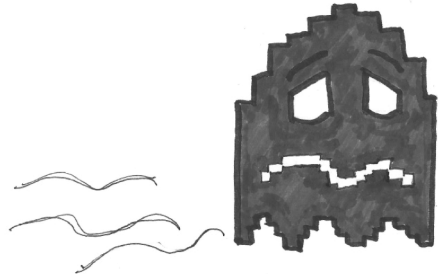
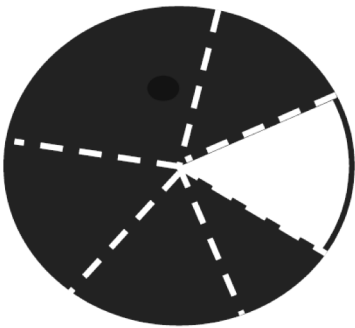


PATENT ELIGIBILITY'S DOCTRINAL EXCLUSIONS . . . LATELY, A SCARY MOVIE TOO DIFFICULT TO WATCH:

CONCRETE SOLUTIONS AND SUGGESTIONS



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ABSTRACT

Patent eligible subject matter is defined by the legislature's 35 U.S.C. § 101 to include "any new and useful process, machine, manufacture or composition of matter." Since the nineteenth century, however, United States (U.S.) courts have considered certain otherwise eligible subject matter excludable from patent protection. The judiciary's doctrinal exclusions' purpose was to protect fundamental building blocks to science and useful arts ensuring that such information could not be monopolized by one entity. Presently, however, the judicial exclusions have been used to exclude fewer *fundamental* building blocks and more ordinary brick-and-mortar innovations after two U.S. Supreme Court decisions (*Mayo* and *Alice*). The doctrinal exclusions have been recently interpreted so loosely that many practitioners are turning their heads away from § 101 jurisprudence in fear of the erratic and inconsistent wreckage of § 101 judgments. This article discusses the history of § 101 and its doctrinal exclusions to regain a collective consciousness as to its original directives. This article parses through recent appellate decisions and illustrates common arguable derailments made by the judiciary in weighing inventions under the

Mayo-Alice framework. Finally, this article includes practical suggestions for all three branches on the U.S. government on § 101, including use of a pictorial tool in analyzing claim scope under the preemption doctrine to take the “abstractness” out of the analysis. By pie charting claims against all possible practical applications of a fundamental concept those applications foreclosed by the claims become more distinct, as should eligibility therefrom.

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INTRODUCTION

I have a confession to make: while being an admirer of patent eligibility, pre-*Mayo & Alice*, I have had to cease “watching the show” lately due to the disquieting way the judicial exclusions of § 101 are being applied prejudicially towards invalidity.¹ The notion of an “abstract concept” being so narrowly drawn as to include almost anything or “conventional” claim language disqualifying an invention from eligibility has produced an erratic wreckage too gruesome to fixate upon.² Innocent, reasonably harmless innovations in hard-core sciences like data processing, digital imaging, medical diagnostics and power-grid management have gotten sucked into the vortex of what I would like to call judicial paranoia on eligibility; these deprived inventions are never to return to the intellectual-property scene again, commercially relevant ones nonetheless.³

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1. See, e.g., Robert Sachs, *#AliceStorm: April Update and the Impact of TC Heartland on Patent Eligibility*, BILSKI BLOG, <http://www.bilskiblog.com/blog/2017/06/alicestorm-april-update-and-the-impact-of-tc-heartland.html> (June 01, 2017) (reporting post-*Alice* § 101 invalidity rates as high as 97.8% on covered business method patent reviews at the Patent Trial and Appeal Board and 91.7% at the Court of Appeals).

2. See, e.g., *BASCOM Glob. Internet Servs. v. AT&T Mobility*, 827 F.3d 1341, 1353-54 (Fed. Cir. 2016) (Newman, J., concurring) (discussing how “the emphasis on eligibility has led to erratic implementation in the courts”); Brief of Amicus Curiae Paul R. Michel In Support of Neither Party at 7, *Alice Corp. Pty. Ltd. v. CLS Bank International*, 134 S.Ct. 2347 (2014) (No. 13-298) (referring to the vague and unpredictable nature of defining something as an “abstract concept”).

3. See, e.g., Robert Sachs, *The One Year Anniversary: The Aftermath of #AliceStorm*, BILSKI BLOG, (June 20, 2015) <http://www.bilskiblog.com/blog/2015/06/the-one-year-anniversary-the-aftermath-of-alicestorm.html>. The author provides an overview of the aftermath following the one-year anniversary of *Alice*:

It's been one year since the Supreme Court's decision in *Alice Corp. v. CLS Bank*. On its face the opinion was relatively conservative, cautioning courts to “tread carefully” before invalidating patents, and emphasizing that the primary concern was to avoid preemption of “fundamental building blocks” of human ingenuity. The Court specifically avoided any suggestion that software or business methods were presumptively invalid. But those concerns seem to have gone unheeded. *The Court's attempt to sidestep the tricky problem of defining the boundary of an exception to patent eligibility—“we need not labor to delimit the precise contours of the “abstract ideas category in this case”“—has turned into the very mechanism that is quickly “swallow[ing] all of patent law.”* The federal courts, the Patent Trial and Appeal Board, and the USPTO are using the very lack of a definition to liberally expand the contours of abstract ideas to cover everything from computer animation to database architecture to digital photograph management and even to safety systems for automobiles.

Id. (emphasis added).

Historically, courts have carved out doctrinal exclusions to patent eligibility for concerns of a “patent monopoly” on fundamental building blocks interfering with the “progress of science and useful arts” more so than promoting them.⁴ Yet, lately that policy has gotten lost;⁵ instead eligibility has been used as grounds for invalidating issued patents where the invention is arguably sufficiently limited in practical applications of a fundamental concept.⁶ Given reasons for ineligibility appear, in many ways, phantom like, depending upon arguments rather than evidence.⁷ At least with §§ 102 and 103, one has the objective teachings of the prior art to justify why an invention is unpatentable;⁸ with § 101, however, all reasons seem to essentially summate to a “because [an authority] said so” reply.⁹

As patent stakeholders try to piece together an understanding of what technology cannot be protected by U.S. patent laws we are constantly thrown off guard by eligibility.¹⁰ Many types of sophisticated technologies or

4. See, e.g., *Tilghman v. Proctor*, 102 U.S. 707, 724–30 (1881) (providing a discussion on how allowing patents on “mere principles” unjustly monopolizes the use of essentially “every mode” of accomplishing the resulting benefit of the principle as opposed to a “particular mode.”). In referring to an earlier case finding claims ineligible—*O’Reilly v. Morse*—Justice Bradley stated, “The eighth claim of Morse’s patent was held to be invalid, because it was regarded by the court as being not for a process, but for a mere principle. . . . It was not a claim of any particular machinery, nor a claim of any particular process for utilizing the power; but a claim of the power itself” *Id.* at 726–27.

5. See *infra* Section IV.

6. See *infra* Section IV(A)–(C).

7. See, e.g., Wayne Sobon, *Exploring the Legal Contours of Patent Subject Matter Eligibility*, (Dec. 15, 2016), <http://www.bilskiblog.com/blog/2016/12/exploring-the-legal-contours-of-patent-subject-matter-eligibility.html> (“Section 101 is being used with ferocious effect, by District Courts at the pleading stage, with little to any *factual development*, and by Patent examiners, in hundreds and thousands of cases, as a new, often insurmountable hurdle to patentability.”)(emphasis added)).

8. See U.S. PATENT & TRADEMARK OFFICE, *MANUAL OF PATENT EXAMINATION AND PROCEDURE*, § 2131 (9th ed. Rev. 08.2017, Jan. 2018) (“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” (quoting *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)); see also *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). In *Graham v. John Deere Co.*, a discussion of § 103 is provided:

While the ultimate question of patent validity is one of law, . . . the § 103 condition, which is but one of three conditions, each of which must be satisfied, lends itself to several basic factual inquiries. Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved.

Id.

9. Sobon, *supra* note 7.

10. See, e.g., *BASCOM Glob. Internet Servs. v. AT&T Mobility*, 827 F.3d 1341, 1353–54 (Fed. Cir. 2016) (Newman, J., concurring) (discussing the current “erratic” implementation of the eligibility standard); Jeffrey A. Lefstin, Peter S. Menell, and David O. Taylor, *Final Report of the Berkley Center for Law & Technology Section 101 Workshop: Addressing Patent Eligibility Challenge*, 33 BERKELEY TECH. L.J. 551, 554–56 (2017) (stating that *Alice* and *Mayo* “have sent shock waves through the

consumer products have been negatively affected by the modern anxieties of § 101 including computing, banking, and medical diagnostics and products.¹¹ Patents are salient to those industries, impacted stakeholders include Global 1000 companies,¹² non-practicing entities,¹³ attorneys¹⁴ and solo inventors.¹⁵

This horrific scene is due to a number of factors within our control and some others that are not. On the one hand, it is hard to tailor fit a standard to technology unforeseen.¹⁶ On the other hand, today, the way the judicial exclusions are applied is too fungible for reliability.¹⁷ One would likely have more reliable odds at a Las Vegas game than in winning eligibility.¹⁸ These are technological areas where we *want* to “promote the progress of science and useful arts” as patents are intended to do.¹⁹ Additionally, there is no consensus about eligibility, one man’s trash is another’s treasure.²⁰ Experts are constantly

research, technology, business, and patent communities” and citing examples in medical devices, software innovations, and financing).

11. Lefstin et al., *supra* note 10.

12. See, e.g., *Apple Inc. v. Ameranth Inc.*, 842 F.3d 1229 (Fed. Cir. 2016) (involving Apple, a Global 1000 company, finding a computer system for taking and transmitting menu orders ineligible).

13. See, e.g., *Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363 (Fed. Cir. 2015) (involving Intellectual Ventures, a non-practicing entity, finding web advertising systems ineligible).

14. See, e.g., *Inventor Holdings, LLC v. Bed Bath & Beyond, Inc.*, 876 F.3d 1372 (Fed. Cir. 2017) (finding a business-method patentee liable for attorney’s fees when continuing to assert their patents post-*Bilski* and *Alice!*).

15. See, e.g., *In re Brown*, 645 F. App’x (Fed. Cir. 2016) (affirming the ineligibility findings for claims to methods of cutting hair by independent inventors in a non-precedential opinion).

16. See, e.g., *CLS Bank Int’l v. Alice Corp.*, 717 F.3d 1269, 1304 (Fed. Cir. 2013) (Rader, Chief J., dissenting) (stating “It is particularly important that Section 101 not be read restrictively to exclude ‘unanticipated inventions’ because the most beneficial inventions are ‘often unforeseeable.’”) (citing *Diamond v. Chakrabarty*, 447 U.S. 303, 316 (1980) and *J.E.M. Agric. Supply v. Pioneer Hi-Bred Int’l, Inc.*, 534 U.S. 124, 135 (2001)).

17. See, e.g., *BASCOM Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1353–54 (Fed. Cir. 2016) (Newman, J., concurring) (discussing how “the emphasis on eligibility has led to erratic implementation in the courts.”); Brief of Amicus Curiae Paul R. Michel In Support of Neither Party at 7, *Alice Corp. Pty. Ltd. v. CLS Bank International*, 134 S.Ct. 2347 (2014) (No. 13-298) (referring to the vague and unpredictable nature of defining something as an “abstract concept”).

18. *Subject Matter Eligibility Court Decisions (Formerly Appendix 3)*, U.S. PATENT AND TRADEMARK OFFICE (Dec. 5, 2017), <https://www.uspto.gov/patent/laws-and-regulations/examination-policy/subject-matter-eligibility> (providing that post-*Alice* U.S. Court of Appeals § 101 decisions fair towards ineligibility 86% of the time).

19. U.S. CONST. art. I, § 8, cl. 8. “The Congress shall have 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.” *Id.*

20. See, e.g., *Sobon*, *supra* note 7 (positing an eligibility guide as broad as anything “useful” by, *inter alia*, quoting prior Judge Rich as to whether § 101 should even be considered a condition to patentability: “[a]s Judge Rich underscored in *Bergy*, Section ‘101 was never intended to be a “standard of patentability””). Compare *Sobon*, *supra* note 7 with Megan Throbe, *A Call to Action: Fixing the Judicially-Murkied Waters of 35 U.S.C. § 101*, 50 IND. L. REV. 1023, 1029–30 (2017) (advocating for

bickering about eligibility.²¹ Courts are also pausing on defining “abstract idea” in clear and concrete terms for the patent community, while invalidating patents on that very basis.²² The “conventional” elements prong of *Alice* is being applied more like an abbreviated § 102/103 analysis.²³

This article kicks the can-of-solution around with respect to all three branches of the federal government. Legislative proposals being discussed at the U.S. Patent Office and bar organizations are reviewed. Also considered are the recent, frequently published guidelines by the U.S. Patent Office. Moreover, the article critically hones in on contemporary U.S. Court of Appeals decisions. Perhaps more significantly, this article focuses on the original purposes of the doctrinal exclusions: to ensure that fundamental building blocks to innovation are not significantly foreclosed by the grant of a U.S. patent.²⁴ It is time that we return to those basics. Next, because eligibility deals with

a more aggressive use of § 101 so as to preserve judicial and Patent Office resources by eliminating claims preliminarily on § 101).

21. See *supra* Section IV(D).

22. See *The One Year Anniversary: The Aftermath of #AliceStorm*, *supra* note 3 (“The Court’s attempt to sidestep the tricky problem of defining the boundary of an exception to patent eligibility—‘we need not labor to delimit the precise contours of the “abstract ideas category in this case”’—has turned into the very mechanism that is quickly ‘swallow[ing] all of patent law.’”).

23. See, e.g., Daniel Taylor, *Down the Rabbit Hole: Who Will Stand Up for Software Patents After Alice?*, 68 ME. L. REV. 217, 249–50 (2016) (discussing how *Alice* Has Brought Back A Test For ‘Invention’). “If the court finds an ‘abstract idea,’ the court may then perform an obviousness analysis and search for an ‘inventive concept’ or ‘something more’ based solely on the patent claims and the court’s subjective knowledge . . .” *Id.*; Megan Throbe, *A Call to Action: Fixing the Judicially-Murkied Waters of 35 U.S.C. § 101*, 50 IND. L. REV. 1023, 1029–33 (2017) (discussing the continued blurred lines between §§ 101 and 102 et al. when courts decide eligibility).

24. See, e.g., *Gottschalk v. Benson*, 409 U.S. 63, 67–68 (1972). In *Gottschalk v. Benson*, the court provided a discussion on the fundamental building blocks of innovation:

The Court stated in *Mackay Co. v. Radio Corp.*, 306 U. S. 86, 94 . . . , that “[w]hile a scientific truth, or the mathematical expression of it, is not a patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be.” That statement followed the longstanding rule that “[a]n idea of itself is not patentable.” *Rubber-Tip Pencil Co. v. Howard*, 20 Wall. 498, 507. . . . “A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, *as no one can claim in either of them an exclusive right.*” *Le Roy v. Tatham*, 14 How. 156, 175. . . . Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, *as they are the basic tools of scientific and technological work.* As we stated in *Funk Bros. Seed Co. v. Kalo Co.*, 333 U. S. 127, 130 . . . , “He who discovers a hitherto unknown phenomenon of nature *has no claim to a monopoly of it which the law recognizes. If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end.*” We dealt there with a “product” claim, while the present case deals with a “process” claim. But we think the same principle applies.

Id. (emphasis added).

abstractness a pictorial suggestion of pie-charting any potential foreclosure of a fundamental concept is also made. By removing the inherent intangibility of abstract concepts perhaps practitioners can migrate towards a universal application and more reliability.

I. THE PURPOSES OF THE U.S. PATENT SYSTEM AND ITS RELEVANCE TO PATENT ELIGIBILITY

A. Background on U.S. Patent Law

The U.S. patent system has a specific purpose in mind and its origins are constitutional. Article I, Section 8, Clause 8 of the U.S. Constitution grants Congress the authority to make laws to “promote the Progress of Science and useful Arts”²⁵ Therefore, the U.S. patent system is designed simply to reward and incentivize scientific and useful progression. The Drafters reasoned upon a specific means by which the U.S. Congress could incentivize innovation in this country. Proper motivation was fashioned “by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”²⁶ This is commonly referred to as a “monopoly” on the patented invention because the issued patent grants the inventor authority to exclude others from making, using, offering to sell, selling or importing their invention anywhere in the United States.²⁷ In essence, the Framers believed that if inventors (and/or their investors) could be given exclusivity to their inventions for a limited time doing so would provide them with an ability to fiscally profit from their ingenuity.

Patent owners are not the only ones to benefit from patent laws; the fact that Congress architected a system of property rights for inventions signals that the Republic had (and has) an interest in the U.S. patent system as well. Many companies and investors are more likely to invest where intellectual property can be respected.²⁸ Investing makes inventions more readily available to the masses. Some examples of patent inventors whose inventions were made more publicly accessible by investor interests include Edison for his electric grid distribution system,²⁹ Tesla for his brushless electric motor and utility of

25. U.S. CONST. art. I, § 8, cl. 8. “To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.” *Id.*

26. *Id.*

27. 35 U.S.C. § 271(a) (2010).

28. See, e.g., Jack Nicas et al., *Stronger Chinese Patent Laws Also Help U.S. Companies*, WALL ST. J., Jul. 20, 2016 (covering the recent surge in Chinese investing and patenting).

29. *Thomas Edison*, WIKIPEDIA (last visited Apr. 7, 2019), https://en.wikipedia.org/wiki/Thomas_Edison. See also, Jill Jonnes, *Let There Be Light*, TIME MAGAZINE ONLINE (Jun. 23, 2010),

alternating current,³⁰ McCoy for his locomotive lubricating system,³¹ and Magie for her Monopoly board game.³² It is difficult to argue that the U.S. patent system has not met its purpose because the U.S. remains one of the most innovative, and developed countries in the world.³³ Science and our society have certainly progressed under the 228 year tenure of the U.S. patent system.³⁴

B. Historical § 101

As integral as U.S. patent rights have been to our country's development, patent rights are not without limitations. As expressed in 35 U.S.C. § 101, one limitation pertains to what types of inventions or discoveries can be protected by a U.S. patent or what inventions are eligible for U.S. patent.³⁵ Inventions eligible for patent are limited to "process[es], machine[s], [articles of] manufacture, or composition[s] of matter" and their improvements under the statute.³⁶ So, an RF wave signal would be excluded from patent protection under the Code while a method for generating the same might be eligible for patent.³⁷

In addition to those codified categories of patent eligible subject matter, U.S. courts have taken it upon themselves to enumerate other limits on patent

http://content.time.com/time/specials/packages/printout/0,29239,1999143_1999202_1999203,00.html.

