligibility Guidance

As noted above in Section III(B), the USPTO has issued several different rounds of updated examiner guidance, in addition to updates to the Manual of Patent Examining Procedure (MPEP), regarding what constitutes patentable subject-matter post-*Alice*.¹⁶⁵ The most recent of these updates was issued on January 7, 2019.¹⁶⁶ This update, however, was different than most prior examination guidance updates, which mostly would interpret how to apply post-*Alice* Federal Circuit decisions in light of the *Mayo* test to determine whether claims recited statutory subject-matter under § 101.¹⁶⁷ Instead, the January 2019 update completely revised the procedures for determining whether a patent claim is directed to an abstract idea under step one of the *Mayo* test,¹⁶⁸ with the ultimate goal of “draw[ing] distinctions between claims to principles in the abstract and claims that integrate those principles into a practical application.”¹⁶⁹

As set forth in the January 2019 update, the USPTO essentially revised its prior guidance at *Mayo* step one from a single question into a two-prong analysis.¹⁷⁰ In prong one, examiners must determine whether the claim at issue “recites” an abstract idea, which ultimately turns into a two-step approach.¹⁷¹ First, the examiner must identify one or more specific limitations in the claim that he or she believes recites an abstract idea.¹⁷² Next, the examiner must determine whether that specific limitation(s) falls within one of the enumerated groupings of abstract ideas identified by the USPTO, rather than comparing the claimed concept to the USPTO’s prior “Eligibility Quick Reference Sheet Identifying Abstract Ideas.”¹⁷³ These enumerated groupings of abstract ideas include (a) mathematical concepts, such as formulas, equations, or calculations; (b) certain methods of organizing human activity—for instance, fundamental economic principles or practices, commercial or legal interactions, or managing personal behavior, relationships or interactions between people; and (c) mental processes, e.g., concepts performed in the human mind.¹⁷⁴ If, however, the identified limitation(s) falls within one of the enumerated groupings of abstract ideas, the examiner should then proceed to prong two.¹⁷⁵

In prong two, examiners must assess whether the claim, as a whole, contains additional elements that integrate the abstract idea into a “practical application.”¹⁷⁶ Similar to prong one, examiners must follow a two-step approach to determine whether the judicial exception has been integrated into a practical application.¹⁷⁷

165. See generally *Subject Matter Eligibility*, *supra* note 117.

166. 2019 Revised Guidance, 84 Fed. Reg. 50, (Jan. 7, 2019).

167. See generally *Subject Matter Eligibility*, *supra* note 117.

168. 2019 Revised Guidance, 84 Fed. Reg. at 50.

169. *Id.* at 51.

170. *Id.* at 50.

171. *Id.* at 53.

172. 2019 Revised Guidance, 84 Fed. Reg. at 50.

173. *Id.*

174. *Id.* at 52.

175. *Id.* at 54.

176. *Id.*

177. 2019 Revised Guidance, 84 Fed. Reg. at 50.

First, the examiner must identify whether additional elements exist in the claim beyond the judicial exception(s), and, second, he or she must evaluate those additional elements individually and in combination to determine whether they integrate the judicial exception into a practical application.¹⁷⁸ Under this second step, the examiner must rely on court precedent to determine if the judicial exception is sufficiently integrated into a practical application.¹⁷⁹ For example, an examiner may conclude that a software-related patent claim is integrated into a practical application if it is directed to an improvement in computer technology.¹⁸⁰

After proceeding through this new two prong approach at *Mayo* step one, the examination of a patent claim under § 101 may proceed as normal to step two of the *Mayo* test.¹⁸¹ Although this change in examiner guidance could potentially streamline the examination process by providing a more robust way to approach questions of subject-matter eligibility, the guidance does have some drawbacks. First, because examiner guidance does not constitute substantive rulemaking and does not have the same force and effect of law,¹⁸² the guidance could potentially be struck down by the Supreme Court at any time. Second, if the examination guidelines were struck down by the Court, patent holders who may have acquired their patent grant under the new guidance could potentially be stripped of that patent in a subsequent court proceeding. Third, the two-step *Mayo* test now seems to have mushroomed into a six- or seven-step analysis. Thus, although the updated guidance may be a step in the right direction for settling the issue of what constitutes statutory subject-matter under § 101 post-*Alice*, the guidance may not be the best long-term solution. On the other hand, a proposed congressional amendment to 35 U.S.C. § 101, as discussed next in Subsection C, could be an answer for a long-term, practical solution.

C. Restoring America's Leadership in Innovation Act of 2018

On June 28, 2018, during the second session of the 115th Congress, Congressman Massie, on behalf of himself, Ms. Kaptur, and Mr. Rohrabacher, presented House Bill 6264, formally known as the "Restoring America's Leadership in Innovation Act of 2018" (RALI Act).¹⁸³ The RALI Act made various underlying findings, alleging that the Leahy-Smith America Invents Act and various decisions of the Supreme Court "have harmed the progress of Science and the useful Arts by eroding the strength and value of the patent system," and additionally that the Act would restore the patent system as originally envisioned by the Constitution.¹⁸⁴

178. *Id.*

179. *Id.* at 55.

180. *See id.* at 55 n.25.

181. *Id.* at 56.

182. 2019 Revised Guidance, 84 Fed. Reg. at 50.