30. *Nikola Tesla*, WIKIPEDIA (last visited Apr. 7, 2019), https://en.wikipedia.org/wiki/Nikola_Tesla. See also Jonnes, *supra* note 29.

31. *Elijah McCoy*, WIKIPEDIA (last visited Apr. 7, 2019) https://en.wikipedia.org/wiki/Elijah_McCoy. See also *Elijah McCoy Biography*, BIOGRAPHY (Jan. 19, 2018), <https://www.biography.com/people/elijah-mccoy-9391300>.

32. See *History of the Board Game Monopoly*, WIKIPEDIA (last visited Apr. 7, 2019), https://en.wikipedia.org/wiki/History_of_the_board_game_Monopoly. See also Mary Pilon, *Monopoly's Inventor: The Progressive Who Didn't Pass 'Go'*, NEW YORK TIMES ONLINE (Mar. 3, 2015), <https://www.nytimes.com/2015/02/15/business/behind-monopoly-an-inventor-who-didnt-pass-go.html>.

33. See, e.g., Chris Weller, *The 16 most innovative countries in the world*, BUSINESS INSIDER ITALIA (Jun. 15, 2017), https://it.businessinsider.com/most-innovative-countries-in-the-world-2017-6/?refresh_ce (listing the United States as the fourth most innovative country globally for the second year in a row).

34. *The First US Patent Issued Today in 1790*, U.S. PATENT AND TRADEMARK OFFICE (July 31, 2001), <https://www.uspto.gov/about-us/news-updates/first-us-patent-issued-today-1790> (celebrating the anniversary of the issued U.S. patent on a method of making potash).

35. 35 U.S.C. § 101 (1952).

36. *Id.*

37. *In re Nuijten*, 500 F.3d 1346, 1357 (Fed. Cir. 2007) (to transitory forms of signal transmission); U.S. PATENT AND TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE §2106 (9th ed. Rev. 08.2017, Jan. 2018) (listing examples of claims that are not directed to one of the four statutory categories of eligible subject matter).

eligibility.³⁸ Their doctrinal exclusions include “laws of nature, physical phenomena, and abstract ideas.”³⁹ These doctrinal exclusions, though more than 130 years old, for some reason have not been incorporated into the United States Code.⁴⁰ However, the exclusions are just as etched in stone as any section of the U.S. Code because the patent industry universally recognizes them as exclusions to patentability.⁴¹

The policy behind the doctrinal exclusions is logical: courts have reasoned that if “monopolies” are granted on fundamental building blocks of scientific ingenuity then such monopolies might hinder the “Progress of Science and Useful Arts” more than they would promote it.⁴² It might be too cumbersome, in so many words, for a person of ordinary skill in the art to “design around” a law of nature, such as e.g., Newton’s theory on gravity, photosynthesis or pricing according to natural demand and supply. Such a broad property right would restrict all innovations for systems that depend upon, for example, the Earth’s natural gravitational pull like flight or ground vehicle propulsion and even building static structures. A “patent monopoly” on photosynthesis, as another example, would limit humanity from growing crops or using the sun’s

38. See, e.g., *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (listing out the doctrinal exclusions to patent eligibility).

39. *Id.*

40. U.S. PATENT AND TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE § 2106.04 (9th ed. Rev. 08.2017, Jan. 2018) see also *Tilghman v. Proctor*, 102 U.S. 707 (1881) (a nineteenth century case on exclusions to patent eligibility).

41. See, e.g., MANUAL OF PATENT EXAMINING PROCEDURE §2106, *supra* note 37 (listing judicial exceptions to the four categories of patentable subject matter).

42. See, e.g., *Gottschalk v. Benson*, 409 U.S. 63, 67–68 (1972). In *Gottschalk v. Benson*, the court provided a discussion on the fundamental building blocks of innovation:

The Court stated in *Mackay Co. v. Radio Corp.*, 306 U. S. 86, 94 . . . , that “[w]hile a scientific truth, or the mathematical expression of it, is not a patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be.” That statement followed the longstanding rule that “[a]n idea of itself is not patentable.” *Rubber-Tip Pencil Co. v. Howard*, 20 Wall. 498, 507. . . . “A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, *as no one can claim in either of them an exclusive right.*” *Le Roy v. Tatham*, 14 How. 156, 175. . . . Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, *as they are the basic tools of scientific and technological work.* As we stated in *Funk Bros. Seed Co. v. Kalo Co.*, 333 U. S. 127, 130 . . . , “He who discovers a hitherto unknown phenomenon of nature *has no claim to a monopoly of it which the law recognizes. If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end.*” We dealt there with a “product” claim, while the present case deals with a “process” claim. But we think the same principle applies.

Id. (emphasis added).

energy for the same, leading potentially to massive starvation or significant financial burden for a basic need. As another example, the inability to price according to supply-and-demand might stifle financial transactions as diverse as those in retail stores, regarding residential/commercial real estate sales and even those in professional service industries like law, engineering and medicine. It is not believed that “the Matrix” could handle it in sum; now . . . how is that for a conspiracy theory?

There is another caveat to patent rights that similarly limits these global-domination-conspiracy concerns expressed with the doctrinal exclusions. Patent owners quite arguably cannot limit others from engaging in experimental work related to their patented inventions.⁴³ So, persons of skill in the art would theoretically still be able to test the patented invention without liability if they did not seek to commercialize it. For this reason, recent patent scholars have opined that perhaps the doctrinal exclusions are less necessary.⁴⁴ Being able to test a discovery as ubiquitous as photosynthesis, for example, through the experimental exception may not be enough to deter patent-monopolistic chaos

43. See, e.g., *CLS Bank Int’l v. Alice, Corp.*, 717 F.3d 1269, 1323–24 (Fed. Cir. 2013) (en banc) (Newman, J., dissenting). In *CLS Bank Int’l v. Alice Corp.*, the court provided a discussion on the experimental use of patented information:

The Federal Circuit has reaffirmed that “patenting does not deprive the public of the right to experiment with and improve upon the patented subject matter.” *In re Rosuvastatin Calcium Patent Litig.*, 703 F.3d 511, 527 (Fed. Cir. 2012). However, in *Embrex, Inc. v. Service Engineering Corp.*, 216 F.3d 1343, 1349 (Fed. Cir. 2000), the court stated that the experimental use defense was “very narrow” and unavailable when “the inquiry has definite, cognizable, and not insubstantial commercial purpose,” the concurrence adding that “neither the statute nor any past Supreme Court precedent gives any reason to excuse infringement because it was committed with a particular purpose or intent, such as for scientific experimentation.” *Id.* at 1353. Precedent does not support this theory. The right to study and experiment, to evaluate and improve upon the information in patents was discussed by our predecessor Court of Claims in *Ordnance Engineering Corp. v. United States*, 84 Ct. Cl. 1 (1936) and in *Chesterfield v. United States*, 159 F.Supp. 371 (Ct.Cl.1958), the court explaining that experimentation does not infringe the patent. Factual distinctions may arise, as in *Pitcairn v. United States*, 212 Ct. Cl. 168, 547 F.2d 1106 (1976), where the Court of Claims held that of 2200 infringing helicopters, the use of 93 helicopters for testing or demonstration was not an “experimental use,” as compared with the truly “experimental helicopters” that the patentee did not accuse of infringement.

Id. See also 35 U.S.C. § 271(e)(1) (2010). “It shall not be an act of infringement to make, use, offer to sell, or sell . . . a patented invention . . . solely for uses reasonably related to the development and submission of information under a Federal law which regulates the manufacture, use or sale of drugs or veterinary biological products.” *Id.*

44. *CLS Bank Int’l v. Alice, Corp.*, 717 F.3d 1269, 1321–22 (2013) (en banc) (Newman, J., dissenting) (“Judicial clarification is urgently needed to restore the understanding that patented knowledge is not barred from investigation and research. The debate involving §101 would fade away, on clarification of the right to study and experiment with the knowledge disclosed in patents.”).

because “the [p]eople” (and many animals) would still need to be nourished for the term of the patent, not just experiment with crops.

In addition to the experimental use exception, there are other restrictions on patent rights that would limit the “monopoly” ordinarily granted with a U.S. patent. For example, for decades the right to exclude others from practicing the patented invention included a right to a permanent injunction once a finding of infringement had been made.⁴⁵ In recent years, however, the U.S. Supreme Court decided that patent injunctive relief must satisfy the traditional principles of equity used in other civil disputes.⁴⁶ In Justice Kennedy’s Concurrence to the *eBay* Opinion, Justice Kennedy suggested that the “economic function” (or practicing status) of a patentee should be relevant, if not outcome determinative, in analyzing whether an injunction should issue.⁴⁷ The industry gravitated towards this paragraph in the Kennedy Concurrence and since then patent injunctions have almost exclusively been limited to those that have a reputational interest in the patent, meaning either the patentee or one of their licensees is practicing the invention.⁴⁸

With respect to subject-matter eligibility, one might argue that bearing *eBay* in mind, even if patents on fundamental concepts were allowed the benefits of

45. See *MercExchange LLC v. eBay, Inc.*, 401 F.3d 1323, 1338 (2005) (overruled by *eBay v. MercExchange*, 547 U.S. 388 (2006)) (“Because the ‘right to exclude recognized in a patent is but the essence of the concept of property,’ the general rule is that a permanent injunction will issue once infringement and validity have been adjudged.” (citation omitted)).

46. *eBay, Inc. v. MercExchange LLC*, 547 U.S. 388, 391–94 (2006).

47. In his concurrence in *eBay, Inc. v. MercExchange LLC*, Justice Kennedy stated:

In cases now arising trial courts should bear in mind that in many instances the nature of the patent being enforced and the economic function of the patent holder present considerations quite unlike earlier cases. An industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees. . . . For these firms, an injunction, and the potentially serious sanctions arising from its violation, can be employed as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the patent.

Id. at 395–97 (Kennedy, J., concurring). There are also limitations on injunctive relief if the invention relates to medical innovations used for the benefit of saving lives:

[W]ith respect to both Abbott’s cancer test kits and Abbott’s hepatitis test kits, the district court determined that the public interest is served best by the availability of these kits. On this basis, the district court did not enjoin Abbott from producing these products. We cannot hold that the district court’s public interest analysis provides a basis for us to disturb its grant to Hybritech of preliminary relief.

Hybritech Inc v. Abbott Laboratories, 849 F.2d 1446, 1458 (Fed. Cir. 1988)

48. Downing, *Injunctive Relief after eBay*, American Intellectual Property Law Association Patent Law Committee (Washington D.C., 2007).

the invention would not be kept from the public because the patent owner would only be able to enjoin others from practicing the invention if the patentee or a licensee were practicing it. The public would not be completely deprived of a patented invention because either the patentee or an infringer would be providing it to the public. Returning to a prior example, the country would not run out of food from plants if photosynthesis were to be considered patent-eligible, food would likely just be more expensive. Considering *eBay* (and the experimental exception to infringement), one might ask whether the doctrinal exclusions are as necessary as they once were?

C. Modern Patent Law & § 101

Despite this curiosity as to the necessity of the exclusions given recent curtailments of patent rights, the doctrinal exclusions are applied with evermore brutish confidence.⁴⁹ The exclusion most responsible for what some would refer to as a “storming attack” on issued patents, is the “abstract idea” exclusion to eligibility.⁵⁰ Like most things considered in the abstract, inventions considered to be “abstract” can result in much confusion, dissent, and mystique. E.g., death and the afterlife are said to be abstract concepts and some of the most contentious and frightening topics in human history. Other examples are the Universe in its full scope or large numbers incalculable by hand. These concepts stump the brightest of minds as do “abstract concepts” excluded from eligibility.

Imagine: spending hundreds of thousands of dollars on a property right, e.g., for a yacht or piece of land, closing on the property and being given title from the government. Imagine further paying periodic property taxes called “maintenance fees” and “annuities.” However, when noticing others using the property without proper permission one consults an attorney who agrees with your position and sends the offending party a cease-and-desist letter. When trying to collect rent from the offender, unluckily, the trespasser claims that no one can own this type of property, it is like a preserved wetland or a national park. Only, this “[t]aking” would not be with just compensation, the courts and the patent system would just rescind it.⁵¹ An investment nightmare, this extremely unsettling practice leaves patent stakeholders unsure of what

49. See Sections IV(A)–(C).

50. See *The One Year Anniversary: The Aftermath of #AliceStorm*, *supra* note 3 (“The Court’s attempt to sidestep the tricky problem of defining the boundary of an exception to patent eligibility—‘we need not labor to delimit the precise contours of the “abstract ideas category in this case”’—has turned into the very mechanism that is quickly ‘swallow[ing] all of patent law.’”).

51. Compare U.S. CONST. amend. IV with *Mayo Collaborative Svcs v. Prometheus Labs*, 132 S.Ct. 1289 (2012) (federal court rendered claims patent ineligible after issuance by the Patent Office and provides no compensation for relinquishing the right).

inventions can reliably be protected by U.S. patent laws.⁵² Moreover, the average attorney cannot even provide investors with comfort on modern eligibility because the law is often confusing, self-contradictory or still being formed on a case-by-case basis thus opening up inventors to liability for merely asserting their patents.⁵³ Many investors have assets comparable to a coastline of land or fleet of luxury yachts devoted to patents.

Intellectual property—an intangible asset—has not lived without some mystique in the past. To some degree it goes with the territory of owning an intangible asset. For example, the scope of ownership often changes from the time of authorship of a patent application, through its prosecution and then when enforcement occurs because different people are interpreting the claims for different reasons on each occasion.⁵⁴ Some small variances in claim construction, however, are much more tolerable than the eradication of the patent right altogether. After the sting of so many recent ineligibility decisions under § 101, some have opined that the presumption of validity is not even considered in § 101 decisions;⁵⁵ courts are so patent-phobic that they are arguably invalidating nearly any patent where there is commercial breadth.⁵⁶

52. See, e.g., Michael Clancy, *Intellectual Property Law—The Future of Patent Eligibility Analysis On Medical Diagnostics and its Effects on Healthcare Innovation—Ariosa Diagnostics, Inc. v. Sequenom, Inc.*[], 12 J. HEALTH & BIOMED. L. 319, 330–34 (2017) (discussing how the application of *Alice-Mayo* in *Ariosa* left ambiguity as to whether an inventive concept is needed for claims that involve a law of nature to be eligible and reduced patenting: “[t]his heightened standard forces medical diagnostic companies, which cannot obtain patents, to protect their intellectual property rights by trademark and trade secret law.”).

53. See, e.g., *Inventor Holdings v. Bed Bath & Beyond*, 876 F.3d 1372, 1374 (Fed. Cir. 2017) (finding a business-method patentee liable for attorney’s fees when continuing to assert their patents post-*Bilski* and *Alice!*).

54. See, e.g., *Cuozzo Speed Technologies v. Lee*, 136 S.Ct. 2131, 2142 (2016) (endorsing use of the broadest reasonable interpretation standard for claim construction at the Patent Office, while courts use a plain and ordinary construction for litigation).

55. See, e.g., Robert Sachs, *Twenty-Two Ways Congress Can Save Section 101*, BILSKI BLOG (Feb. 12, 2015), <http://www.bilskiblog.com/blog/2015/02/twenty-two-ways-congress-can-save-section-101.html>. The author provided a discussion on the presumption of validity:

While every court decision states that the presumption of validity applies to Section 101, *the behavior of the district courts suggests that the presumption in practice has no weight*. This is evidenced by the growing numbers of district court decisions that find a patent invalid on motion to dismiss, in which the court [must] find that there is no plausible interpretation of the claim as eligible subject matter, giving no weight to the inherent fact that the patent examiner found it plausible that the claims were eligible by allowing the patent.

Id. (emphasis added).

56. See Section IV(A)–(C).

The need for a more transparent litmus for patent eligibility intensifies. Eligibility remains one of the most controversial topics in patent law, especially since the adoption of post-grant reevaluation of business method patents under § 101 with the historic passage of the America Invents Act.⁵⁷ For computing technologies, business methods, and health care technologies the instability of § 101's exclusions has caused great angst.⁵⁸ Moreover, as computers continue to infiltrate everything, § 101 is affecting industries where one might not have fathomed patent rights being questionable years ago, like vehicular technologies, image processors, networking, and power-grid management.⁵⁹

In order to understand where we are going with §101's judicial exclusions we need to be reminded of where we have been.⁶⁰

II. THE HISTORY OF ELIGIBILITY'S DOCTRINAL EXCLUSIONS

As science evolved so did subject-matter eligibility. Early on, courts considered what types of inventions should be eligible for patent protection. At that time, many debated innovations related to chemistry and radio communications.⁶¹ These early decisions highlight the original policy behind the judicial exclusions.

57. 35 U.S.C. §§ 321–329 (2011); AIA § 18 (2011); 37 CFR §§ 42.300 *et seq.* (2011).

58. See *The One Year Anniversary: The Aftermath of #AliceStorm*, *supra* note 3 (“The Court’s attempt to sidestep the tricky problem of defining the boundary of an exception to patent eligibility—‘we need not labor to delimit the precise contours of the “abstract ideas category in this case”’—has turned into the very mechanism that is quickly ‘swallow[ing] all of patent law.’”).

59. See, e.g., *Vehicle Intelligence & Safety LLC v. Mercedes-Benz USA, LLC*, 635 F. Appx. 914 (Fed. Cir. 2015) (non-precedential); *In re: TLI Communications LLC, TLI Communications, LLC v. AV Automotive, LLC*, 823 F.3d 607 (Fed. Cir. 2016); *Content Extraction and Transmission, LLC v. Wells Fargo Bank*, 776 F.3d 1343 (Fed. Cir. 2014); *Intellectual Ventures I LLC v. Erie Indemnity Co.*, 850 F.3d 1315 (Fed. Cir. 2017); *Electric Power Group v. Alstrom*, 830 F.3d 1350 (Fed. Cir. 2016).