183. *See Restoring America's Leadership in Innovation Act of 2018, H.R. 6264, 115th Cong. (2018)* [hereinafter RALI Act].

184. *Id.* § 2.

Thus, the stated purpose of the RALI Act is to “promote the leadership of the United States in global innovation by establishing a robust patent system that restores and protects the right of inventors to own and enforce private property rights in inventions and discoveries, and for other purposes.”¹⁸⁵

In addition to proposing an unlikely and questionable repeal of the first-to-file system under the America Invents Act,¹⁸⁶ the RALI Act also proposed several amendments to the current U.S. patent system, including a proposed amendment to 35 U.S.C. § 101.¹⁸⁷ The proposed amendment to 35 U.S.C. § 101 would create three subsections within the code provision as follows:

(a) IN GENERAL—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.

(b) EXCEPTION—A claimed invention is ineligible patent subject matter under subsection (a) if the claimed invention as a whole, as understood by a person having ordinary skill in the art, exists in nature independently of and prior to any human activity, or exists solely in the human mind.

(c) ELIGIBILITY STANDARD—The eligibility of a claimed invention under subsections (a) and (b) shall be determined without regard as to the requirements or conditions of sections 102, 103, and 112 of this title, or the claimed invention’s inventive concept.¹⁸⁸

Thus, while subsection (a) merely recites § 101 in its current form verbatim,¹⁸⁹ subsections (b) and (c) add new substance to § 101 by codifying exceptions to patentability and setting new eligibility standards.¹⁹⁰

In justifying this proposed amendment to § 101, the RALI Act provides that it is the sense of Congress that the U.S. patent system must “protect and encourage research and development . . . in the life sciences, computer sciences, and other disciplines” by providing scientists and inventors with “certainty that their discoveries and inventions are entitled to patent protection.”¹⁹¹ Furthermore, the RALI Act asserts that the amendment to § 101 “effectively abrogates” the *Alice* decision and its predecessors to “ensure that life sciences discoveries, computer software, and similar inventions and discoveries are patentable, and that those patents are enforceable.”¹⁹² In accordance with this, the language in subsection (b) regarding “human activity” is critical for reinvigorating the patentability of medical advances, which were curtailed by the Supreme Court’s decision in *Mayo*, while the language about inventions “existing solely in the human mind” is directed to

185. RALI Act, *supra* note 183.

186. *Id.* § 3(a).

187. *Id.* § 7(a).

188. *Id.*

189. *See* 35 U.S.C. § 101 (2012).

190. *See* RALI Act, *supra* note 183, § 7(a).

191. *Id.* § 7(b)(2).

192. *Id.* § 7(b)(3).

reviving the issuance of software and business method patents restrained by *Alice*.¹⁹³

Some patent scholars have regarded the RALI Act as “America’s best hope to restore sanity and prosperity to the U.S. patent system.”¹⁹⁴ However, as is the case with many proposed House bills in Congress, the chances of the RALI Act making its way through the entire legislative process and being signed into law are slim to none,¹⁹⁵ and critics have been quick to point this out.¹⁹⁶ Thus, while the RALI Act is potentially the answer that pro-software and business method patentee advocates have been waiting for, it appears to be unlikely that the RALI Act will pass in the near future, at least as it currently is drafted. But what if the Act just proposed an amendment to § 101 rather than a complete repeal of first-to-file and other provisions of the America Invents Act? If that were the case, the Act would likely find endorsement from a broader range of supporters and thus have a better chance at becoming law.

D. Trade Related Aspects of Intellectual Property Rights (TRIPS) and Foreign Patent Systems

Although determining the extent to which software and business method patents are eligible for protection under § 101 is solely a question for the U.S. patent system’s consideration, it is important to keep in mind the obligations the United States has as a member country of the World Trade Organization (WTO) under the TRIPS agreement.¹⁹⁷ Additionally, to help maintain consistency with other member countries of the WTO, it is arguably “best practice” to keep patentable subject-matter standards consistent between member countries so that a patentee does not receive patent protection in one member country, while being denied

193. Steve Brachmann, *Legislation Introduced in House to Repeal the PTAB and the AIA*, IPWATCHDOG (July 17, 2018), <https://www.ipwatchdog.com/2018/07/17/legislation-house-repeal-ptab-aia/id=99059/>.

194. *Id.*

195. See, e.g., Dennis Crouch, *Legislation: Restoring America’s Leadership in Innovation*, PATENTLY-O (July 2, 2018), <https://patentlyo.com/patent/2018/07/legislation-leadership-innovation.html> (Noting that “this proposal has a 0% likelihood of passing this Congress, but it has been introduced and offers an interesting discussion point.”); Bradley Roush, *Restoring America’s Leadership in Innovation Act of 2018*, FOLEY (Aug. 16, 2018), <https://www.foley.com/restoring-americas-leadership-in-innovation-act-of-2018-08-16-2018/> (explaining that the RALI Act bill is “highly unlikely to become law”).

196. See Crouch, *supra* note 195. For instance, one critic stated that “this bill has ZERO chance in passing, and we also know they can not and will not pass anything pro patent, Google, Amazon, Microsoft, Facebook have the Senate and House in the back of their pockets. Silicon Valley elites own the vote.” Jason Lee, Comment to *Legislative Steps in the Pro-patent Direction*, IPWATCHDOG (July 8, 2018, 1:38 PM), <https://www.ipwatchdog.com/2018/07/08/legislative-steps-pro-patent-direction/id=99068/>; see also Valuationguy, Comment to *Legislation Introduced in House to Repeal the PTAB and the AIA*, IPWATCHDOG (July 17, 2018, 8:47 AM), <https://www.ipwatchdog.com/2018/07/17/legislation-house-repeal-ptab-aia/id=99059/> (“this bill has ZERO chance of getting through the necessary subcommittees and Committee in the House of Reps”).

197. See *Members and Observers*, WORLD TRADE ORGANIZATION, https://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm (last visited Oct. 30, 2019).

patent protection in another member country for not claiming patentable subject-matter. Accordingly, this subsection will first explore the requirements for patentable subject-matter under TRIPS, and then look at various WTO member jurisdictions, such as Canada and the European Union, to see just what they have to say about the eligibility of software and business method patents.

i. TRIPS Take on Patent Subject-Matter Eligibility

Article 1 of TRIPS provides that member countries “*may, but shall not be obliged to*, implement in their law more extensive protection than is required by this Agreement, provided that such protection does not contravene the provisions of this Agreement.”¹⁹⁸ Furthermore, Article 1 provides that members “shall be free to determine the appropriate method of implementing the provisions of this Agreement within their own legal system and practice.”¹⁹⁹ Thus, the TRIPS agreement, like the United States Constitution, provides a floor rather than a ceiling for the intellectual property laws of its member countries.²⁰⁰ And this floor is essentially non-existent for software-related and business method patents.²⁰¹

According to Article 27 of TRIPS, and subject to a couple of exceptions, “patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application.”²⁰² Expanding on the Article 27 definition, the two “terms ‘inventive step’ and ‘capable of industrial application’ may be deemed by a member [country] to be synonymous with the terms ‘non-obvious’ and ‘useful,’ respectively.”²⁰³ As such, the general provision for what is patentable subject-matter under TRIPS is strikingly similar to 35 U.S.C. § 101²⁰⁴ and has no substantial bearing on the validity of software and business method patents.

Additionally, like the general provision for patentable subject-matter in Article 27, the exceptions listed in Article 27 do not affect the validity of software and business method patents either.²⁰⁵ First, these exceptions merely state that member states *may* exclude from patent protection inventions that may be immoral, dangerous to health, or prejudicial to the environment;²⁰⁶ member countries may also exclude certain medical methods for treating humans or

198. Agreement on Trade-Related Aspects of Intellectual Property Rights (as amended on 23 January 2017), Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299, art. 1, ¶ 1 [hereinafter TRIPS Agreement] (emphasis added).

199. *Id.*

200. See generally Ilya Somin, *A Floor, Not a Ceiling: Federalism and Remedies for Violations of Constitutional Rights in Danforth v. Minnesota*, 102 NW. U. LAW REV. COLLOQUY 365 (2008) (discussing how the Supreme Court’s interpretation of the United States Constitution creates a floor for remedies).

201. See TRIPS Agreement, *supra* note 198, art. 27, ¶ 1.

202. *Id.*

203. See TRIPS Agreement, *supra* note 198, n.5.

204. See 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.”).

205. See TRIPS Agreement, *supra* note 198, art. 27.

206. *Id.* art. 27, ¶ 2 (emphasis added).

animals,²⁰⁷ in addition to plants, animals, and certain biological processes.²⁰⁸ Second, these exceptions are entirely permissive and member countries do not have to exclude inventions directed to one of the exceptions listed above.²⁰⁹ Thus, software and business method patents are eligible for patenting under TRIPS.

In fact, a strict reading of Article 27 of the TRIPS agreement could lead to the conclusion that software and business method patents are more than just allowable by member countries; rather, they are implicitly required. As quoted above, member countries *must* provide patent protection for “*any inventions, . . . in all fields of technology,*” subject to a few conditions.²¹⁰ And furthermore, there is no provided exception in TRIPS for member countries to refuse patent protection for software or business method patents.²¹¹ Therefore, so long as the U.S. remains a member of the WTO, and absent any amendments to TRIPS with respect to patentable subject-matter, it is highly unlikely that there will be an outright bar on software and business method patents in the United States. With this proposition in mind, let’s take a look at what is going on North of our border.

ii. Canadian Subject-Matter Eligibility

Up and until China stole the show in 2015 as the United States’ biggest overall trade partner in foreign commerce, Canada, naturally, was the United States’ biggest overall partner in foreign trade.²¹² According to the U.S. Census Bureau, however, Canada still remains the United States’ biggest partner in foreign exports, where the amount of goods exported in 2018 accounted for a total of \$276.4 billion as of November.²¹³ Given that Canada is such a huge player in trade with the United States, it would seem fitting that laws in each respective country should be relatively consistent, including intellectual property laws. So, what does Canada have to say about software and business method patents?²¹⁴

207. *Id.* art. 27, ¶ 3(a).

208. *Id.* art. 27, ¶ 3(b).

209. *See id.* art. 27, ¶¶ 2, 3 (stating that member states “may exclude from patentability...”).

210. *Id.* art. 27, ¶ 1 (emphasis added).

211. *See* TRIPS Agreement, *supra* note 198, art. 27, ¶¶ 2, 3.