60. See, e.g., Department of History, *History is _____*, UNIVERSITY OF MEMPHIS (Nov. 6, 2017) http://www.memphis.edu/history/about/history_is.php. Machiavelli stated:

Whoever wishes to foresee the future must consult the past; for human events ever resemble those of preceding times. This arises from the fact that they are produced by men who ever have been, and ever shall be, animated by the same passions, and thus they necessarily have the same results.

Id.

61. See, e.g., *Tilghman v. Proctor*, 102 U.S. 707, 724–30 (1881) (process for treating fats and oils); *Mackay Radio & Telegraph Co. v. Radio Corp. of America*, 306 U.S. 86 (1939) (antennae structures).

Later on, technology migrated towards vast improvements in computing,⁶² moreover business method patents starkly grew in popularity.⁶³ These inventions have been the subject of recent controversy. Since § 101 does not acknowledge any of the three judicial exclusions nor does it provide an assessment standard, practitioners have relied upon appellate decisions for instruction, the most recent from the U.S. Supreme Court are *Mayo* and *Alice* articulating a two-part test for eligibility.⁶⁴

A. Early § 101 precedent

One of the earliest U.S. appellate cases discussing patent eligibility is *Tilghman v. Proctor*.⁶⁵ *Tilghman* regarded a *process* patent for separating certain fats from oils with the use of a novel technique employing high-temperature or pressurized water.⁶⁶ The eligibility of the patent was contested because it allegedly attempted to monopolize a mere principle or *law of nature*: “that the elements of neutral fat require to be severally united with an atomic equivalent of water in order to separate from each other and become free.”⁶⁷ The Court reasoned, however, that the patentee did not wish to cover the principle of nature but “a particular mode of bringing about the desired chemical union between the fatty elements and water” or in other words a particular mode of employing the scientific principle.⁶⁸ Central to the Court’s analysis was how there remained many other avenues of obtaining a similar result—the separation of fats from oils—outside of the claims.⁶⁹ “He does not claim every mode of accomplishing this result. He does not claim the lime saponification process, nor the sulphuric-acid distillation process, and if, as contended, []by means of steam distillation, he does not claim that process.”⁷⁰ The Court ultimately found the claimed process eligible.⁷¹ Most pertinently, the Opinion shows the original policy behind the Court’s doctrinal exclusion to

62. C. N. Trueman, *The Personal Computer*, The History Learning Site (Jul. 28, 2018), <https://www.historylearningsite.co.uk/inventions-and-discoveries-of-the-twentieth-century/the-personal-computer/>.

63. See Martinez et al., *Overview of Recent Changes and Comparison of Patent Regimes in the United States, Japan and Europe*, RESEARCH GATE, 16–17 (Jan. 2004), https://www.researchgate.net/publication/250615452_Overview_of_recent_changes_and_comparison_of_patent_regimes_in_the_United_States_Japan_and_Europe.

64. *Mayo Collaborative Services v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012); *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S.Ct. 2347 (2014).

65. *Tilghman v. Proctor*, 102 U.S. 707 (1881).

66. *Id.* at 729.

67. *Id.*

68. *Id.*

69. *Id.*

70. *Id.*

71. *Id.* at 734.

eligibility—that “not every mode of accomplishing” the benefits of a scientific principle be foreclosed by the grant of a U.S. patent.⁷²

Nearly sixty years later the U.S. Supreme Court heard an ineligibility claim against an *article of manufacture*.⁷³ The product claims of the *Mackay Radio* patent relate to a radio antenna system with conductors angularly disposed according to a *mathematical formula* in order to optimize reception.⁷⁴ In *Mackay Radio* the Court recognized the difference between seeking to patent an “unpatentable” “scientific truth, or the mathematical expression of it” versus a patentable “useful structure created with the aid of knowledge of scientific truth.”⁷⁵ The Court found the structure eligible for patent, however, the Court provided little analysis on why, other than to express appreciation for the fact that the claims related to a tangible structure or apparatus.⁷⁶ This might suggest that the courts’ earlier concerns with the doctrinal exclusions were limited to processes until considering the next case.

Though the U.S. Supreme Court upheld the eligibility of the *product* claims in *Mackay*,⁷⁷ a decade later the Court illustrated its willingness to find at least what one might term a *composition-of-matter*⁷⁸ claim on an issued patent ineligible in *Funk Brothers Seed Co. v. Kalo Inoculant Co.*⁷⁹ *Funk Brothers* involved a productivity-promoting bacteria combination useful in agriculture.⁸⁰ Prior discovered versions of the bacteria proved useful with certain types of crops but when combined—like barreled crabs—nullified their efficacy.⁸¹ The inventor in *Funk Brothers* conceived of combinations of varying strands of the

72. See *id.* at 729. (emphasis added); see also Andrei Iancu and Peter Gratzinger, *Machines and Transformations: The Past, Present, and Future Patentability of Software*, 8 NW. J. TECH. & INTELL. PROP. 247, 274 (2010). The authors provided a discussion on the scope of algorithms:

[R]ather than focusing on whether algorithms are “mathematical” or not, it may be more feasible to focus on separating computational processes that are mere statements of mathematical truths, from computational processes (whether or not they include math) that have a “practical application.” . . . So long as a principle of nature or a scientific truth is not preempted, why should these processes be treated differently than any other process. . . ?

Id.

73. *Mackay Radio & Telegraph Co. v. Radio Corp. of America*, 306 U.S. 86 (1939).

74. *Id.* at 94.

75. *Id.* at 94–95.

76. *Id.*

77. *Id.*

78. Though *Funk Brothers* does not refer to the subject invention as a “composition of matter,” the claimed bacteria composition would likely be referred to as such today.

79. *Funk Brothers Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127 (1948).

80. *Id.* at 128–30.

81. *Id.*

bacteria that would promote productivity in multiple types of crops but not attack each other when combined; so, the combined bacteria could be used across a vast array of plants.⁸²

The 6:3 majority in *Funk Brothers* found the bacteria cocktail ineligible for patent because it was perceived to be a “work of nature” or “*natural phenomenon*.”⁸³ The Court explained that inventions or discoveries of natural phenomenon should not be eligible for patent “monopoly” because they are a “part of the storehouse of knowledge of all men. They are manifestations of laws of nature, free to all men and reserved exclusively to none.”⁸⁴ As a matter of policy, such information was considered in the public domain, presumably so that patent rights would not significantly impede scientific development in that area. So, there was some concern by the Court (again) in *Funk Brothers*, for not foreclosing all practical applications of a doctrinal exclusion.⁸⁵

The majority in *Funk Brothers* also seemed to be concerned with the value added to the product of nature (or lack thereof) by the patentee, reasoning that the inventor’s “application of [the natural principle] is hardly more than an advance in the packaging of the inoculants Their use in combination does not improve in any way their natural functioning”⁸⁶ However, one could argue that the selection of specific strands over others “improves” their natural functioning because the collected strands do not destroy each other’s utility in agriculture.⁸⁷ “[The inventor’s] mixture does in fact have the new property of multi-service applicability.”⁸⁸ This was the view of Justice Frankfurter’s concurrence.⁸⁹ Justice Frankfurter would have found the subject claims eligible notwithstanding disclosure issues, acknowledging that every patented invention employs some sort of work or law of nature and then reasoning that the subject invention provided a “new property” (or value) when selectively combined as the inventor discovered.⁹⁰

Justice Frankfurter’s acknowledgment of a law of nature in every patented invention⁹¹ reoccurs in subsequent § 101 precedent.⁹² Thus suggesting that

82. *Id.*

83. *Id.* at 130–32 (emphasis added).

84. *Id.* at 130–31.

85. *Id.*

86. *Id.* at 131.

87. *Id.* at 132–36 (Frankfurter, J., concurring).

88. *Id.* at 135 (Frankfurter, J., concurring).

89. *Id.* 132–36.

90. *Id.* at 133–35 (finding the subject claims invalid for issues with description, not eligibility).

91. *Id.* at 135.

92. See, e.g., *Smart Sys. Innovations, LLC v. Chi. Transit Auth.*, 873 F.3d 1364, 1378 (Fed. Cir. 2017) (Jinn, J., dissenting).

assessing eligibility according to the inclusion of a doctrinal exclusion is a matter of extent.

Gottschalk v. Benson, related to an application for patent on a data conversion *method*.⁹³ In *Gottschalk*, binary-coded decimals were converted into digital-computer-friendly values or pure binary numbers using a conversion table.⁹⁴ The Court reasoned that the claimed method was so broad that it was drawn to a *mathematical formula* that could be performed mentally.⁹⁵

Here the ‘process’ claim is so abstract and sweeping as to cover both known and unknown uses of the []conversion. The end use may (1) vary from the operation of a train to verification of drivers’ licenses to researching the law books for precedents and (2) be performed through any existing machinery or future-devised machinery without any apparatus.⁹⁶

At that time, the Court provided no clear definition of what an “abstract concept” is but only referred to it in terms of breadth of the patent claim’s practical utility. In determining that the claimed process was too broad (or “sweeping”) to be eligible for patent in *Gottschalk* the Court focused on the practical uses for the conversion method that would be foreclosed by the grant of the patent.⁹⁷ Next, the Court compared the claimed method with other processes the Court previously found eligible or ineligible.⁹⁸ The Court concentrated primarily on the lack of practical uses for the fundamental concepts *outside* of the claim scope.⁹⁹ E.g., as to an ineligible printing process the claim breadth had an effect such that “some future inventor . . . could not use” a printing method undisclosed in the specification due to the fundamental concept of electromagnetic printing (or telegraphy) being impeded by the claim.¹⁰⁰ The arguable focus in assessing eligibility was to sort overly broad claims from those that were properly tailored to “confine the patent monopoly” to “rather definite bounds” or practical applications.¹⁰¹

The Court used an early version of the machine-or-transformation test as a clue to eligibility arguing that if the claimed invention did not have to be

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

94. *Id.* at 64–67.

95. *Id.* at 67–68, 71–72.

96. *Id.* at 68.

97. *Id.*

98. *Id.* at 68–71.

99. *Id.* at 68, 71–72.

100. *Id.* at 68.

101. *Id.* at 68–72.

executed using a specific kind of machine or if the invention did not result in a physical transformation it was likely claimed too broadly or in the “abstract.”¹⁰² However, the Court expressly stated that the M/T test should not be used as the only mode by which a process may be found eligible.¹⁰³ Instead, the Court reiterated the modern preemption analysis:

What we come down to in a nutshell is the following.

It is conceded that one may not patent an idea. But in practical effect that would be the result if the formula for converting BCD numerals to pure binary numerals were patented in this case. The mathematical formula involved here has *no substantial practical application except in connection with a digital computer*, which means that if the judgment below is affirmed, the patent would *wholly pre-empt the mathematical formula* and in practical effect would be a patent on the algorithm itself.¹⁰⁴

Notice (again) that the lack of remaining practical applications for the fundamental concept was highly relevant to the Court’s finding of ineligibility in *Gottschalk*.

For this reason, *Parker v. Flook*, stands out from other U.S. Supreme Court precedent on § 101 because plenty of alternative practical applications of the fundamental concept in *Parker* remained outside of the claim scope, but the Court still found the claims ineligible.¹⁰⁵ *Parker v. Flook* regards an application for patent to a *method* of updating alarm limits or performance thresholds for the catalytic chemical conversion of hydrocarbons.¹⁰⁶ As the performance characteristic, e.g., temperature or pressure, operated at higher values the threshold or “alarm limit” increased.¹⁰⁷ While the claims were specifically written to calibrating the alarm limits in the “catalytic chemical conversion of hydrocarbons” the Court arguably treated the claimed process as one for updating alarm limits in any process.¹⁰⁸

First, the Court parsed novel claim features from preexisting concepts and reasoned that the “only novel feature of the method [was] a mathematical

102. *Id.* at 70–71.

103. *Id.* at 71–72.

104. *Id.* (emphasis added).

105. *Parker v. Flook*, 437 U.S. 584, 596 (1978).

106. *Id.* at 585–86.

107. *Id.* at 596–97 (reciting claim 1).

108. *Id.*

formula.”¹⁰⁹ The fundamental concept in *Parker* was a *mathematical formula* used to calibrate an alarm limit based on a present value of a device in operation, such as its temperature, flow rate or pressure.¹¹⁰ The Court arguably gave very little weight to the preamble limitation on context—for the conversion of hydrocarbons—because the process was so often used in the oil refining business.¹¹¹ “Since there are numerous processes of that kind in the petrochemical and oil-refining industries [namely, the catalytic chemical conversion of hydrocarbons], the claims cover a broad range of potential uses of the method. They do not, however, cover every conceivable application of the formula.”¹¹² The Court considered the ubiquitous nature of catalytic chemical conversions in the oil industry but it is arguable that the Court did not fully examine alternative industries where the alarm limit updating formula—or the fundamental concept—could have been employed like, for example, most other manufacturing processes, powertrains, or thermal management.¹¹³

The Court adhered to this perspective in *Diamond v. Diehr*[] when holding that, in assessing eligibility under Section 101 of the Patent Act, claims are not to be dissected, as occurred in *Parker v. Flook*[] but to be evaluated “as a whole.” *Flook* was in that regard an aberration, for the Court had long assessed compliance with all requirements of the Act by analyzing the claims in view of all their limitations together.¹¹⁴

The appropriate comparison should have been between the fundamental concept used in the claimed context and its utility outside the claims, not the claimed context (in this case hydrocarbon conversion) and its given industry (here, oil refinement). Utility of a fundamental concept might theoretically dominate an industry without overly burdening progress in science for humanity at large.

Had the Court in *Parker* compared the fundamental concept, as claimed, with its remaining uses, it might have decided the case differently. This was the logic adopted by the Court of Customs and Patent Appeals.¹¹⁵

109. *Id.* at 585–86.

110. *Id.*

111. *Id.* at 586.

112. *Id.*

113. See Brief Of Amicus Curiae Paul R. Michel In Support of Neither Party at 4–6, *Alice Corp. Pty. Ltd. v. CLS Bank International*, 134 S.Ct. 2347 (2014) (No. 13-298).

114. *Id.* at 4.

115. *Id.* at 587.

The Court of Customs and Patent Appeals reversed [the PTO]. It read *Benson* as applying only to claims that entirely pre-empt a mathematical formula or algorithm, and noted that *respondent was only claiming on the use of his method to updated alarm limits in a process comprising the catalytic chemical conversion of hydrocarbons*. The court reasoned that *since the mere solution of the algorithm would not constitute infringement of the claims, a patent on the method would not pre-empt the formula* [or the fundamental concept].¹¹⁶

In its analysis, the Court in *Parker* first rebuked reliance on claimed features outside of the fundamental concept for determining eligibility.¹¹⁷ Making the use of a fundamental principle eligible for patent because its claimed use was in a “specific fashion,” the Court reasoned, placed too much emphasis on a patent attorney’s art (or “draftsman’s art”).¹¹⁸ However, practically speaking nearly all tenants of patentability in 35 U.S.C. depend on a patent attorney’s/agent’s art. For example, novelty, obviousness, and adequacy of description/disclosure under § 112 all depend upon how a claim is drafted or what is included and excluded in the claim language. Reliance on attorney drafting is not inherently inappropriate; patent attorneys are considering legal requirements when drafting claims – that is their skill. It stands to reason therefore that a patent practitioner’s “art” would influence an inventor’s legal rights just as a contract attorney’s composition would affect rights under an agreement.¹¹⁹

Secondly, the Court focused on “inventiveness” or novelty when evaluating the *Parker* claims, which is essentially flawed with respect to eligibility.¹²⁰ In § 101, one is not asking if the invention is new, but whether it is the right type of invention and not too domineering.¹²¹ Section 101 is asking whether one is

116. *Id.* (emphasis added).

117. *Id.* at 593–95.

118. *Id.*; *Diamond v. Diehr*, 450 U.S. 175, 191–92 (1981). With respect to not relying upon “post-solution” activity, the Court wrote “[t]o hold otherwise would allow a competent draftsman to evade the recognized limitations on the type of subject matter eligible for patent protection.” *Id.*

119. *See, e.g., Phillips v. AWH, Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’”); 42 CFR §11.7(a)(2)(iii) (providing that the Patent Office requires a special examination of attorneys and professionals to be authorized to assist others in filing U.S. patent applications). “No individual will be registered to practice before the Office unless he or she has: . . . (2) [e]stablished to the satisfaction of the OED Director that he or she: . . . (iii) [i]s competent to advise and assist patent applicants in the presentation and prosecution of their applications before the Office.” *Id.*

120. *Parker v. Flook*, 437 U.S. 584, 594 (1978) (“[T]he discovery of such a phenomenon cannot support a patent unless there is some other inventive concept in its application.”).

121. 35 U.S.C. § 101 (1952); *Gottschalk v. Benson*, 409 U.S. 63, 67–68 (1972).

being too greedy, trying to consume all the pie, to take over the universe, or monopolize an intellectual building block. The Court in *Parker v. Flook* rightly considered the application of the fundamental concept but only to the extent that it spoke to novelty versus other practical uses remaining outside of the claimed use; said application was not required to be novel/inventive under § 101.¹²²

The bad habits of *Parker* (1) comparing use of a fundamental concept in the invention's context to its use in the invention's industry (as opposed to humanity at large), and (2) the search for inventive elements separate from a fundamental concept, have plagued patent law for the last forty years.¹²³

Diamond v. Chakrabarty involved a different category of invention than the method claims of *Parker* and *Benson*.¹²⁴ *Chakrabarty* involved the appealed rejection of claims in a patent application for an *article of manufacture*, genetically engineered bacteria used to break down crude oil.¹²⁵ The Patent Office and Court of Appeals found the claims to the bacteria unpatentable because they pertained to a living thing, which was not intended to be covered by the Patent Code.¹²⁶ The posited "fundamental concept" in *Chakrabarty* was then that the claims were directed to a derivative of a *natural phenomenon*.¹²⁷

The U.S. Supreme Court reversed the Court of Appeals decision by a margin of one justice, finding that because the claimed bacteria was not actually a product of nature, but of human ingenuity, the claims should issue.¹²⁸ In so many words, the Court stated that the genetically engineered bacteria did not fall under the natural-phenomenon judicial exclusion at all since it was

122. *Parker*, 437 U.S. at 594.

123. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 77 (2012) (providing a narrow construction of the "law of nature" as using a specific drug to treat a specific disorder as opposed to determining drug efficacy in general); *see also Diehr*, 450 U.S. at 188–89. In *Diamond v. Diehr*, the Court discussed the analysis under section 101:

In determining the eligibility of respondents' claimed process for patent protection under § 101, their claims must be considered as a whole. It is inappropriate to dissect the claims into old and new elements and then to ignore the presence of the old elements in the analysis The "novelty" of any element or steps in a process . . . is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter.

124. *Diamond v. Chakrabarty*, 447 U.S. 303 (1980).

125. *Id.* at 305–06.

126. *Id.* at 306.

127. *Id.*

128. *Id.* at 308–10.

manmade.¹²⁹ The Court distinguished the composition of naturally occurring bacteria claimed in *Funk Brothers* on these grounds.¹³⁰

Arguably, a comparison should have been made between the naturally occurring bacteria and those engineered to ensure that all practical uses of the naturally occurring bacteria would not be foreclosed by the claims. The Court in *Chakrabarty*, however, really did not discuss the practical applications of the bacteria in its natural form as compared to the engineered version. Thirty years later, furthermore, the Court found some genetically engineered DNA that was identical to that naturally occurring ineligible for patent, in *Myriad*, thus somewhat contradicting the notion that manmade organisms automatically fall outside of the doctrinal-exclusion analysis.¹³¹

Returning now to *process* claims, *Diamond v. Diehr*, involved *method* claims for curing rubber products using a known *mathematical formula* – the Arrhenius equation.¹³² The equation was used with a computer-controlled mold that took real-time temperature readings of the mold to calibrate curing time using the Arrhenius equation.¹³³ The fundamental concept in *Diehr* was an abstract concept or mathematical equation: the Arrhenius equation on the energy transfer needed for chemical reactions.¹³⁴ Since the claimed method applied the equation as opposed to attempt to completely foreclose its use by others, the U.S. Supreme Court found the subject claims eligible.¹³⁵

Their process admittedly employs a well-known mathematical equation, but they do not seek to pre-empt the use of that equation. Rather, they seek only to foreclose from others the use of that equation in conjunction with all of the other steps in their claimed process. These include installing rubber in a press, closing the mold, constantly determining the temperature of the mold, constantly recalculating the appropriate cure time through the use of the formula and a digital computer, and automatically opening the press at the proper time.¹³⁶

By listing the steps of the method that did *not* involve the mathematical formula the Court showcased how much narrower the claimed method was in comparison to the formula, thereby also demonstrating other practical uses for

129. *Id.*

130. *Id.* at 308–10.

131. *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S.Ct. 2107, 2111 (2013).

132. *Diamond v. Diehr*, 450 U.S. 175, 177–80 (1981).

133. *Id.*

134. *Id.*

135. *Id.* at 187–93.

136. *Id.* at 187.

the equation left outside of the claim scope.¹³⁷ Processes that do not include “installing rubber in a press,” e.g., where other materials are being cured would not have been foreclosed by the *Diehr* claims.¹³⁸ The other side of the narrower-than formula-claim-scope coin is that there will be available a litany of other practical uses for the Arrhenius equation left open by the claims. Therefore, it was essentially determined based upon claim breadth, that the patentee was not seeking to be overly greedy with respect to the fundamental concept or mathematical equation.

B. Recent § 101 precedent

State Street Bank is another more recent seminal case on § 101, where a Court of Appeals panel indicated that there was no business method exclusion to patent eligibility and that the subject *system* claims employing various *mathematical concepts* were eligible under § 101.¹³⁹ The issued claims in *State Street* were to a system for pooling investor assets and calculating investment value after a day of transactions.¹⁴⁰ The fundamental concepts were the math equations used to calculate investment value.¹⁴¹ The district court granted summary judgment for invalidity under § 101, erroneously interpreting the means-plus-function system claims to regard a method instead of *structure*.¹⁴² The panel reasoned that the claimed use of the equations were “practical application[s]” because they “produce[d] ‘a useful, concrete and tangible result’ “ – a final share price used for reporting.¹⁴³

The *State Street* analysis was arguably unclear or too broadly interpreted in future cases. The panel did not use a preemption analysis, for example, in finding the subject claims eligible. It arguably rebuked such considerations when indicating the nonexistence of a business method exception to eligibility.¹⁴⁴

[Quoting the district court] “If Signature’s invention were patentable, any financial institution desirous of implementing a multi-tiered funding complex modelled (sic) on a Hub and Spoke configuration

137. *Id.*

138. *Id.*

139. *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1375–77 (1998).

140. *Id.* at 1370–71.

141. *Id.* at 1373–75.

142. *Id.* at 1371–72.

143. *Id.* at 1373.

144. *Id.* at 1374–77.

would be required to seek Signature's permission before embarking on such a project." . . .

*Whether the patent's claims are too broad to be patentable is not to be judged under section 101, but rather under sections 102, 103 and 112.*¹⁴⁵

At that time, the Supreme Court had already adopted the preemption analysis which compares the scope of the claims to the breadth of practical applications for a fundamental concept.¹⁴⁶ Instead of using the preemption analysis, the panel used a useful-concrete-tangible results test from *State Street* which is arguably vaguer.¹⁴⁷ The useful results test opened the door for some of today's most questionable business method and computer-based patents.¹⁴⁸

In re Comiskey followed the *State Street* decision.¹⁴⁹ *Comiskey* involved a patent application for a business *method* of requiring arbitration between parties having a dispute.¹⁵⁰ The steps of the method were purported to be carried out "mentally" by a human as opposed to computer software and for that aim the claims were reasoned to be drawn to an *abstract concept*.¹⁵¹ The Court found this especially relevant to determining whether the claimed process was eligible for patent.¹⁵²

Comiskey left a great deal of questions open for the patent community as to the eligibility line for business method patents. First, it was unclear why the claims in *Comiskey* were determined to have been drawn solely to the use of human intelligence? The claims included steps like (1) enrolling a person, (2) incorporating arbitration language, (3) requiring a complainant to submit a request, and (4) conducting arbitration and determining an award.¹⁵³ Though these steps can be carried out by a human, they are not solely mental steps. To enroll a person, for example, one would have to take pen to paper, if not type

145. *Id.* (emphasis added).

146. *See, e.g.,* *Tilghman v. Proctor*, 102 U.S. 707 (1881); *Gottschalk v. Benson*, 409 U.S. 63 (1972).

147. *State Street Bank*, 149 F.3d at 1373.

148. *See Transitional Program for Covered Business Method Patent Reviews*, U.S. PATENT AND TRADEMARK OFFICE (last visited Apr. 7, 2019), <https://www.uspto.gov/patents-application-process/appealing-patent-decisions/trials/transitional-program-covered-business>; 35 U.S.C. §§ 321-29 (2011); AIA § 18 (2011); 42 CFR §§ 42.300 *et seq.* (2011).

149. *In re Stephen W. Comiskey*, 554 F.3d 967 (2009) (en banc).

150. *Id.* at 969–71.

151. *Id.* at 980–81.

152. *Id.* at 981 (“[L]ike the claims that the Supreme Court found unpatentable in *Benson* and *Flook* and the claims found unpatentable in our own cases, *Comiskey*'s independent claims 1 and 32 seek to patent the use of human intelligence in and of itself.”).

153. *Id.*

information into a register. Similarly, to require another like a “complainant” to do something implies a verbal instruction be issued by the actor and so forth. Second, every human-executed process, whether it be for baking bread, smelting iron, or performing surgery would begin with “mental” instructions because the brain instructs the body to perform. Perhaps because no apparatus results from the *Comiskey* claims the court was reluctant to find the claims eligible. This is not, however, expressed in the opinion, precedent nor the plain language of § 101. So, it is difficult to ascertain exactly why the *en banc* sitting court nonetheless believed the subject claims in *Comiskey* to be ineligible for patent. It could have been that the *Comiskey* claims would unduly preempt something we consider to be a fundamental building block to science or business-related arts. Perhaps if dispute resolution can be considered a useful art then arbitration clauses are something basic to dispute resolution in the same way as would be converting numbers into a digital format for computer processing.¹⁵⁴

The court deviated from the preemption analysis in *Comiskey*, not really examining which practical uses remained for the alleged “abstract concept,” if any, outside of that claimed. Moreover, to the extent that a method of arbitration is a fundamental concept, the court was unclear as to why exactly. Most business methods are not going to employ tools or machines other than computers; so *Comiskey* left us questioning whether many non-computer-implemented business methods could be considered “abstract concepts” excluded from eligibility?

Bilski v. Kappos was the next major case on that issue and it provided a bit more clarity as to eligibility concerns regarding business methods.¹⁵⁵ *Bilski* involved a patent application for a *method* of reducing or “hedging” risk and was considered a method of conducting business.¹⁵⁶ The Court ultimately found the subject claims ineligible,¹⁵⁷ but the majority embraced the potential eligibility of business method claims which was in question at the time.¹⁵⁸ The Court started by reasoning that the claimed process was to a method of hedging which was considered to be a *fundamental concept* in *economics*, it was therefore drawn to an abstract concept.¹⁵⁹ Because the method of hedging was not restricted to a particular field of use, like natural ore pricing as the Applicant intended to use the concept, it was determined to preempt nearly all practical

154. See *Gottschalk v. Benson*, 409 U.S. 63, 71–73 (1972).

155. *Bilski v. Kappos*, 130 S.Ct. 3218 (2010).

156. *Id.* at 3223–24.

157. *Id.* at 3231.

158. *Id.* at 3228–29.

159. *Id.* at 3231.

uses of the concept as claimed.¹⁶⁰ In other words, the Applicant was being too greedy with respect to the fundamental concept.

Bilski was a two-sided coin on eligibility. While the case generally cemented the eligibility of business method patents¹⁶¹—even those that solely rely on human activity and are not tied to a machine or physical transformation—it also opened the door for loose characterizations of claims as reading upon fundamental concepts.¹⁶² After *Bilski* it arguably became much easier to characterize nearly any successful economic practice as “fundamental,” especially to doing business, for the purposes of arguing abstractness and ineligibility.¹⁶³ Moreover, after *Bilski*, courts took less care in viewing the claims as a whole, not really taking *every* limitation into consideration when evaluating eligibility.¹⁶⁴ This vague application of the exclusions doctrine resulted in courts arguably inadequately measuring the breadth of a claim before deducing that the claim would preempt a substantial number of practical uses of the “fundamental concept” or should thus be found ineligible for patent.¹⁶⁵

Mayo Collaborative Svcs v. Prometheus Labs involved another method of human activity, this time in the context of a medical application.¹⁶⁶ The claims in *Mayo* involved an issued patent on a *method* of treating autoimmune disorders.¹⁶⁷ The method incorporated the use of a *law of nature*, namely, relationships between concentrations of certain chemicals in the blood and based upon that concentration determining a likelihood that a dosage of the drug would prove ineffective or cause harm.¹⁶⁸ The Court found the subject claims ineligible for patent, articulating a now seminal two-step test for eligibility to: 1) identify whether a judicial exclusion is included in the claims; and 2) to determine if what remains outside of the exclusion adds enough to qualify it for eligibility or is it well-understood, routine and conventional activity.¹⁶⁹ The opinion is littered with references to the “conventional” nature

160. *Id.* (“Allowing petitioners to patent risk hedging would preempt use of this approach in all fields, and would effectively grant a monopoly over an abstract idea.”).

161. *Bilski* at 3229 (“[T]he Patent Act leaves open the possibility that there are at least some processes that can be fairly described as business methods that are within patentable subject matter under § 101.”).

162. *See infra* Section IV(B).

163. *Id.*

164. *See infra* Section IV(C).

165. *Id.*

166. *Mayo Collaborative Svcs. v. Prometheus Labs, Inc.*, 132 S.Ct. 1289, 1294–95 (2012).

167. *Id.*

168. *Id.* at 1296–97.

169. *Id.* at 1296–98.

of steps determined to be outside of the fundamental concept in a manner that quite arguable confuses some of the purposes of § 102 with those of § 101.¹⁷⁰

The Court also considered practical applications for the fundamental concept outside of the claims reasoning that the claims in *Mayo* did not adequately confine their reach to a particular application.¹⁷¹ In coming to this conclusion, the Court reasoned that the steps of the method added nothing of significance to the natural law;¹⁷² however, it is arguable that the Court too narrowly construed the law of nature in the first instance, thus failing to appreciate other practical applications for determining drug efficacy outside of the claims. For example, the claims were not drawn to determining drug efficacy in general but to treatment of a *specific* disorder, “immune-mediated gastrointestinal disorder” and the use of a *specific* drug, “6-thioguanine.”¹⁷³ If the relevant natural law can be construed as determining drug efficacy by measuring the presence of a drug in the blood system in general than a ton of other practical uses lie outside of that which was claimed in *Mayo*, e.g., determining the efficacy of insulin in treating a diabetic, dialysis in treating kidney failure or an anesthetic in preparing for surgery. When stripping the natural law down to its bare bones it appears that the *Mayo* method could have been sufficiently narrow to *not* preempt all significant practical uses of the natural law.

Moreover, the “novel” or “inventive” quality of claim limitations apart from the fundamental concept is a distraction in determining eligibility; it could very well be the case that conventional components limit the practical application of a fundamental concept in a way that narrowly tailors the claim to a reasonably specific practical use.¹⁷⁴ Yet, this language on inventiveness conjured up in *Mayo* has led to the ineligibility of many a reasonably drafted patent claim as discussed hereinbelow in Section IV.

Association for Molecular Pathology v. Myriad Genetics, Inc., involved a *natural phenomenon* or claims directed to isolated and synthetically generated DNA.¹⁷⁵ Specifically, the patentee (Myriad Genetics) held claims to DNA useful in the prediction of a likelihood of developing breast and ovarian

170. *Id.* 1298–1300.

171. *Id.* at 1301–02.

172. *Id.* at 1303 (“[T]he underlying functional concern here is a *relative* one: how much future innovation is a foreclosed relative to the contribution of the inventor.”).

173. *Id.* at 1295.

174. *See, e.g.*, *Mackay Radio & Telegraph Co. v. Radio Corp. of America*, 306 U.S. 86, 95 (1939) (finding the claimed angular ratio was simply double an angle resulting from the mathematical formula); *Diamond v. Diehr*, 50 U.S. 175, 187 (1981) (finding the steps in the claimed process outside of the equation were not novel).

175. *Association for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S.Ct. 2107, 2111–13 (2013).

cancers.¹⁷⁶ While the DNA naturally occurred, Myriad was responsible for locating the specific strands related to cancer and isolating them from the rest of the human genome as well as recreating the DNA synthetically.¹⁷⁷ The claimed DNA was then a *composition of matter*. The Court found the isolated DNA ineligible for patent while the reconstructed DNA was found to be eligible.¹⁷⁸

In finding the isolated DNA ineligible, the Court reasoned that the separation from other genome did not require Myriad to create anything new.¹⁷⁹ Drawing an analogy to the bacteria cocktail found ineligible in *Funk Brothers*, the Court considered that Myriad had not altered the composition of the DNA.¹⁸⁰ There was a suggestion, however, that had the claims been drafted to reflect nonnaturally occurring structure with the naturally occurring structure they may have been eligible.¹⁸¹

As to the allowable synthetic DNA it was determined to be eligible for patent solely based on its distinctiveness from the naturally occurring DNA.

cDNA retains the naturally occurring exons of DNA, but it is distinct from the DNA from which it was derived. As a result, cDNA is not a 'product of nature' and is patent eligible under § 101, except insofar as very short series of DNA may have no intervening introns to remove when creating cDNA.¹⁸²

The Court in *Myriad Genetics* did not employ the preemption analysis in determining the eligibility (or ineligibility) of either type of claim.¹⁸³ Instead, the Court appeared to do a straight-forward assessment of whether the claimed DNA was identical to naturally occurring DNA.¹⁸⁴ In the past, however, where a fundamental concept has been identified its claimed distinctions were usually not enough to *automatically* render the claimed invention eligible.¹⁸⁵ Said

176. *Id.*

177. *Id.*

178. *Id.* at 2116–19.

179. *Id.*

180. *Id.* at 2117–19.

181. *Id.* at 2118. (“Myriad’s claims are simply not expressed in terms of chemical composition, nor do they rely in any way on the chemical changes that result from the isolation of a particular section of DNA. Instead, the claims understandably focus on the genetic information encoded in the BRCA1 and BRCA2 genes.”).

182. *Id.* at 2119.

183. *Id.* at 2116–19.

184. *Id.*

185. *See, e.g.,* *Tilghman v. Proctor*, 102 U.S. 707 (1881); *Mackay Radio & Telegraph Co. v. Radio Corp. of America*, 306 U.S. 86, (1939); *Diamond v. Diehr*, 50 U.S. 175, 187 (1981)

distinctions were scrutinized with a fine-toothed comb.¹⁸⁶ Regardless of whether *Myriad* was “rightly” or “wrongly” decided as to eligibility, because the preemption analysis was not made explicit, the case provides less instruction (and more apprehension) for inventions employing composition-of-naturally-occurring-matter claims.

Alice Corp. Pty. Ltd. v. CLS Bank International provides a current book end to U.S. Supreme Court jurisprudence on eligibility.¹⁸⁷ *Alice* pertains to issued claims to a computer-implemented *method* (and *systems*) for mitigating settlement risk for a financial transaction through the use of a third-party intermediary.¹⁸⁸ The fundamental concept in *Alice*, was determined to be one related to *fundamental economics* and thus was an *abstract concept*: intermediated settlement, i.e., the use of a third party to mitigate settlement risk.¹⁸⁹ The use of an intermediary in settlement (or clearing house) was determined to be a building block of modern economics citing expert references on settlements and economics.¹⁹⁰

The additional features outside of the abstract idea were found to be insufficient to transform the fundamental concept into eligible subject matter.¹⁹¹ The Court noted that the use of a computer alone was insufficient to render otherwise ineligible claims eligible.¹⁹² Then, because the remaining steps were seen as conventional or generic they were deduced to not substantially transform the claims into eligible subject matter, rather they were said to simply instruct one to apply the fundamental concept.¹⁹³

The Court did not make explicit the preemption analysis in *Alice*, which is unfortunate because the conventional-generic language is simply not sufficiently instructive on eligibility. This is especially true given the rampant use of existing technology on any given novel computer algorithm. It is arguable that there remained little practical applications for intermediated settlement outside of the claim scope.¹⁹⁴ However, without this portion of the preemption analysis being made explicit in *Alice* following courts have been able to render “innocent” claims ineligible just for incorporating known features in a previously unknown way.