212. Sarah Gray, *These Are the Biggest U.S. Trading Partners*, FORTUNE, <http://fortune.com/2018/03/07/biggest-us-trade-partners/> (last updated Apr. 2, 2018 1:38 PM).

213. *Top Trading Partners – November 2018*, UNITED STATES CENSUS BUREAU, <https://www.census.gov/foreign-trade/statistics/highlights/top/top1811yr.html> (last visited Oct. 30, 2019).

214. Although this paper will not be discussing Chinese patent law, it is sufficient for our purposes to know that China revised its examination guidelines in 2017 to address software and business method inventions. Gene Quinn, *Navigating the Patent Landscape in China*, IPWATCHDOG (May 23, 2018), <http://www.ipwatchdog.com/2018/05/23/navigating-patent-landscape-china/id=97611/>. Under these revisions, software related innovations can be protected under Chinese patent law as a “‘computer program product,’ ‘a machine-readable medium,’ and ‘an apparatus comprising a process configured to execute instructions on a computer-readable medium.’” *Id.* Additionally, “[w]ith respect to business methods, claims relating to business models that include a technical feature in addition to business rules or methods are patent eligible under the new guidelines.” *Id.*

Although the Canadian patent system is relatively silent with respect to business methods, it does provide helpful guidance for software and computer-implemented patents in general. For instance, a computer software program, when claimed per se, is deemed an abstract scheme, plan, or set of rules for operating a computer and is not an invention within the meaning of the Canadian Patent Act.²¹⁵ However, in certain circumstances software can be patent eligible, and the Canadian Manual of Patent Office Practice (MOPOP) provides specific, helpful guidelines for patent stakeholders to use in attaining a software-related patent.²¹⁶ These guidelines explain the mechanics of how a software patent claim should be drafted, as well as how an examiner should determine whether the claimed software itself recites a patentable concept.²¹⁷

When drafting, the form of a software patent claim is critically important.²¹⁸ As a whole, the claim should be directed to a physical memory storing software program, and “the preamble must clearly direct the claim to a physical product limited by the computer program stored thereon . . . not to a computer program limited by having been stored on a memory.”²¹⁹ For example, a preamble claiming “a physical memory having stored thereon . . .” directs the claim to a statutory embodiment, whereas ‘a computer program stored on a physical memory’ directs the claim to a computer program and thus to excluded subject-matter.²²⁰ And finally, “it must be explicitly defined that the computer program is present as machine-executable code.”²²¹ Only under these formalities will a patent claim directed to a software program be eligible for protection in Canada.²²²

As noted above, in addition to offering guidelines for software claim drafting formalities, the MOPOP further provides the test to determine whether a software patent claim recites a patentable concept.²²³ Under this test, a claim will include statutory subject-matter when the software “program would cause the device it controls to provide a technological solution to a technological problem,” in addition to the software program being novel and inventive.²²⁴ And as summed up in the MOPOP, these are the “circumstances under which a software product comprising a physical memory storing executable code can be patented.”²²⁵

In building on its layers of guidance, the MOPOP also provides instructions and examples for determining the eligibility of computer-implemented inventions.²²⁶ As with software patent claims, the eligibility of computer-implemented patent claims

215. GOV'T OF CANADA, MANUAL OF PATENT OFFICE PRACTICE (MOPOP) § 16.08.04 (Oct. 2010) [hereinafter MOPOP].

216. *Id.*

217. *Id.*

218. *Id.*

219. *Id.*

220. *Id.*

221. MOPOP, *supra* note 215, § 16.08.04 (“Only machine-executable code can change the technological functionality of the physical memory storing the program. Non-executable code is considered to be mere descriptive matter.”).

222. *Id.*

223. *Id.*

224. *Id.*

225. *Id.*

226. *Id.* § 16.02.03.

also hinges on whether the claimed system, method, or device provides a “technological solution to a technological problem.”²²⁷ In examples, while presuming novelty and ingenuity, the MOPOP suggests that patent claims involving (a) new computer hardware, (b) known computer hardware controlled by new software, or (c) a new arrangement of known computer hardware controlled by new software, provide technological solutions to technological problems and would be viewed as patent eligible.²²⁸ Thus, the Canadian patent system is relatively generous when it comes to granting patents for general computer-implemented inventions.

As shown from the foregoing, the Canadian patent system and the MOPOP provide more robust solutions for examiners, stakeholders, and attorneys to determine whether a software- or computer-implemented invention recites statutory subject-matter. Likely the most unique provision that differs from the U.S. patent system is how the MOPOP lays out the exact language that claim drafters should be using, and that examiners should be expecting, when dealing with software-related patent claims, likely leading to more uniformity and consistency for issuing software-related patents.

iii. Subject-Matter Eligibility in the European Union

In recent years, industry experts have noted that the United States’ approach to the patentability of software and business method innovations seems to be converging, at least somewhat, with the approach taken by the European Patent Office (EPO).²²⁹ However, there are still many differences between the two patent systems, and the EPO offers brighter-lined analysis tools to determine what constitutes patentable subject-matter in these two areas.

Article 52 of the European Patent Convention provides the general rule for patentable subject-matter in the European Union (EU), following the same language as the TRIPS agreement, but with a few more exceptions.²³⁰ The European statute broadly provides that “patents shall be granted for any inventions, in all fields of technology, provided that they are new, involve an inventive step and are susceptible of industrial application.”²³¹ No statute, however, is complete without a few exceptions, and Article 52 has several as well. One of these exceptions is that “methods for . . . doing business” and “programs for computers” shall not be regarded as patentable inventions.²³² Although inventions of this type may seem to

227. MOPOP, *supra* note 215, § 16.08.04.

228. *Id.*

229. *E.g.*, James Leach, *Patentability of Software and Business Method Inventions in Europe*, MEWBURN ELLIS, <https://mewburn.com/resource/patentability-of-business-method-and-software-inventions-in-europe-2/> (last visited Oct. 30, 2019).

230. *See* European Patent Office, European Patent Convention art. 52, ¶ 1 (June 2016); TRIPS Agreement, *supra* note 198, art. 27, ¶ 1.

231. European Patent Convention, *supra* note 230, art. 52, ¶ 1.

232. *Id.* art. 52, ¶ 2(c).

be explicitly barred, the exclusion does not apply to inventions that have a “technical character.”²³³

Under EPO standards, software-related inventions may be grouped into one of two categories: programs for computers and computer-implemented inventions.²³⁴ The EPO distinguishes between these two categories by stating that a computer program refers “to a sequence of computer-executable instructions specifying a method,” whereas a computer-implemented invention refers to a “method being actually performed on [or by] a computer.”²³⁵ With respect to the stricter of these two categories, a computer program has a technical character, and therefore is not excluded from patentability, if the computer program produces a “further technical effect” when run on a computer, i.e., a technical effect “going beyond the ‘normal’ physical interactions between the program (software) and the computer (hardware) on which it is run.”²³⁶ On the other hand, patent claims directed to a computer-implemented method, including a computer-readable storage medium, cannot be objected to under Article 52 because any method involving the use of a computer or its specific hardware have technical character.²³⁷

On the other hand, with respect to business method patents, the EPO Guidelines for Examination follow similarly to that of computer-implemented inventions.²³⁸ Like computer-implemented methods, the guidelines for examining a method of doing business provide that if the claimed subject-matter specifies technical means, such as computers, computer networks, or other programmable apparatus for executing at least some steps of a business method, it is not limited to excluded subject-matter as such, and thus not excluded from patentability under Article 52.²³⁹ In other words, the EPO pushes business method patents along to further analysis by examiners to determine novelty and non-obviousness so long as the claim specifies that the method is performed, at least in part, by a computer.

iv. Recap of Foreign Patent Subject-Matter Eligibility

As shown by the rules and guidelines in place in jurisdictions like Canada and the EU, it is clear that the United States’ approach to patent subject-matter eligibility is out of date and in need of reconsideration. The more consistent laws and guidance in place in Canada and the EU likely encourage inventors to file for patents and disclose their ideas. Compared to the United States, our current system

233. European Patent Office, Guidelines for Examination in the European Patent Office, Pt. G, Ch. II, §§ 3.5.3, 3.6 (Nov. 2018) [hereinafter GEEPO].

234. *Id.* Pt. G, Ch. II, § 3.6.

235. *Id.*

236. *Id.* In general, examples of further technical effects may include (1) “computer programs controlling the internal functioning or operation of a computer, such as processor load balancing or memory allocation;” (2) “[p]rograms for processing code at low level, such as builders or compilers;” or (3) a computer program corresponding to a method that itself has a technical character, such as a computer program for “controlling an anti-lock braking system in a car, determining emissions by an X-ray device, compressing video, restoring a distorted digital image, or encrypting electronic communications.” *Id.* Pt. G, Ch. II, § 3.6.1.

237. GEEPO, *supra* note 233, Pt. G, Ch. II, § 3.6.

238. Compare *id.* § 3.5.3, with *id.* § 3.6.

239. See GEEPO, *supra* note 233, Pt. G, Ch. II, § 3.5.3.

likely has more of a tendency to encourage trade secrets and thereby discourage investing money into research and development for software and business method innovations.

So, why is it that the wealthiest, most technologically advanced country in the world—that is the home to worldwide tech giants like Apple, Amazon, Google, and Microsoft—refuses to provide direction as to what type of software and business method innovations should be eligible for patent protection? Moreover, why do both Canada and the EU have better guidance than the United States for determining the eligibility of computer-implemented inventions in general? But more importantly, who is going to fix this mess?

VII.SUCH A CURIOUS DREAM: A PATENT SYSTEM PROPOSAL

With the Federal Circuit’s hands tied by the Supreme Court’s recent decisions concerning patent subject-matter eligibility, the question becomes who, exactly, is in the better position to determine the patentability of software and business methods: Congress or the Supreme Court? Should the rule be in the form of a Congressional amendment, or should it be a Supreme Court holding? What should the rule be and how should it be formulated? We will explore these issues in this section.

A. Congress Should Provide the Answer

Although it was the Supreme Court that originally created the current problem, Congress is the ideal entity to clarify the patentability of software and business method inventions. This becomes apparent for at least four reasons: First, the Court has repeatedly declined to define bright-line rules for what is patentable; second, Congress would likely provide a more pro-patent resolution; third, a Congressional amendment would be longer lasting and more concrete than a Supreme Court holding; and fourth, the procedures for passing an amendment would provide an opportunity to receive feedback from businesses and inventors who are the ones investing their time and capital in research and development.