186. *Id.*

187. *Alice Corp. Pty. Ltd. v. CLS Bank International*, 134 S. Ct. 2347 (2014).

188. *Id.* at 2351–52.

189. *Id.* at 2355–56.

190. *Id.*

191. *Id.* at 2357–60.

192. *Id.* at 2357–58.

193. *Id.* at 2359–60.

194. *See, e.g.*, claim 33 of the ‘479 patent as reproduced in *Alice*.

III. THE EMPEROR IS UNCLOTHED – MODERN HORRORS TO APPLYING THE DOCTRINAL EXCLUSIONS

Applying the doctrinal exclusions under *Mayo-Alice* reminds one of the popular children's story about an emperor who loved his clothes and in vanity one day spared no expense to have a garment made for him by two swift-talking tailors.¹⁹⁵ The tailors claimed that the robe's material was magical such that only wise people could perceive it.¹⁹⁶ Given this backdrop everyone who was presented the robe hailed its praises.¹⁹⁷ That is, until the Emperor nearly finished the parade in his honor and a child stated the obvious: "the Emperor has no clothes on!"¹⁹⁸ After a few whispered conferences, adults began to acknowledge the truth . . . that the Emperor stood barren in his thermal onesie in the middle of town.¹⁹⁹ Sometimes custom inhibits us, such that offbeat answers add more value than what is "trending."

While the majority of deciding officials are still in denial as to *Mayo-Alice*'s inadequate coverage, many childlike practitioners and judges are seeing the non-cloak of *Mayo-Alice* for what it is worth. For example, we are nearly four years into the parade and most patent practitioners could not describe the color, hemline or cuff of the doctrinal exclusions as applied to a newly reviewed innovation.²⁰⁰

[T]he emphasis on eligibility has led to erratic implementation in the courts.

I have come upon no guide to when a claim crosses the boundary between unacceptable abstractness and acceptable specificity.

195. H.C. ANDERSEN retold by MARCUS SEDGWICK, *THE EMPEROR'S NEW CLOTHES*, (Chronicle Books 2004); H.C. ANDERSEN retold by RIKI LEVINSON, *THE EMPEROR'S NEW CLOTHES*, (Dutton Children's Books 1991).

196. SEDGWICK *supra* note 195, at 3–6; LEVINSON *supra* note 195, at 5–10.

197. SEDGWICK *supra* note 195, at 13–22; LEVINSON *supra* note 195, at 13–34.

198. SEDGWICK, *supra* note 195, at 23–24; LEVINSON, *supra* note 195, at 35–37.

199. SEDGWICK, *supra* note 195, at 23–24; LEVINSON, *supra* note 195, at 35–37.

200. BASCOM Glob. Internet Servs., Inc. v. AT&T Mobility, LLC, 827 F.3d 1341, 1353–54 (Fed. Cir. 2016) (Newman, J., concurring); see also Mark Nowotarski, *Surviving Alice in the e-Commerce Arts*, BILSKI BLOG (May 17, 2017), http://www.bilskiblog.com/blog/2017/05/surviving-alice-in-the-e-commerce-arts.html#_edn1; #AliceStorm: April Update and the Impact of TC Heartland on Patent Eligibility, *supra* note 1 (reporting post-Alice § 101 invalidity rates as high as 97.8% on covered business method patent reviews at the Patent Trial and Appeal Board and 91.7% at the Court of Appeals); Lefstin et al., *supra* note 10, at 555 (stating that *Alice* and *Mayo* "have sent shock waves through the research, technology, business, and patent communities" and citing examples in medical devices, software innovations, and financing).

Experience with this aspect demonstrates its imprecision. This conundrum is resolved on application of the criteria of patentability.²⁰¹

The term “abstract concept” is inherently vague.²⁰²

The reference in *Bilski*[] to “abstractness” as a ground of ineligibility for computer-related claims amplifies this problem and sets out a dangerous road to travel. “Abstractness” is a vague and subjective notion that has proven entirely unworkable, and unavoidably yields inconsistent and unpredictable results in the hands of 7,000 examiners and some 1,000 district judges, not to mention the countless thousands of patent attorneys, inventors, business leaders, and investors who need to interpret the law when making decisions about investing in patents, licensing, and funding or settling litigation.

Clearer lines are urgently needed and can only be provided by this Court as the creator and arbiter of the judicially-created “exceptions” to statutory patent eligibility, including “abstract ideas,” whatever that means.²⁰³

Mayo-Alice is not clear enough to transform the abstractness of “abstract concept” into something practical.

The United States Court of Appeals for the Federal Circuit and the United States Patent and Trademark Office (USPTO) have worked to understand and apply the Supreme Court’s test. But the impact of that test and its application by the Federal Circuit and the USPTO have sparked considerable discussion in the patent community, both critical and favorable, of the Supreme Court’s jurisprudence.²⁰⁴

Nearly every invention involves some fundamental concept which could be characterized as “abstract.”

Step one cannot be a hunt for the abstract idea underlying the claim, because underlying virtually every claim is an abstract idea. And if the

201. *BASCOM Glob. Internet Servs., Inc.*, 827 F.3d at 1353–54 (Newman, J., concurring).

202. Brief of Amicus Curiae Paul R. Michel In Support of Neither Party at 7, *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S.Ct. 2347 (2014) (No. 13-298).

203. *Id.*

204. *Patent Eligible Subject Matter: Report on Views and Recommendations from the Public*, U.S. PATENT AND TRADEMARK OFFICE, 1 (July 2017), https://www.uspto.gov/sites/default/files/documents/101-Report_FINAL.pdf.

task under step one is to assess whether the claim is directed to no more than an abstract idea, what is left for determination under step two? . . . Despite the number of cases that have faced these questions and attempted to provide practical guidance, great uncertainty yet remains. And the danger of getting the answers to these questions wrong is greatest for some of today's most important inventions in computing, medical diagnostics, artificial intelligence, the Internet of Things, and robotics, among other things.²⁰⁵

It is believed that due at least in-part to this phenomenon modern application of the § 101 exclusions has been termed to have an “ferocious” effect, invalidity requiring “little to any factual development,”²⁰⁶ in theory, nearly *any* claim in a modern popular technology field like computing, business methods and medicine employing a “fundamental concept” could be subject to a non-descript § 101 rejection or ineligibility finding.

Courts further need to remind themselves that the doctrinal exclusions are judge-made exceptions to § 101 and should be narrowly construed, not liberally applied.²⁰⁷

Indeed, the Supreme Court has cautioned that, to avoid improper narrowing by courts of congressional enactments, resort to judge-made exceptions to statutory grants must be rare

As the Supreme Court has made clear, too broad an interpretation of these exclusions from the statutory grant of Section 101 “could eviscerate patent law.”²⁰⁸

It is time the “adults” start listening; as the following several horrors to applying the *Mayo-Alice* standard demonstrate, a more transparent and practical standard is desperately needed.

A. There is Judicial Paranoia About Whether Claims are Actually Directed to

205. *Smart Sys. Innovations, LLC v. Chi. Transit Auth.*, 873 F.3d 1364, 1378 (Fed. Cir. 2017) (Linn, J. dissenting).

206. *See Sobon*, *supra* note 7 (“Section 101 is being used with ferocious effect, by District Courts at the pleading stage, *with little to any factual development*, and by Patent examiners, in hundreds and thousands of cases, as a new, often insurmountable hurdle to patentability.” (emphasis added)).

207. *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 717 F.3d 1269, 1303–04 (Fed. Cir. 2013) (Rader, C.J., dissenting in part).

208. *Id.*

Fundamental Concepts

As discussed, the policies behind the doctrinal exclusions to eligibility rest with concerns about foreclosing use of fundamental building blocks to science or useful arts.²⁰⁹ Rightly at the forefront of many judicial analyses is a consideration of claim breadth under § 101. However, sometimes this consideration plays too big of a role in a courts' analysis and patentees are not given appropriate credit for being reasonably disciplined about claim scope. Courts are being too empathetic to accused infringers and their difficulties designing around an invention. Instead, claim breadth should be measured from the perspective of all humanity that might find utility in a fundamental concept under § 101.²¹⁰

Take for example *Electric Power Group, LLC v. Alstom*, where the representative claim pertained to a power-grid management *system*.²¹¹ The Court of Appeals panel affirmed the ineligibility findings of the district court first reasoning that the claims were directed to the *abstract concept* of collecting information, analyzing it and displaying certain related results.²¹² While the “abstract concept” in *Electric Power Group* seems to have been reasonably defined, given that process improvement often requires the review of system performance data, the panel gave little to no credit to the patentee for limitations distinct from that abstract concept in assessing eligibility.²¹³ “Most obviously, limiting the claims to the particular technological environment of power-grid monitoring is, without more, insufficient to transform them into patent-eligible applications of the abstract idea at their core.”²¹⁴ The claims in *Electric Power Group* showed more than just limitations to power-grid monitoring, like giving the data a time stamp and geographic-location notation, receiving data from multiple sources including “non-grid data sources,” detecting particular types of performance characteristics (as opposed to others), displaying measurements concurrently with the results, updating results in real time and deriving what was called a “reliability indicator” of power-grid vulnerability.²¹⁵ These limitations were given no weight in assessing whether the claims were directed to an abstract concept and under step two of *Alice* only the power-grid environment limitation was given consideration.²¹⁶ A limitation is, as its name

209. See *supra* Section III(A).

210. *Id.*

211. *Electric Power Group, LLC, v. Alstom S.A.*, 830 F.3d 1350, 1351 (Fed. Cir. 2016).

212. *Id.* at 1353–54.

213. *Id.* at 1354–56.

214. *Id.* at 1354.

215. *Id.* at 1351–53.

216. *Id.* at 1353–56.

suggests, a limit on claim scope and should be given due consideration on eligibility.

The Court of Appeals panel did consider the district court's use of the pre-emption analysis in *Electric Power Group* as a "double-check" to its own work but the panel was arguably paranoid about how widespread the claimed invention would be with respect to the fundamental concept of collecting information, analyzing it and displaying certain related results.²¹⁷

The district court in this case wrapped up its application of the Supreme Court's framework by invoking an important common-sense distinction between ends sought and particular means of achieving them, between desired results (functions) and particular ways of achieving (performing) them. The court identified the problem addressed by the patents: "Here, the problem is the need to monitor and analyze data from multiple distinct parts of a power grid." J.A. 30. *But, the court reasoned, "there is a critical difference between patenting a particular concrete solution to a problem and attempting to patent the abstract idea of a solution to the problem in general."* *Id.* *Electric Power Group's asserted claims, the court observed, do the latter: rather than claiming "some specific way of enabling a computer to monitor data from multiple sources across an electric power grid," some "particular implementation," they "purport to monopolize every potential solution to the problem" — any way of effectively monitoring multiple sources on a power grid. Id.* Whereas patenting a particular solution "would incentivize further innovation in the form of alternative methods for achieving the same result," the court concluded, allowing claims like *Electric Power Group's* claims here would "inhibit[] innovation by prohibiting other inventors from developing their own solutions to the problem without first licensing the abstract idea." *Id.*

The district court did not set forth that description as a freestanding basis for its ineligibility holding, independent of the framework for analysis established under the Supreme Court's authority. Moreover, the district court phrased its point only by reference to *claims so result-focused, so functional, as to effectively cover any solution to an identified problem.* The court's description is one helpful way of double-checking the application of the Supreme Court's framework to particular claims — specifically, when determining whether the claims meet the requirement of an inventive concept *in application.* Indeed, the essentially result-focused, functional character of claim language has been a frequent feature of claims held ineligible under § 101,

217. *Id.* at 1356 (emphasis added).

especially in the area of using generic computer and network technology to carry out economic transactions. See *Loyalty Conversion Sys. Corp. v. American Airlines, Inc.*, 66 F.Supp.3d 829, 837-38, 840, 843, 845 (E.D. Tex. 2014). In this case, the district court's wrap-up description confirms its, and our, conclusion that the claims at issue fail to meet the standard for patent eligibility under § 101.²¹⁸

Respectfully, it does not appear that the subject claims in *Electric Power Group* sought to “monopolize” every way of utilizing the stated abstract concept: monitoring data from multiple sources, which remember should not even be limited to power-grid management in assessing its elementariness.²¹⁹ As discussed, representative claim 12 was limited in at least five additional ways beyond use of the abstract concept in power-grid management such that the claimed practical application required specificity as meticulous as deriving a “reliability indicator” of power-grid vulnerability.²²⁰ The court arguably overreacted to claim scope, assessing breadth with perhaps too much empathy for the perspective of the accused infringer when claim scope should be drawn against humanity's plausible utility of the fundamental concept.

B. The Slithery Serpent-Like Idea of an “Abstract Concept” is Way Too Ambiguous and Flexible to be a Standard for Patentability

Characterizing an invention as directed to versus involving the doctrinal exclusion of an “abstract concept” has become a sort of “catch-all” exclusion to eligibility. Under *Mayo-Alice*, the list of what is considered an “abstract concept” continues to grow. “Abstract concept” is by its own name vague.²²¹ Moreover, in determining whether a concept is truly “abstract” courts are not

218. *Id.*

219. *Id.* at 1351–53.

220. *Id.*

221. See *Alice Doesn't Live Here Anymore: A Critique of the Supreme Court's “Abstract Ideas” Test*, BOS. PAT. LAW ASS'NS NEWSL., Vol. 45, Issue 3 (2015) at 4–6. “In any event, this ‘*Bilski* comparison’ method for determining whether a claim is drawn to an abstract idea is itself abstract and thus unsatisfying.” *Id.* at 4; see also *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 135 (1948) (Frankfurter, J., concurring) (discussing the natural phenomenon exclusion). In *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, J. Frankfurter wrote:

For these are vague and malleable terms infected with too much ambiguity and equivocation. Everything that happens may be deemed ‘the work of nature,’ and any patentable composite exemplifies in its properties ‘the laws of nature.’ Arguments drawn from such terms for ascertaining patentability could fairly be employed to challenge almost every patent.

distinguishing between fundamental (i.e., foundational) building blocks and ordinary bricks and mortar.²²² More description as to *why* an abstract concept is considered fundamental to science and useful arts is needed in recent judicial opinions on eligibility.

As discussed below, some panels are arguably too narrowly construing abstract concepts, making it seem as if all practical uses of the same will be foreclosed by the patent, thereby providing support for the proposition that the patent should not be eligible. Other panelists are completely shying away from recognizing a fundamental concept even being involved in the claims (as opposed to directed to one) for fear that the claims will fail under the defeating *Alice-Mayo* framework.

Frankly, sometimes courts rush into defining something as an abstract concept. *Secured Mail Solutions* is a recent case out of the Court of Appeals where the abstract concept was arguably drawn too narrowly such that it appeared that the claims foreclosed a concept that was not actually fundamental to mailing.²²³ The invention in *Secured Mail* regarded a *method* of tracking mail involving generating a unique code to affix to the mailed object that included sender information, recipient data and shipping method.²²⁴ The panel determined that “*communicating information about a mail object using a personalized marking*” was an *abstract concept*.²²⁵ However, while displaying sender and recipient data on a piece of mail may be fundamental to the mail system, since multiple third parties sort and deliver mail, “using a personal marking” to accomplish the same does not appear to be a necessary building block to mailing. For example, mail can be delivered in the same way that the Pony Express did it: by reading the recipient’s and sender’s information from the front of the envelope. Other limitations in the representative claim like authenticating the generated code or “marking” also would not foreclose the general addressing of a letter. Further, there is no reason that optical scanners might not be employed to digitize this information without generating an intermediate marking to affix on the envelope. When the core “abstract concept” of *Secured Mail Solutions* is adjusted, it seems more likely that the

222. See, e.g., *Secured Mail Solutions LLC v. Universal Wilde, Inc.*, 873 F.3d 905, 911 (Fed. Cir. 2017) (discussing that since the panel defined the fundamental concept so narrowly as “communicating information about a mail object *using a personalized marking*,” it was treated more like a concrete slab that would foreclose building many different types of structures rather than an ordinary clay brick (emphasis added)); Sobon, *supra* note 7 (“We need to somehow stop the [c]ourts and the USPTO from importing their own often hazy, subjective view of ‘abstractness’ ([which is] often really just *unbound, personal views of novelty, obviousness or distinctiveness*) into the purposefully low Section 101 patentability threshold.” (emphasis added)).

223. *Secured Mail Solutions*, 873 F.3d at 905.

224. *Id.* at 906–08.

225. *Id.* at 911 (emphasis added).

claims were arguably narrowly tailored, under § 101, leaving many other practical uses for the fundamental concept of communicating information about a mail object in the free domain. Under the *Mayo-Alice* standard, however, there is little accountability in what a court finds “abstract,” we are essentially left with a “swallow-it-because-I-said-so” answer.