The Supreme Court has repeatedly stated that this is the exact type of decision intended for Congress.²⁴⁰ In the words of Justice Scalia in his famous dissent in *Obergefell v. Hodges*,

it is not of special importance to me what the law says about marriage. It is of overwhelming importance, however, who it is

240. *E.g.*, *Gottschalk v. Benson*, 409 U.S. 63, 73 (1972) (“If these programs are to be patentable, considerable problems are raised which only committees of Congress can manage, for broad powers of investigation are needed, including hearings which canvass the wide variety of views which those operating in this field entertain.”); *Parker v. Flook*, 437 U.S. 584, 595 (1978) (“Difficult questions of policy concerning the kinds of programs that may be appropriate for patent protection and the form and duration of such protection can [only] be answered by Congress on the basis of current empirical data not equally available to this tribunal.”).

that rules me. Today's decree says that my Ruler, and the Ruler of 320 million Americans coast-to-coast, is a majority of the nine lawyers on the Supreme Court. The opinion in these cases is the furthest extension in fact—and the furthest extension one can even imagine—of the Court's claimed power to create “liberties” that the Constitution and its Amendments neglect to mention. This practice of constitutional revision by an unelected committee of nine, always accompanied (as it is today) by extravagant praise of liberty, robs the People of the most important liberty they asserted in the Declaration of Independence and won in the Revolution of 1776: the freedom to govern themselves.²⁴¹

Because Justice Scalia was not the only member of the Court who shared this similar belief,²⁴² and since the Court's current Justices likely do not feel experienced enough,²⁴³ let alone inclined to answer the question of patent subject-matter eligibility, the Supreme Court will likely continue to punt every time it is presented with the opportunity to draw the line for patentable subject-matter.²⁴⁴

Additionally, a decision by Congress in the form of an amendment to 35 U.S.C. § 101 would likely be more pro-patent and thus favorable to the issuance of software and business method patents in the future. A pro-patent legislative fix would further encourage innovation in the software and business method arts by encouraging inventors to disclose their inventions, rather than trying to maintain them in secret. Furthermore, Supreme Court Justices, at least as compared to many of the Judges sitting on the Federal Circuit, have previously had tendencies to be anti-patent. For instance, once Supreme Court Justice Abe Fortas allegedly stated that “a typical judge's reaction to a patent is like that of a man suddenly

241. *Obergefell v. Hodges*, 135 S. Ct. 2584, 2627 (2015) (Scalia, J., dissenting).

242. *Cf., e.g., id.* at 2611, 2640. Chief Justice Roberts and Justice Alito also penned similar dissents, in which Justices Scalia and Thomas both joined. *Id.* For instance, in the Chief Justice's dissent he noted his opinion was “not about whether . . . the institution of marriage should be changed to include same-sex couples.” *Id.* at 2612 (Roberts, C.J., dissenting). Rather, the Chief Justice's dissent was about “whether, in our democratic republic, that decision should rest with the people acting through their elected representatives, or with five lawyers who happen to hold commissions authorizing them to resolve legal disputes according to law.” *Id.*

243. For instance, not one current Justice sitting on the Supreme Court holds an engineering degree, let alone a Bachelor of Science degree. See *Current Members*, SUPREME COURT OF THE UNITED STATES (last visited Sept. 25, 2019), <https://www.supremecourt.gov/about/biographies.aspx>. However, in order to qualify to take the Patent Bar Examination and prosecute patents before the USPTO, an applicant must have either (1) received a Bachelor of Science in an approved undergraduate field of science or engineering; or (2) have a scientific background that otherwise meets the requirements for the USPTO's Category B type of applicant. See UNITED STATES PATENT AND TRADEMARK OFFICE, GENERAL REQUIREMENTS BULLETIN FOR ADMISSION TO THE EXAMINATION FOR REGISTRATION TO PRACTICE IN PATENT CASES BEFORE THE UNITED STATES PATENT AND TRADEMARK OFFICE, 4–5 (June 2019), https://www.uspto.gov/sites/default/files/documents/OED_GRB.pdf.

244. *Bilski v. Kappos*, 561 U.S. 593, 649 (2010) (Stevens, J., concurring) (“We should not casually risk exceeding the constitutional limitation on Congress' behalf.”); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 92 (2011) (“In consequence, we must hesitate before departing from established general legal rules lest a new protective rule that seems to suit the needs of one field produce unforeseen results in another. And we must recognize the role of Congress in crafting more finely tailored rules where necessary.”).

encountering a snake: His first instinct is to try to kill it.”²⁴⁵ Although this view may not be quite this drastic today, it potentially demonstrates the general proposition that patent law is a highly technical area of the law, and there is only a relatively small class of individuals who can understand both the intricacies of a patentable invention, as well as the patent laws applicable to that invention. Therefore, the best legal doctrine for the patentability of software and business method inventions is likely going to be introduced by experts in the relevant field, not a Justice of the Supreme Court.

Furthermore, a Congressional amendment to 35 U.S.C. § 101 would potentially be longer lasting and more concrete than judge-made law, thereby providing certainty in the patent law for years to come. If Congress were to amend § 101, they would be able to define, in furtherance of the Constitution of course, exactly what inventions are patent-eligible. Additionally, the USPTO and the courts—including the Supreme Court—would be responsible for determining whether claims were patent eligible in light of a concrete definition instead of relying on a prior court’s holding in a factually distinct case.

Finally, passing an amendment would provide more than just the law itself; it would provide floor debates, drafts, an opportunity for stakeholders to voice their opinions, and other important information to help interpret the intent of Congress in cases where the statute does not provide an explicit answer. Stakeholders and those investing their time, money, and expertise in research and development are the exact individuals that our patent laws were designed to incentivize. Thus, it makes sense to listen to the voices of the industry experts whom the patent laws primarily impact.

At least for the foregoing reasons, I believe that the answer to this complex problem of patent subject-matter eligibility that the United States finds itself in the middle of lies with the Congress. It is Congress’s job under the Constitution to proscribe laws, and it is the Supreme Court’s job to interpret those laws in light of the Constitution. So how exactly should Congress respond? Let me tell you what I think.

B. Author’s Proposed Amendment to 35 U.S.C. § 101

As alluded to above in Section IV(C), I believe the “Restoring America’s Leadership in Innovation Act of 2018” (RALI Act) is, at least to date, the best proposed solution to the current patent subject-matter eligibility problem in the United States. Although I am somewhat in agreement with the RALI Act’s proposed amendment to 35 U.S.C. § 101, I am not prepared to get on board with other sections of the RALI Act. For instance, I question the wisdom of repealing the first-to-file system put in place by the America Invents Act (AIA).²⁴⁶ First, I believe the

245. Philip E. Hansen, *The patent pendulum swings*, IDAHO BUSINESS REVIEW (Jan. 29, 2019), <https://idahobusinessreview.com/2019/01/29/the-patent-pendulum-swings/>.

246. See RALI Act, *supra* note 183, § 3(a).

first-to-file system creates a more straightforward, bright-line approach for courts and the USPTO to determine priority of patent applications under 35 U.S.C. § 102. Second, after making such substantial changes to § 102 in the AIA, I highly doubt that Congress is ready to do away with these changes after being in place for a mere seven years.²⁴⁷ Accordingly, I think such a drastic proposal in the RALI Act is potentially holding back a legitimate attempt to amend 35 U.S.C. § 101 that would otherwise be considered by Congress on a higher level of priority.

Furthermore, although the RALI Act is a step in the right direction, I believe a better answer to the problem lies somewhere in between the RALI Act's proposed amendment and the approaches already taken in Canada and the EU. Therefore, I propose that 35 U.S.C. § 101 be amended as follows:

(a) IN GENERAL—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.

(b) EXCEPTIONS—The following shall be regarded as excluded patent subject-matter under subsection (a), provided that a patent claiming excluded subject-matter as defined below in subsections (1)–(4) does not involve an inventive concept as defined in subsection (d):

- (1) discoveries pre-existing in nature;
- (2) scientific theories and mathematical relationships;
- (3) pre-emptory principles in the abstract;
- (4) methods of doing business; and
- (5) software programs for computers.

(c) ELIGIBILITY STANDARD—The eligibility of a claimed invention under subsections (a) and (b) shall be determined without regard as to the requirements or conditions of §§ 102, 103, and 112 of this title.

(d) INVENTIVE CONCEPT—An invention claiming excluded subject-matter under subsection (b) recites an inventive concept and shall be considered patent-eligible under this section if,

(1) for an invention claiming excluded subject-matter under subsection (b)(2), the claimed invention reduces the scientific theory or mathematical relationship into a specific and practical application.

(2) for an invention claiming excluded subject-matter under subsection (b)(4), the method of doing business is implemented on a computer or similar device and, as a result of the implementation, the method of doing business realizes an improvement that was not otherwise capable of being achieved by a human.

(3) for an invention claiming excluded subject-matter under subsection (b)(5), the software program:

247. Patent Law Treaties Implementation Act of 2012, Pub. L. No. 112-211, 126 Stat. 1527.

- (i) produces an improvement in computer-related technology; or
- (ii) corresponds to, or is incorporated into, an otherwise patent-eligible process, machine, manufacture, or composition of matter under subsection (a).

An amendment taking this form would, similar to the systems in place in Canada and the EU, strike down patent claims that merely act as a pre-emption to certain fields of innovation, while advancing patent claims tied to specific improvements or applications past the threshold of § 101 to determine whether the patent claims are in fact novel and nonobvious. I believe this amendment—or at least something similar—would maintain pace with current Supreme Court and Federal Circuit precedent, while providing a better platform to maintain consistency with the issuance of new patents.

For example, while subsection (a) is just a restatement of 35 U.S.C. § 101 in its current form, subsection (b) would codify the current judicial exceptions to patentability in addition to adding a few other per se exceptions that the Court has contemplated over the years. The first exception, discoveries pre-existing in nature, corresponds to the natural phenomenon exception, while the second exception, scientific theories and mathematical relationships, is meant to correspond to the laws of nature exception. Additionally, the third exception of pre-emptory principles in the abstract is meant to codify the abstract idea exception, but to bring the exception back to its roots as it was in *Wyeth v. Stone* where the patentee attempted to claim "an exclusive title to the art of cutting ice by means of any power, other than human power."²⁴⁸ Finally, the last two exceptions would codify the more recent problems the Court has been struggling with: methods of doing business and computer software.