Another example of where a Court of Appeals panel arguably drew the *abstract concept* too narrowly includes *Intellectual Ventures I v. Erie Indemnity Co.*²²⁶ In this case the panel reviewed the eligibility of issued claims to a *manufacture* or system for transferring user-preference data between computers like a home computer and mobile device such that bookmarks and browser settings would be consistent between devices.²²⁷ Under *Alice*, the panel agreed with the district court in finding “*remotely accessing user-specific information*” to be an abstract concept.²²⁸ However, remotely accessing specific *user interface* information does not seem to be a fundamental concept to computing. Indeed, users can self-program and update each device over time while still allowing the devices to “network” or access the same websites, directories and hard drives. Automatically changing user settings across devices does not appear to be *fundamental* to computer networking. In finding the concept “abstract” the panel pointed to what seems to be more § 112 ¶(a)/(b) concerns like reciting “any particular unique delivery of information” or “how the mobile interface communicates.”²²⁹ The panel reasoned that because the claims merely provided “generic technological environment” for what it deemed to be an “abstract concept” this field-of-use limitation left the claims directed towards an abstract concept.²³⁰ It is arguable that if a claim involves a concept that is truly fundamental/abstract the concept’s abstractness should stand separate from claim description on implementation of the concept. E.g., if one were to claim an invention involving Newton’s law on gravity ($F=ma$) additional usage descriptions in the claim would not change the core concept—the formula will

226. *Intellectual Ventures I LLC v. Erie Indemnity Co.*, 850 F.3d 1315 (Fed. Cir. 2017); *see also Two-Way Media Ltd. v. Comcast Cable Commc’ns, LLC*, 874 F.3d 1329 (Fed. Cir. 2017) (stating that the abstract concept was arguably too narrowly drawn with respect to the ‘187 patent’s claim 1). The Court of Appeals panel affirmed the § 101 invalidity findings of the lower court finding the claims directed to an abstract concept and no inventive concept outside of the abstract concept transformed the claims under *Alice*. *Id.* at 1341. The panel found claim 1 directed to a four-part abstract concept of “(1) sending information, (2) directing the sent information, (3) monitoring the receipt of the sent information, and (4) accumulating records about receipt of the sent information.” *Id.* at 1337. Arguably, the monitoring and recording steps are not *fundamental* to streaming TV. Alternatively, streaming TV when requested could have been the abstract concept and systems without record keeping or recordation of transmission time would be outside of the claim scope.

227. *Intellectual Ventures I LLC*, 850 F.3d at 1329–30.

228. *Id.* at 1330.

229. *Id.*

230. *Id.*

be as it has always been. In this way, courts seem to be muddling step one and two of *Mayo-Alice* in its analysis.²³¹ Limitations outside of the abstract concept are to be reviewed under step two of *Mayo-Alice*.

Ironically, courts also tend to shy away from acknowledging any kind of abstract or fundamental concept in the claims. Who can blame them? Eligibility will be a near impossible uphill battle under step 2 of *Mayo-Alice* for almost any invention. Yet, any claim likely incorporates the use of some fundamental concept on some level.²³² In *Visual Memory, LLC v. NVIDIA Corp.* the majority found the subject claims to memory systems tailored to processor type eligible for patent.²³³ The majority in *Visual Memory* reasoned that the claims were not drawn to, nor did they involve, an *abstract concept* at

231. See *FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089 (Fed. Cir. 2016). The Court of Appeals panel under step one of *Alice*, found the claims directed towards the abstract concept of essentially detecting CPU system misuse by focusing on the lack of novelty in claim features. *Id.* at 1094–95. The invention in *FairWarning* regarded systems and methods for detecting fraudulent user activity in health-care databases. *Id.* at 1091–92. The court rebuked the claims using phraseology like “implement[ing] an old practice in a new environment” and pointing to the benefit of the invention coming from the invention’s use of a “general-purpose computer” rather than the “patented method itself” as if an invention’s benefit need be tied to novel claim features to be non-abstract or eligible. *Id.* at 1094–95. The panel ignored, disappointingly, the other practical uses for the fundamental concept not foreclosed by the claims such as non-health-care systems and systems that used different rules than those claimed to detect misuse. *Id.* at 1092–95. The court again summarily dismissed the preemption analysis simply stating that the lack of preemption will not necessarily “save” the claims on eligibility in a somewhat conclusory fashion. *Id.* at 1098. See also *McRO, Inc. v. Bandai Namco Games Am., Inc.*, 837 F.3d 1299 (Fed. Cir. 2016). The Court of Appeals panel partially relied upon novelty in finding the subject claims *not* drawn to an abstract concept. *Id.* at 1314–15. The panel assessed whether the claimed processes were the same as the prior art or distinct and whether the “novel” claimed features generated the benefit of the invention rather than the use of a generic computer. *Id.* Later, however, the panel also detailed a preemption analysis finding the claimed automated animation calibration method eligible for patent because there remained different modes of achieving the same effect—automated animation—available. *Id.* at 1315–16.

232. See, e.g., *Smart Sys. Innovations, LLC v. Chi. Transit Auth.*, 873 F.3d 1364, 1378 (Fed. Cir. 2017) (Linn, J., dissenting) (stating that “[s]tep one cannot be a hunt for the abstract idea underlying the claim, because underlying virtually every claim is an abstract idea.”); see also *Visual Memory LLC v. NVIDIA Corp.*, 867 F.3d 1253, 1259 (Fed. Cir. 2017) (acknowledging “the difficulty inherent in delineating the contours of an abstract idea.”); see also *Rapid Litig. Mgmt. v. CellzDirect*, 827 F.3d 1042, 1044–47 (Fed. Cir. 2016) (reversing the district court’s finding of ineligibility of claims towards cryogenically preserving cells). In *Rapid Litigation Management*, the panel found that claims were not “directed to” an abstract concept or law of nature but the panel arguably shied away from acknowledging that the claims involved a law of nature. *Id.* 1047–48. “The district court identified in these claims what it called a ‘natural law’ . . . [w]e need not decide in this case whether the court’s labeling is correct. It is enough in this case to recognize that the claims are simply not directed to the [abstract concept or natural law].” *Id.* at 1047–48. It is difficult to assess foreclosure or preemption of an unacknowledged concept, to the extent comparisons are made between what is claimed and a fundamental concept—in this case the survivability of multiple freeze cycles by these cells—the fundamental concept must be identified. The panel did still acknowledge that the mere involvement of a fundamental concept is not enough to render the claims ineligible. *Id.* at 1049–50.

233. *Rapid Litig. Mgmt. v. CellzDirect*, 867 F.3d 1253, 1262 (Fed. Cir. 2017).

all, rather the claims were drawn to an improvement to a computer.²³⁴ Hon. J. Hughes in dissent, however, indicated that the claims did involve the use of an abstract concept: “categorical data storage.”²³⁵ Judge Hughes was probably right in identifying that storing data by category is a fundamental building block to memory systems because different data will often need to be stored differently either due to its size, type or for other organizational reasons. Also, it is without question that the claims were drawn to a memory system that stored data categorically or in this case according to the processor type. Though the claims arguably were more limited to practical applications where the memory is tailored to the processor type, in other words the invention was not *directed to* all categorical data storage, the majority likely overlooked acknowledging that the claims *did* incorporate a fundamental concept—categorical data storage. Even when eligibility is affirmed there is ambiguity as to what is or is not an “abstract concept” probably subconsciously because judges have a sense that the claims should be eligible but know that acknowledgement of an invention being “directed to,” or involving, an “abstract concept” is often a death nail to eligibility.

*C. The Shape-Changing Second Prong of the Alice Test Regarding
Conventionality is Improperly Applied as an Anticipation Standard Instead of
Being Instructive as to What Substantially Forecloses Uses of a Fundamental
Concept*

The second prong of *Alice-Mayo* asks courts to assess whether the claim limitations outside of the fundamental concept substantially “transform” the invention from being directed to the fundamental concept.²³⁶ While the opinions in *Alice* and *Mayo* invoke claim language like “conventional” or “generic” it is difficult to believe that the Court was of the conviction that the use of conventional and generic features alone would be enough to render a claim involving a fundamental concept ineligible.²³⁷ It is par for the course to use generic features in claims, moreover even generic or conventional elements still limit the practical applications covered by the claims. Thus, by itself, conventionality cannot be a true *indicium* of eligibility.

The consideration of whether claim elements outside of the fundamental concept are conventional has grown to be a *de facto* exercise of searching for

234. *Id.*

235. *Id.* at 1262–64.

236. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S.Ct. 2347, 2357 (2014).

237. *See, e.g., Diamond v. Diehr*, 50 U.S. 175 (1981) (finding eligible a method for curing rubber using conventional equations, equipment, and techniques arranged in an unconventional manner).

novelty, or non-obviousness in a subset of the claims.²³⁸ For example, the Court of Appeals panel in *Secured Mail Solutions* discussed conventionality such that it held the patentee to a standard of novelty to defend eligibility.²³⁹ Claims need not, however, be held to the standard of novelty to be eligible under §101.²⁴⁰

That is not to say,[] that all process claims that employ only independently known steps will be unpatentable. To the contrary, in examining claims under step two [of *Alice*], we must view them as a whole, considering their elements “both individually and ‘as an ordered combination.’” [citing *Alice* and *Mayo*] Thus, “a new combination of steps in a process may be patentable even though all the constituents of the combination were well known and in common use before the combination was made [citing *Diehr*].²⁴¹

The panel in *Secured Mail Solutions* disparaged the use of the unique identifier in snail mail citing references to uses of “barcodes” earlier in time and reply

238. See, e.g., Taylor, *supra* note 23, at 249–50 (discussing how “*Alice* Has Brought Back A Test For ‘Invention’”). “If the court finds an ‘abstract idea,’ the court may then perform an obviousness analysis and search for an ‘inventive concept’ or ‘something more’ based solely on the patent claims and the court’s subjective knowledge” *Id.* See also Megan Throbe, *A Call to Action: Fixing the Judicially-Murkied Waters of 35 U.S.C. §101*, 50 IND. L. REV. 1023, 1029–34 (2017) (discussing the continued blurred lines between § 101 and § 102 when courts decide eligibility).

239. *Secured Mail Solutions LLC v. Universal Wilde, Inc.*, 873 F.3d 905, 911–12 (Fed. Cir. 2017).

240. *Rapid Litig. Mgmt. v. CellzDirect*, 827 F.3d 1042, 1051 (Fed. Cir. 2016); see also *BASCOM Glob. Internet Servs. v. AT&T Mobility*, 827 F.3d 1341, 1349–50 (Fed. Cir. 2016) (reversing an ineligibility dismissal and instructing the district court on remand to not treat step two of *Alice* like an obviousness analysis.) “The inventive concept inquiry requires more than recognizing that each claim element, by itself, was known in the art. As is the case here, an inventive concept can be found in the non-conventional and non-generic arrangement of known, conventional pieces.” *Id.* at 1349–50, 1353–55. See also *Diamond v. Diehr*, 450 U.S. 175, 188–89 (“The ‘novelty’ of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the §101 categories of possibly patentable subject matter.” (quoting Brief of Amicus Curiae Paul R. Michel In Support of Neither Party at 4–6, *Alice Corp. Pty. Ltd. v. CLS Bank International*, 134 S.Ct. 2347 (2014) (No. 13-298))); *Alice Doesn’t Live Here Anymore: A Critique of the Supreme Court’s “Abstract Ideas” Test*, *supra* note 221, at 6–8 (“[W]hat the Court [in *Alice*] really means by ‘abstract’ is . . . that the core concept of the claim is not novel or obvious. Indeed, the opinion is rife with words like ‘well known’ and ‘convention.’ Thus, the Court is really applying a stealth § 102 or 103 anticipation or obviousness test.”); Taylor, *supra* note 23, at 249–50 (discussing how “*Alice* Has Brought Back A Test For ‘Invention’”). “If the court finds an ‘abstract idea,’ the court may then perform an obviousness analysis and search for an ‘inventive concept’ or ‘something more’ based solely on the patent claims and the court’s subjective knowledge” *Id.*; Megan Throbe, *A Call to Action: Fixing the Judicially-Murkied Waters of 35 U.S.C. § 101*, 50 IND. L. REV. 1023, 1029–34 (2017) (discussing the continued blurred lines between § 101 and §§ 102 et al. when courts decide eligibility).

241. *Rapid Litig. Mgmt.*, 827 F.3d at 1051.

routing URLs in email.²⁴² This comparison to the prior art on assessing conventionality is first extremely light when cast against a traditional § 102 assessment.²⁴³ Second, the unique-identifier steps related to the fundamental concept of “communicating information about a mail object using a personalized marking” not the added limitations that required assessment for transformation.²⁴⁴ Said additional steps included at least for some claim(s) an authentication process that may have very well been unconventional as compared to other barcodes and email reply URLs.²⁴⁵ In any event the analysis is absent. In this way, courts seem to be skipping over cornerstone tenants of novelty through the “backdoor” of § 101 created by *Mayo-Alice*.²⁴⁶

A court’s finding of conventionality under prong two of *Mayo-Alice* can further be called into question by other findings on novelty that are arguably in opposition to the court’s findings on eligibility. For example, in *Intellectual Ventures I v. Symantec Corp.* the Court of Appeals panel was split as to eligibility on one of three claim sets.²⁴⁷ Hon. J. Stoll, dissenting in part as to the judgment, would have found the subject claim to computer virus screening on Internet-based telephonic networks eligible for patent because it merely *involved* an abstract concept but was not solely directed to one.²⁴⁸ Specifically, the invention transferred screening from individual users to a pre-communication network administrator, thus other practical applications not foreclosed by the claim arguably included non-telephonic computer screening and screening applications at the recipient site.²⁴⁹ More interestingly, J. Stoll commented on the contradiction between the majority finding the claim limitations conventional/generic and in this case the jury finding the same claims valid under §§ 102 and 103.²⁵⁰ “While I recognize that validity under §§ 102 and 103 is a distinct inquiry from eligibility under § 101, and may not be dispositive of § 101, the jury verdict nonetheless supports the notion that this particular ordering of the components in claim 7 was not conventional at the time.”²⁵¹ Judge Stoll’s dissent brings up a valid question: how can § 102

242. *Secured Mail Solutions LLC*, 873 F.3d at 912 (“The use of barcodes was commonplace and conventional in 2001.”).

243. *Id.* at 911–12; see also *Alice Doesn’t Live Here Anymore: A Critique of the Supreme Court’s “Abstract Ideas” Test*, *supra* note 221.

244. *Secured Mail Solutions LLC*, 873 F.3d at 908–11.

245. *Id.* at 907–08.

246. *Alice Doesn’t Live Here Anymore: A Critique of the Supreme Court’s “Abstract Ideas” Test*, *supra* note 221, at 6–8.

247. *Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307 (Fed. Cir. 2016).

248. *Id.* at 1329–31.

249. *Id.* at 1319.

250. *Id.* at 1330.

251. *Id.* at 1330.

findings of novelty comport with § 101 findings of conventionality? The two would appear to be mutually exclusive concepts. Do courts need to find claim language anticipated to also find the non-abstract limitations conventional? If not, in what way do the tests differ?

By focusing too heavily on novelty under prong two of *Mayo-Alice*, courts are almost completely skipping over evaluating whether other practical applications remain outside of the claims. Another Court of Appeals panel affirmed the U.S. District Court for the Northern District of Illinois' grant of a Rule 12 dismissal due to the ineligibility of a series of patents.²⁵² The *Smart Systems* patents in-suit related to payment processing for access to a transit system.²⁵³ Representative claim 14 of the '003 patent regarded using a pre-registered credit card as an identifier for payment at the turnstiles rather than running the credit card for each transaction in real-time.²⁵⁴ The majority found the subject claims ineligible applying the *Mayo-Alice* standard.²⁵⁵ Specifically, the court found the claims directed to one of two abstract concepts, either *conducting financial transactions in a particular field or collecting, analyzing and classifying information*.²⁵⁶ Under step 2 of *Alice*, the majority found that the claim limitations outside of these abstract concepts did not recite inventive concepts, the majority mainly referring to the generic nature of those limitations in computing and financial transactions.²⁵⁷ However, a thorough §§ 102/103 analysis was clearly not performed.

Moreover, when the preemption analysis is applied to the *Smart Systems* claims it is clear that many of the claims would pass the preemption test since other practical applications for the fundamental concepts existed outside of the claims. For example, other practical applications for the "collection, analysis and classification of information" include doing so for non-transit applications (like entertainment venues or refueling stations), online stores or library catalogues that do not even require payment. Also, other practical applications for conducting financial transactions in mass transit include prepaid cards, tokens or payment by cash. Thus, it was not the case that the use of the abstract (or fundamental) concept would be substantially foreclosed by the claims.²⁵⁸

252. *Smart Sys. Innovations, LLC v. Chi. Transit Auth.*, 873 F.3d 1364 (Fed. Cir. 2017).

253. *Id.* at 1368–71.

254. *Id.* at 1368–69.

255. *Id.* at 1371–75.

256. *Id.* at 1371–73.

257. *Id.* at 1373–75.

258. *See Apple v. Ameranth*, 842 F.3d 1229, 1240 (Fed. Cir. 2016). The claimed computer system involved the abstract concept of taking and transmitting menu orders (or "generating a second menu from a first menu and sending the second menu to another location") but several other practical applications for the fundamental concept remained outside of the claims. *Id.* Based upon a dictionary interpretation of the claim terms, other practical applications for the abstract concept included manual

order taking, computer-assisted order taking where the ticket is manually delivered to the chef and computer-assisted systems where a separate modification menu is not generated, i.e., where waitstaff notes are used for special requests. *Id.* at 1234. These additional requirements imposed by the claim's limitations were seen as insignificant post-solution activity because their implementations, as claimed, were seen as relying upon "conventional" computing techniques. *Id.* at 1242–43. *See also* Return Mail, Inc. v. U.S. Postal Service, 868 F.3d 1350, 1368–71 (Fed. Cir. 2017). The claimed return mailing method involved the abstract concept of "relaying mailing address data" but several other practical applications for the fundamental concept remained outside of the claims. *Id.* Based upon a dictionary interpretation of the claim terms, other practical applications for the abstract concept included use in deliverable mail, systems that do not encode data or mailing systems that do not allow a sender to update a mailing address when the mail is still in route. *Id.* *See also* Intellectual Ventures I LLC v. Capital One Bank (USA), 792 F.3d 1363, 1369–71 (Fed. Cir. 2015). One of the claimed web advertisement systems involved the abstract concept of customizing website content based upon user personal characteristics or navigation history; however, several other practical applications for the fundamental concept of essentially advertising supply based upon forecasted demand remained outside of the claims. *Id.* Based upon a dictionary interpretation of the claim terms, other practical applications for the abstract concept include non-web-based advertising like traditional newspaper and television advertisements or websites where portions of prior sites visited are not displayed while browsing other webpages. *Id.* These other practical applications, outside of the claimed use of the fundamental concept, likely occupied most of the utility of the fundamental concept of advertising supply according to projected demand (i.e., the fundamental concept was not substantially foreclosed or preempted by the claims. *Id.* *See also* Intellectual Ventures I LLC v. Capital One Bank (USA), 850 F.3d 1332, 1338–39 (Fed. Cir. 2017). The subject claims pertained to an XML code modification system that could be used by coders and non-coders. *Id.* The claims involved the abstract concept of "collecting, displaying and manipulating data." *Id.* at 1340. Yet, based upon a dictionary interpretation of the claim terms, several other practical applications for the fundamental concept remained outside of the claims, arguably, such as data manipulation that is either not computer based or regarding XML code, data sorting that does not perform a hierarchical function (as claimed) or data manipulators that do not use a dynamic modification intermediate that enables non-coders to use the system. *Id.* The fundamental concept was not substantially foreclosed or preempted by the claims, in fact, the claims were so specific that it is difficult to image the claimed use preempting more than a small sliver of the practical-applications "pie" for the abstract concept. *Id.* *See also* Intellectual Ventures I LLC v. Erie Indemnity Co., 850 F.3d 1315, 1325–27 (Fed. Cir. 2017). The subject claims pertained to indexing information for computer searching; the XML index "tags" included two types of tags for different sorts of search criteria. *Id.* The claims involved the abstract concept of "creating an index and using that index to search for and retrieve data." *Id.* at 1327. The breadth of the abstract concept seems appropriate given that indexing assists with searching large information, especially between multiple searchers like those used by large organizations or public libraries. *Id.* Yet, when assessing the limitations outside of the abstract concept under step two of *Alice* the panel did not pay attention to other practical uses for the fundamental concept outside of the claim. *Id.* at 1328–29. Instead, the panel dismissed the XML limitations that would have limited the indexing to computer searching because it was considered "generic computer implementation." *Id.* One would think that a significant portion of indexing must still be done in hard copy like with individual references such as legal treatises or in a book store which have references grouped by subject. *Id.* Other practical applications for the fundamental concept arguably included those that did not involve index tags having two sorts of tags, in this case, "domain tags" and "category tags" as required by the claims. *See id.* at 1325–27. The fundamental concept of indexing was likely not substantially foreclosed by the claims at least because manual searching systems and those not having two types of index tags for one reference could still be used even if the claims were eligible. *Id.* *See also* Electric Power Group v. Alstom, 830 F.3d 1350, 1351 (Fed. Cir. 2016). The subject claims pertained to a power grid management system. Under step two of *Alice* (and arguably under step one as well), the court considered whether conventional computing was employed or if the invention newly improved existing computing technology. *Id.* at

The panel did not undergo the preemption analysis instead stating that “preemption concerns are fully addressed and made moot” when eligibility determinations have already been made.²⁵⁹ However, the statement of the Court of Appeals panel in *Ariosa* lacked reference to statutory support and was prefaced by U.S. Supreme Court acknowledgement in *Alice* of how the principle of the preemption analysis “is the basis for the judicial exceptions to patentability.”²⁶⁰ Accordingly, it is not apparent that the federal judiciary agrees that the preemption analysis can or should rightly be abandoned when any (arguably diluted) version of the *Mayo-Alice* standard indicates ineligibility.

The Court of Appeals panel in *Return Mail, Inc. v. US Postal Service* took a similar position as to the determinativeness of the preemption analysis.²⁶¹

[W]e have consistently held that claims that are otherwise directed to patent-ineligible subject matter cannot be saved by arguing the absence of complete preemption. *See, e.g., Synopsys*, 839 F.3d at 1150 (holding that an argument about the absence of complete preemption “misses the mark”); *FairWarning*, 839 F.3d at 1098 (“But even assuming that the . . . patent does not preempt the field, its lack of preemption does not save these claims.”); *Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1320–31 (Fed. Cir. 2016) (same); *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1362–63 (Fed. Cir. 2015), *cert. denied*, 136 S. Ct. 701 (2015) (“[T]hat the claims do not preempt all price optimization or may be limited to [a particular] setting do not make them any less abstract.”). As we have explained, “questions on preemption are inherent in and resolved by the § 101 analysis.” *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015), *cert. denied*, 136 S. Ct. 2511 (2016). [] “While preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility.” *Id.* Arguments about the lack of preemption risk cannot save claims that are deemed to only be directed to patent ineligible subject matter.²⁶²

1353–56. The court pointed to the lack of “inventive device” or “inventive distribution of functionality” as reason to distinguish the claimed invention from inventions in caselaw finding other inventions eligible. *Id.* at 1355.

259. *Smart Sys. Innovations, LLC*, 873 F.3d at 1375 (citing *Ariosa Diagnostics v. Sequenom*, 788 F.3d 1371, 1379 (Fed Cir 2015)).

260. *Ariosa Diagnostics*, 788 F.3d at 1379 (quoting *Alice Corp. Pty. Ltd. v. CLS Bank International*, 134 S.Ct. 2347, 2354 (2014)) (“We have described the concern that drives this exclusionary principal as one of pre-emption.”).

261. *Return Mail, Inc. v. U.S. Postal Service*, 868 F.3d 1350, 1370 (Fed. Cir. 2017).

262. *Id.*

This post-*Mayo-Alice* precedent is arguably the court's self-serving attempt to bolster its enigmatic application of the *Mayo-Alice* framework. The federal judiciary has routinely relied on the preemption analysis in assessing whether an abstract concept is transformed by other claim elements.²⁶³ Furthermore, because the policy reasons for the doctrinal exclusions are so co-extensive with the preemption analysis it is difficult to image a scenario where claims do not substantially foreclose use of a fundamental concept but should still be considered ineligible if the invention is drawn to one of the four categories of patentable subject matter under § 101. Moreover, the courts' ability to remove otherwise eligible subject matter based upon doctrine is not unbridled and should be conservatively implemented.²⁶⁴ Courts' implementation of the doctrine should serve *established* policy reasons supporting the exclusions as articulated by courts. If satisfying the preemption test is not enough to prove eligibility—being that preemption is directly focused on preventing monopolies of fundamental concepts—it is mysterious as to what other policy reasons are being served by finding its litmus unsatisfactory?

*D. Industry “Mommies” and “Daddies” Keep Fighting! Most
Decisionmakers Do Not Even Agree on Eligibility*

It is frightening to witness the battles over eligibility these days occurring both inside and outside of the courtroom. Industry “parents” or decisionmakers constantly bicker over what subject matter should be considered eligible.²⁶⁵ Moreover, “brother and sister counsel” often have notions of eligibility as vastly differing as anything “useful” under *State Street* to an endorsement of a flexible interpretation of *Alice* calling nearly anything “abstract” and

263. See, e.g., *BASCOM Glob. Internet Servs. v. AT&T Mobility*, 827 F.3d 1341, 1350–52 (Fed. Cir. 2016) (implementing the preemption analysis under step 2 of *Alice* and finding the subject claims eligible).

264. *CLS Bank Int'l v. Alice Corp.*, 717 F.3d 1269, 1303–04 (Fed. Cir. 2013) (Rader, C.J., dissenting in part) (citing precedent) (as quoted above).

265. See, e.g., *CLS Bank Int'l*, 717 F.3d at 1269 (including four separate dissents (at least in part)); *Amdocs Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288 (Fed. Cir. 2016) (Reyna, J., dissenting); *Smart Sys. Innovations v. Chi. Transit Auth.*, 873 F.3d 1364 (Fed. Cir. 2017) (Linn, J., dissenting); *Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307 (Fed. Cir. 2016) (Stoll, J., dissenting); *DDR Holdings v. Hotels.com*, 773 F.3d 1245 (Fed. Cir. 2014) (Mayer, J., dissenting); *Visual Memory LLC v. NVIDIA*, 867 F.3d 1253 (Fed. Cir. 2017) (Hughes, J., dissenting).

ineligible.²⁶⁶ Some prefer § 101 as a prelude to patentability²⁶⁷ others believe § 101 should be considered after the requirements of novelty and nonobviousness are met.²⁶⁸ Even symposiums on proposed legislative changes result in as varied suggested amendments to the Code as: an exclusion of only completely mental processes and natural phenomenon, or codification of the preemption analysis, to restrictions as extensive as statements of a direct-natural-cause-and-effect relationship, processes involving animal cruelty or surgical procedures all together.²⁶⁹ While many discuss the need for change post-*Alice*, there is arguably little consensus on *exactly what* change is needed because practitioners often disagree about the eligibility of a single invention, what types of inventions should be eligible or what specific standard to use. Therefore, even if a new standard were put in place it may be difficult to secure majority endorsement.

E. The Mysterious Future of Human Innovation Requires Eligibility to be Unforeseeably Adaptable While the Law Needs Predictability

Another difficulty with obtaining a uniform standard on eligibility is that there is no practitioner crystal ball with which one can glaze into to see and consider all future human innovation in the States. There is significant mystery about what the future of innovation holds.²⁷⁰ Making a standard that will apply to all future innovation is difficult in terms of eligibility because, unlike §§ 102 and 103, there is no objective accounting for elements in the prior art on § 101 that guides an assessment on eligibility. Instead, one is asking what types of inventions should be eligible for patent without knowing the full gamut of what types of inventions will attempt to be patented or how they will compare to

266. See, e.g., Sobon, *supra* note 7. Compare Sobon, *supra* note 7 with Throbe, *supra* note 20, at 1029–30 (advocating for a broader use of §101 so as to preserve judicial and patent office resources by eliminating claims preliminarily on §101); see also *Patent Eligible Subject Matter: Report on Views and Recommendations from the Public*, *supra* note 204, at 59–63 (presenting eight different legislative proposals by patent stakeholders).

267. Throbe, *supra* note 20 (advocating for a broader use of §101 to preserve judicial and patent office resources by eliminating claims preliminarily on §101).

268. Lemley et al., *Life After Bilski*, 63 STAN. L. REV. 1315, 1342 (2011) (“We think a subject-matter-first approach is backwards. Our claim overbreadth approach requires careful attention to what the patentee invented, what came before, and what might come after. It can’t logically be applied in advance of thinking about the other issues in a patent case.”).

269. *Patent Eligible Subject Matter: Report on Views and Recommendations from the Public*, *supra* note 204, at 59–63 (presenting eight different legislative proposals by patent stakeholders).

270. *CLS Bank Int’l v. Alice Corp.*, 717 F.3d 1269, 1304 (Fed. Cir. 2013) (Rader, C.J., dissenting in part) (“It is particularly important that Section 101 not be read restrictively to exclude ‘unanticipated inventions’ because the most beneficial inventions are ‘often unforeseeable.’” (citing *Diamond v. Chakrabarty*, 447 U.S. 303, 316 (1980) and *J.E.M. Agric. Supply v. Pioneer Hi-Bred Int’l, Inc.*, 534 U.S. 124, 135 (2001))).

inventions in the courts' precedent.²⁷¹ This is why it is believed that the policy behind the judicial exclusions is our most prospective guide as to eligibility.

IV. PROPOSED SOLUTIONS

The policy behind the judicial exclusions needs to take centerstage and become the focus of any decision regarding eligibility so that practitioners have confidence in the doctrine. Moreover, because the inherent nature of abstract concepts is vague and abstract, claims that involve fundamental concepts can be pictorially represented against other practical uses of the fundamental concepts outside of what is claimed. Visual and objective representation of the foreclosed (or claimed) uses should facilitate agreement on that much and possibly quell much of the typical disagreements practitioners have about eligibility.

Finally, all three branches of the U.S. government have recently given attention to eligibility and suggestions on how each can further be utilized are detailed herein.

A. "Beginning With The End in Mind": Focusing on the Policy Reasons Behind the Doctrinal Exclusions

It may be beneficial to take the advice of a popular modern life coach in altering § 101 to "begin with the end in mind."²⁷² Often times, with life events it is easy to fall into the trap of being derailed when life's circumstances throw us a curveball. Section 101 and the *Alice-Mayo* standard has thrown more than its fair share of curveballs our way. Rather than sulk over one case or another it may be a good idea for practitioners to take a step back and ask ourselves, "okay, what is it that we should really care about on the judicial exclusions to eligibility again?" What is it that our "founding" judiciaries were seeking to weed out in the first instance when going rouge creating these exclusions? It was not technology-specific exclusions to patenting, nor was it for fear of (arguably) justly enriching non-practicing entities that usurp relatively broad patents after paying for them on the white market. Rather, the genesis of the doctrinal exclusions—as expressed in the relevant opinions—was in the courts' concerns about taking a fundamental building block to human ingenuity out of the sphere of tools others might use to solve problems.²⁷³ That should also be our focus today. Focusing on the origins of § 101's exclusions will hopefully

271. *Id.*

272. Stephen R. Covey, *The 7 Habits of Highly Effective People, Habit 2: Begin with the End in Mind*, FRANKLINCovey (2017), <https://www.stephencovey.com/7habits/7habits-habit2.php>.

273. *See, e.g.,* *Gottschalk v. Benson*, 409 U.S. 63, 67–68 (1972) (as quoted above).

quell many of the conflicts that arise from having an interest in a specific patent or technology.

A bright-line rule, which courts have shied away from,²⁷⁴ is not necessarily the answer. Preemption could be applied under a totality of the circumstances. However, despite its recent criticism from the Court of Appeals, the preemption doctrine continues to be the standard most aligned with the original policy considerations expressed by early courts. Respectfully, preemption of a fundamental concept is believed to be the reason for the season, so to speak.

B. Removing Abstractness by Pie Charting

Nearly all technical solutions will involve a fundamental concept.²⁷⁵ The concern on § 101 is not the involvement of a fundamental concept but a substantial foreclosure of said concept.²⁷⁶ One way to reduce the abstractness of assessing an abstract concept is by representing it visually. Like a Venn diagram for large numbers or intangible concepts, the foreclosure of a fundamental concept can be represented pictorially.

My proposed method for pie charting claims that involve a fundamental concept calls for first identifying the fundamental concept. After the concept is identified, one should challenge ones labeling of the concept as “fundamental.” Broadly claimed inventions can appear to be drawn to a fundamental concept on first blush. As a check one might ask, “why is the concept fundamental in the first place” or “why would industry participants need to use this portion of the invention to function in the relevant market?” Once the fundamental concept is accurately identified, a circle can be drawn to represent the entire universe of practical applications for the fundamental concept (as shown below with respect to Figures 1-4). The circle represents every known way in which a fundamental concept can be employed. Though the illustrated examples below guesstimate plausible uses, expert testimony can be used to determine the plausible uses for a fundamental concept.

Next, the practical uses that the claim does *not* foreclose others from using are to be represented on the pie chart. Unclaimed practical applications can be identified by referring to claim limitations in the negative—utility in the free

274. *Enfish v. Microsoft*, 822 F.3d 1327, 1339 (Fed. Cir. 2016) (quoting *Bilski v. Kappos*, 130 S.Ct. 3218 (2010) against the use of the machine-or-transformation test as a sole determinant of eligibility); *CLS Bank v. Alice*, 717 F.3d 1269, 1281 (Fed. Cir. 2013) (en banc) (“Finally, the cases urge a flexible, claim-by-claim approach to subject-matter eligibility that avoids rigid line drawing. Bright-line rules may be simple to apply, but they are often impractical and counterproductive when applied to § 101.”).

275. *See Smart Sys. Innovations, LLC v. Chi. Transit Auth.*, 873 F.3d 1364, 1378 (Fed. Cir. 2017) (Linn, J., dissenting) (as quoted above).

276. *See, e.g., Gottschalk*, 409 U.S. at 67–68 (as quoted above).

domain is inapposite to what is claimed. Like an infringement analysis, where practical applications that do not incorporate claim limitation(s) are generally outside of the scope of the claims, utility for the fundamental concept not claimed remains available to the public. Each practical application should be represented as a percentage of the overall plausible uses for the fundamental concept. The percentages can be guesstimated or derived with the assistance of an industry expert who, based upon experience, opines as to how often the fundamental concept can be used in any given practical application. By visually illustrating the percentage of uses outside of the claim scope, it becomes objectively clear how miserly, or conversely greedy, a patentee is being with respect to “the pie”: practical implementations of a fundamental concept.

Assessing how much is too much can be quantitatively determined or qualitatively assessed. For example, one might say that anytime a patent applicant seeks to foreclose seventy percent or more of the practical utility of a fundamental concept, the patentee is really seeking to monopolize use of the fundamental concept and that is excessive, thus the claims should not be eligible for patent. Or, one might compare an invention to pie-charts for the inventions in precedential cases and thereby gauge whether the claims are analogous to prior eligible or ineligible cases.

Pie charting is applied to some familiar precedent hereinbelow. In the following examples the practical applications covered by the claims are shaded in. Moreover, while pie-charting is believed to be one of the more helpful ways of depicting the universe of practical applications for a fundamental concept, it is possible that other graphic representations may be used as well like bars for a fuel gauge or floors to a building or structure. The “percentage” of practical uses foreclosed by the claims are to be represented against the full measure of known practical uses for the fundamental concept.