Additionally, subsection (c) would stay in line with the proposed language of the RALI Act.²⁴⁹ The reason this language is inserted is to maintain the separation between §§ 101, 102, 103, and 112, which should each have their own analysis comprising various questions. Thus, § 101 would ask whether the invention claimed is of a *type* that is eligible for patenting, whereas §§ 102 and 103 would ask whether the invention is in fact *new* and *not obvious*, respectively.

Subsection (d), however, is the real “meat” of the proposed statute. Essentially, this subsection provides the “exception to the exception.” Subsection (d) further refers to that exception as an “inventive concept,” thus keeping with the terminology used in the Supreme Court’s jurisprudence. We will review these exceptions one by one.

First, subsection (d)(1) provides the exception for patent claims involving scientific theories and mathematical relationships, or in other words, laws of nature. This exception provides that a patent claiming a scientific theory or mathematical relationship may be patent-eligible if the claimed invention reduces

248. *Wyeth v. Stone*, 30 F. Cas. 723, 727 (C.C.D. Mass. 1840) (No. 18107).

249. See RALI Act, *supra* note 183, § 7(a).

the scientific theory or mathematical relationship into a specific and practical application. Under this subsection, patent claims like those at issue in *Diamond v. Diehr* would be considered patent-eligible because the claims reduced the law of nature into a specific application of continuously monitoring the temperature inside of a rubber mold with a computer to determine a precise time to open the mold.²⁵⁰

Second, subsection (d)(2) provides an exception for methods of doing business that are implemented on a computer or other device. Under this subsection, if the method of doing business realizes an improvement that was not otherwise capable of being achieved by a human as a result of the method being implemented on a computer, the patent claim recites eligible subject-matter. This provision maintains Federal Circuit precedent in cases like *McRO*, which generally held that patent claims directed to automating prior art techniques on a computer, which were previously capable of being performed only by a human, are patent eligible if they enable a computing device to perform—and improve upon—those prior art techniques.²⁵¹ Additionally, this provision would have invalidated the claims at issue in *Bilski v. Kappos* because the patent claims in that case were merely directed to a method of doing business that was not tied to any computer or other device.²⁵² With respect to *Alice*, however, this provision likely would have regarded the claims at issue to be patent-eligible. But this just means that the claims in *Alice* would have had a chance to be examined under §§ 102, 103, and 112; and assuming that intermediated settlement is truly a “fundamental economic practice” that is “long prevalent in our system of commerce,” the claims in *Alice* would have been invalidated under one of those provisions.

And finally, under subsection (d)(3), an exception is provided for inventions claiming software programs that either (i) produce an improvement in computer-related technology, or (ii) correspond to, or are implemented on, an otherwise patent-eligible process, machine, manufacture, or composition of matter under subsection (a). Provision (i) would keep in line with the growing body of case law in the Federal Circuit that software inventions are patentable if they are directed to improvements in the way a computer operates.²⁵³ Additionally, provision (ii) would target the guidance in place in the EU that declares software as patentable subject-matter when it is tied to a patent-eligible process, machine, or manufacture. In this way, the software that controls the behavior of a patent-eligible automated car or robotic machinery would also be patent-eligible.

Although this model statute is not perfect, no statute defining patentable subject-matter ever will be. Questions will always arise in the course of interpretation of a statute. However, making an amendment to 35 U.S.C. § 101 would be a step in the direction of stabilizing the United States patent system and hopefully improving the consistency of the issuance of patents.

250. *Diamond v. Diehr*, 450 U.S. 175, 178–79, 187 (1981).

251. See *McRO, Inc. v. Bandai Namco Games America, Inc.*, 837 F.3d 1299, 1313 (Fed. Cir. 2016).

252. See *Bilski v. Kappos*, 561 U.S. 593, 609, 612 (2010).

253. See *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1336 (Fed. Cir. 2016); *Finjan Inc. v. Blue Coat Sys., Inc.*, 879 F.3d 1299, 1305–06 (Fed. Cir. 2018); *Core Wireless Licensing S.A.R.L. v. LG Elecs., Inc.*, 880 F.3d 1356, 1362–63 (Fed. Cir. 2018).

VIII. WHAT A WONDERFUL DREAM IT HAS BEEN: AN ENDING TO OUR JOURNEY

Although I am in full agreement with the teachings of Abraham Lincoln that “[n]o organic law can ever be framed with a provision specifically applicable to every question which may occur in practical administration,”²⁵⁴ the prevalence of post-*Alice* § 101 based rejections for patents claiming ineligible subject-matter is a sign that change is needed. The United States and other countries around the world are basking in the benefits of the Digital Revolution, and this revolution is far from over. Computer-related technology, including automation, networking, and cloud computing, is most likely going to continue developing and will reach levels never imaginable before. The days of taking a trip to the supermarket may soon be rare in our society. Thus, software and business method innovations are not going away. Rather, they are the future; and they may just be getting started. In light of this, considered action by Congress is needed to address the uncertainty created by the Supreme Court’s Section 101 jurisprudence. And Congress may ultimately be deciding not only the patentability of certain inventions, but also the future of American innovation as a whole.

254. Abraham Lincoln, 16th President of the United States of America, First Inaugural Address (Mar. 4, 1861).