Pie-charting is applied below with respect to the following few hallmark eligibility cases: *Mackay Radio & Telegraph*, *Gottschalk v. Benson*, *Diamond v. Diehr* and *Bilski v. Kappos*. This test admittedly does not align with some precedent, however, like *Parker v. Flook*, which arguably does not respect the preemption analysis, and *Funk Brothers*. *Mayo's* diagnostic method also fails inconsistent with this pie-charting method and arguably the preemption analysis if the fundamental concept, or law of nature, in *Mayo* can be fairly characterized as determining drug efficacy in general, not with respect to a specific drug.²⁷⁷ This pie-charting method is believed to be applicable to inventions in modern U.S. Court of Appeals cases on eligibility as well, however, the results of pie charting often do not comport with recent precedent applying *Mayo-Alice* which this article posits is further evidence of the need for change

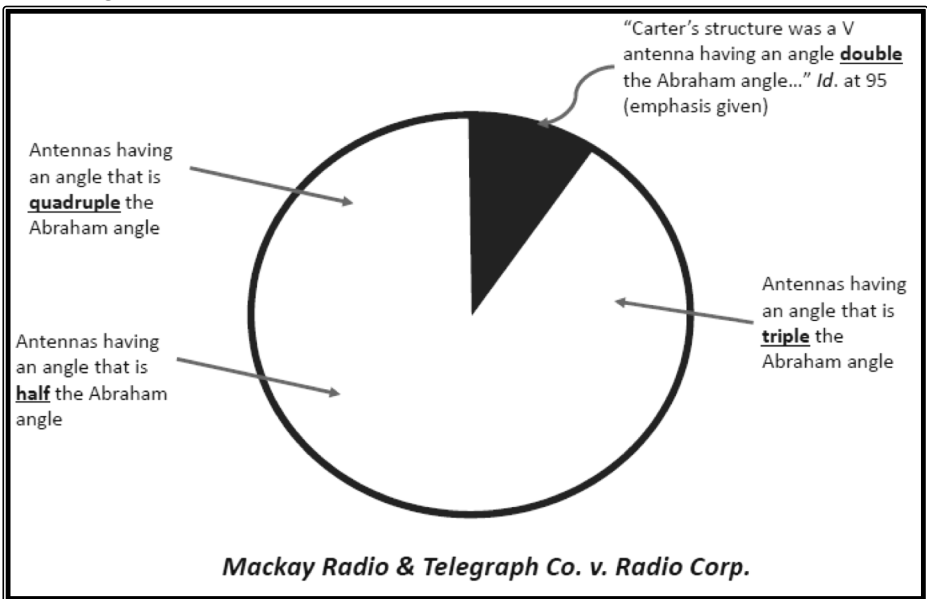


FIGURE 1: PIE CHART FOR MACKAY RADIO & TELEGRAPH

Figure 1 relates to a pie chart drawn for *MacKay Radio & Telegraph Co. v. Radio Corp.* One will recall that the invention in *MacKay Radio* involved product claims that related to a radio antenna system with conductors angularly disposed according to a mathematical formula to optimize reception. The fundamental concept in *MacKay Radio* was the Abraham angle for the angular disposition of two antenna prongs with respect to each other. The claims

277. See *supra* Section III(B).

covered antennas where the angular disposition of antenna prongs was twice the Abraham angle but not arrangements with either a 3:1, 4:1 or 0.5:1 relationship to the Abraham angle.²⁷⁸ If we can assume that each ratio is similarly practical in utility (i.e., potential frequency of use) then with more than two options, we can guesstimate that claims to a 2:1 ratio (as in *MacKay Radio*) are likely a relatively small minority of possible practical uses for the Abraham angle in antenna construction. Figure 1 is a pictorial representation of the preemption analysis; it suggests that the patentee did not intend to monopolize substantially all uses of the fundamental concept. The U.S. Supreme Court found the *MacKay Radio* claims eligible for patent employing the preemption analysis.

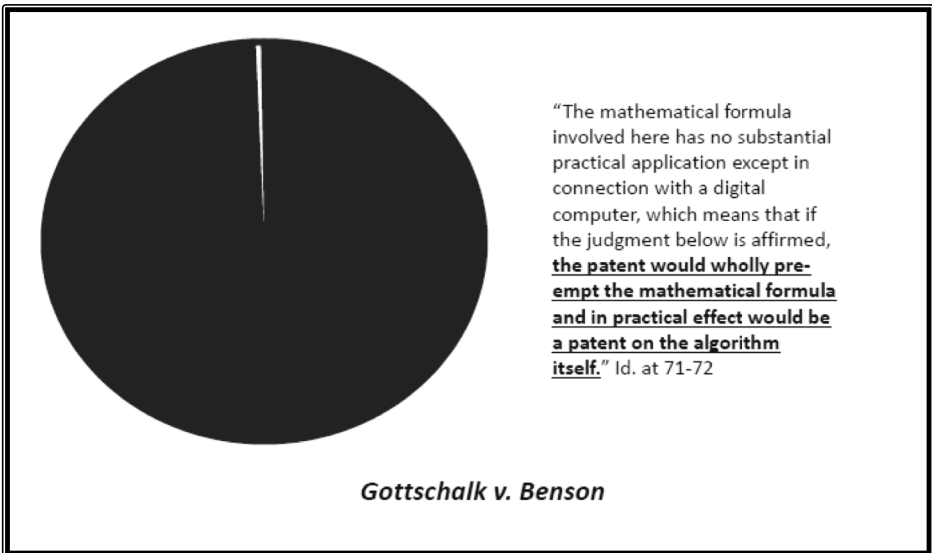


FIGURE 2: PIE CHART FOR *GOTTSCHALK V. BENSON*

Figure 2 relates to a pie chart drawn for *Gottschalk v. Benson*, a case where the U.S. Supreme court found the claimed invention ineligible for patent.²⁷⁹ One will recall that the invention in *Gottschalk* involved a data conversion method that converted binary-coded decimals to digital values. The Court reasoned that the claimed method was so broad that it was drawn to a mathematical formula or algorithm itself.²⁸⁰ The concept was considered fundamental because for digital processing—a popular form of computing—

278. *Mackay Radio & Telegraph Co. v. Radio Corp. of America*, 306 U.S. 86 (1939) (reciting claim 15).

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

280. *Id.* at 68, 71–72.

most if not all types of numbers would require conversion.²⁸¹ The Court in *Gottschalk* concentrated primarily on the lack of practical uses for the fundamental concepts *outside* of the claim scope. Indeed, because the claims were so broadly written to the conversion method it is difficult to imagine even one practical application for conversion that would not employ the claimed algorithm. Thus, the graph in Figure 2 is nearly entirely shaded in by what the patent applicant sought to cover in *Gottschalk*. This pictorial representation of the preemption analysis would suggest that the patentee did intend to monopolize substantially all uses of the fundamental concept.

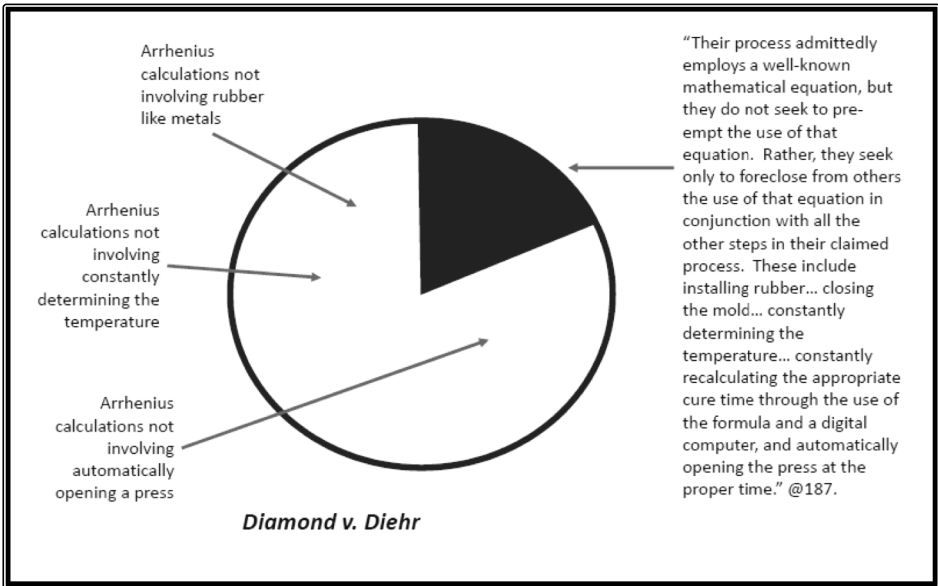


FIGURE 3: PIE CHART FOR *DIAMOND V. DIEHR*

Figure 3 relates to a pie chart drawn for *Diamond v. Diehr*, a case where the U.S. Supreme Court found the claimed invention eligible for patent.²⁸² The invention in *Diamond v. Diehr* involved method claims for curing rubber products using a known mathematical formula – the Arrhenius equation. The equation was fundamental because it expressed a relationship for heat transfer in chemical reactions. In its analysis, the Court expressly listed the steps of the method that did *not* involve the mathematical formula thereby showcasing other practical uses for the Arrhenius equation left outside of the claim scope. Processes that do not include “installing rubber in a press,” e.g., where other

281. *Id.* at 71–72.

282. *Diamond v. Diehr*, 50 U.S. 175, 187–93 (1981).

materials are being cured, that do not constantly check the temperature or automatically open the mold when it is estimated that curing is complete would not have been foreclosed by the *Diehr* claims.²⁸³ If we can assume that each embodiment of a claim limitation has relatively similar practical utility then with more than two options, we can guesstimate that the claimed method likely represented a minority of possible practical uses for the Arrhenius equation. The pictorial representation in Figure 3 of the preemption analysis would suggest that the patentee did *not* intend to monopolize substantially all uses of the fundamental concept in *Diamond v. Diehr*, where the claimed invention was ultimately found eligible for patent.

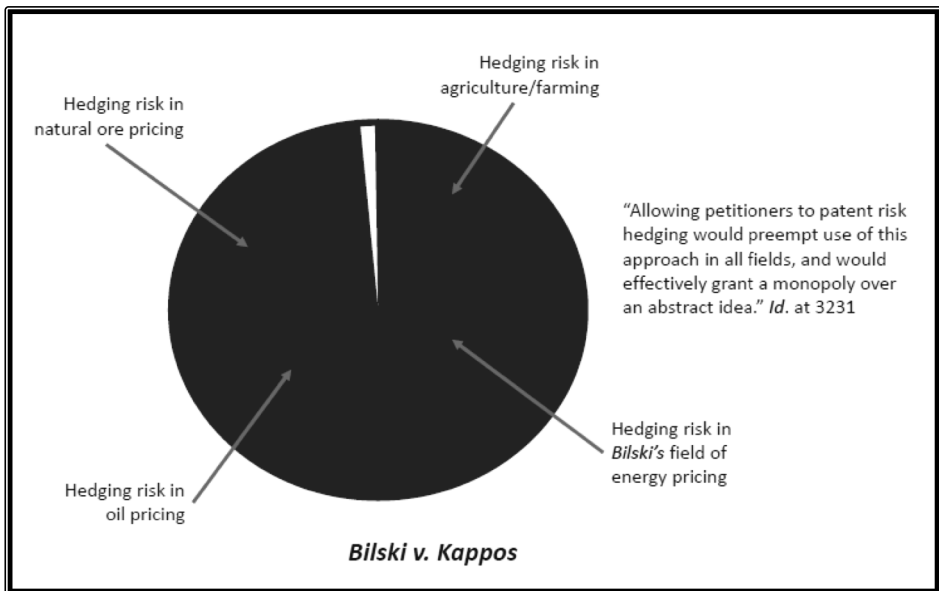


FIGURE 4: PIE CHART FOR *BILSKI V. KAPPOS*

Finally, Figure 4 relates to a pie chart drawn for *Bilski v. Kappos* a case where the U.S. Supreme court found the claimed invention ineligible for patent.²⁸⁴ The invention in *Bilski* involved a patent application for a method of reducing or “hedging” risk in commodity purchasing. The concept of hedging risk was considered fundamental to economics because it allows for alternative pricing in commodity purchasing, thus diversifying risks.²⁸⁵ Since the method

283. *Id.* at 187 (quoting language in Figure 3).

284. *Bilski v. Kappos*, 130 S.Ct. 3218, 3229–31 (2010).

285. *Id.*

of hedging was not restricted to a particular field of use, like natural ore pricing as the Applicant intended to use the concept, or anything more specific than hedging by providing alternative pricing it was determined to preempt nearly all practical uses of the concept as claimed.²⁸⁶ Indeed, because the claims were so broadly written it is difficult to imagine an industry where the *Bilski* claims would not be infringed when risk is hedged through alternative pricing. Thus, the graph in Figure 4 is nearly entirely shaded in by what the patent applicant sought to cover in *Bilski*. This pictorial representation of the preemption analysis would suggest that the patentee did intend to monopolize substantially all uses of hedging risk with alternative commodity pricing.

C. Legislative Remedies

Many patent practitioners have proposed legislative renovations as a remedy to the dysfunction of eligibility post-*Mayo & Alice*. It would seem logical to alter the Code where there is ambiguity in the industry about the standard, however, while practitioners continue to disagree about eligible subject matter a meaningful legislative solution seems distant. Indeed, some acclaimed practitioners believe that §101 should be liberally applied and interpreted to allow nearly every machine, process, article of manufacture and composition of matter.²⁸⁷ While other equally esteemed practitioners interpret the doctrinal exclusions so narrowly that only considerably inventive innovations are considered eligible for patenting.²⁸⁸

There has also been a myriad of legislative proposals on § 101's exclusions.²⁸⁹ One practitioner proposal suggests placing more accountability on courts to cite *Daubert* like evidence when stating that the invention either involves or is directed to a fundamental concept.²⁹⁰

Narrowing Definitions

100(k) A “law of nature” means an express statement of a physical, causal relationship governing the natural properties or behaviors of

286. *Id.*

287. See, e.g., Sobon, *supra* note 7 (positing an eligibility guide as broad as anything “useful” by, *inter alia*, quoting prior Judge Rich as to whether §101 should even be considered a condition to patentability: “[a]s Judge Rich underscored in *Bergy*, Section ‘101 was never intended to be a “standard of patentability”).

288. See *supra* Section IV(C).

289. See, e.g., *Twenty-Two Ways Congress Can Save Section 101*, *supra* note 55; *Patent Eligible Subject Matter: Report on Views and Recommendations from the Public*, *supra* note 204, at 59–63 (presenting eight different legislative proposals by patent stakeholders); Lefstin et al., *supra* note 10, at 11–15; Sobon, *supra* note 7.

290. See, e.g., *Twenty-Two Ways Congress Can Save Section 101*, *supra* note 55, at 2 (emphasis added).

physical objects, and that is recognized by the relevant scientific community.

100(l) A “natural product” means a material, substance, composition as entirely as it appears in nature without any processing by human agency, and excludes any purified, simulated, copied, isolated, replicated product.

100(m) An “abstract idea” means a purely mental concept that is incapable of any physical embodiment and excludes any process performed by a computer program.

This approach cabins the judicial exceptions directly, to prevent the courts from expanding them in haphazard and often scientifically incorrect ways. As to “laws of nature,” the proposed definition is consistent with how many scientists regard “scientific” or “physical laws.” *Grounding the definition in being_“recognized by the relevant scientific community,” requires a court to receive scientific evidence under the Daubert standard before finding a claim directed to_a law of nature, and not to rely on its own lay belief of what constitutes a law of nature.*²⁹¹

Currently, it seems too easy to coin a concept “fundamental;” even if the Code is not changed it makes sense for courts to rely on *Daubert* experts in deciding whether a concept is fundamental in determining how many practical applications are foreclosed by a claimed invention.

Another proposal suggests explicitly indicating the irrelevance of other sections of the Code in § 101.²⁹² This might reduce treatment of conventionality under step two of *Mayo-Alice* as a novelty or nonobviousness standard.

Other proposals suggest including language in the Code on the preemption doctrine and foreclosure of “all practical applications of the [fundamental concept].”²⁹³ My recommendation would be to consider whether the claims substantially or “chiefly preempt the utility of an informational cornerstone.”

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

291. *Id.*

292. Sobon, *supra* note 7 (suggesting that “[f]or the purposes of this section, it is irrelevant whether the invention or any of its claimed elements, is otherwise unpatentable under section 102, 103 or 112”).

293. *Twenty-Two Ways Congress Can Save Section 101*, *supra* note 55.

conditions and requirements of this title. *A patent, however, shall not be available for inventions or discoveries that would, if granted, chiefly preempt the utility of an informational cornerstone.*

“Informational cornerstones” are: laws of nature, natural phenomena, fundamental economic principles, human activity and mathematical relationships.

Whether an invention or discovery would “chiefly preempt” the utility of an informational cornerstone involves an assessment of what uses remain for the informational cornerstone outside of the claimed invention or discovery. That_which is claimed in addition to the informational cornerstone is relevant to the consideration of what uses remain for the informational cornerstone outside of the claimed invention or discovery. However, the generic nature of claim elements is irrelevant to eligibility.

Since the novelty requirement is addressed in § 102, I would remove “new” from § 101. The removal of “new” will assist practitioners in not employing other sections of the Code when analyzing claims under § 101. The “informational cornerstones” language speaks to existing doctrinal exceptions. “Abstract concepts” will be treated as any other informational cornerstone and the informational cornerstones will naturally be identified with the initial preemption inquiry. However, it is believed that calling something an “abstract idea” is too undefined and so doctrinal examples of “abstract idea” are spelled out in the proposed code.

The “idea itself” exception to eligibility under the abstract-idea doctrine can perhaps be addressed by existing § 112, (a) or ¶1, written description and enablement requirements. The theory is that if a concept meets the written description and enablement requirements it may not be merely an “idea itself.” Perhaps an “idea itself” will be claimed using functional claim language that may be interpreted under § 112, (f) or ¶6 and its scope then limited to the structure and equivalents in the specification.

The third paragraph of my proposed legislation on “uses [that] remain for the informational cornerstone outside of the claimed invention or discovery” speaks to the preemption doctrine. The what is “claimed in addition to the informational cornerstone” language speaks to the second step in *Mayo-Alice*. Since “generic” is too similar to novelty or nonobviousness perhaps the same needs to be “overruled” by the Code.

D. Patent Office Remedies

Getting cases allowed over § 101 rejections remains a puzzle for many practitioners writing patent applications in certain art areas like e-commerce.²⁹⁴ The Office has published a series of exemplary cases and guidelines on § 101 on its website related to *Mayo-Alice* and recent Court of Appeals decisions which has been helpful.²⁹⁵ Still, as the two-part test of *Alice* continues to be “erratically” applied by the courts there is only so much that the Office can do.²⁹⁶

One practitioner suggests providing detailed reasons for allowance in PTO office actions.²⁹⁷

One of the major challenges of figuring out why some cases are being allowed and some are not is that only a few examiners give a detailed reason for why a 101 rejection was overcome in their notices of allowance. Most examiners either give a cursory reason (e.g. “the applicant’s arguments are persuasive”) or no reason at all.²⁹⁸

This seems like a reasonable accommodation. Detailed reasons for allowance on § 101—at least until there is more industry consistency—can bring us towards a more notorious standard.

E. Judicial Remedies Are, No Offense, The Least Likely Candidate

More consistency on § 101 will require collaboration between all three branches of the U.S. government. However, our historical reliance on the courts to provide practical guidance on the judicial exclusions has not served the public well recently. It is not entirely the judiciary’s fault, courts by design are not able to “legislate” change through advisory opinions but must decide specific “cases and controversies.”²⁹⁹ Each case before the courts regards a particular invention, claimed in its own unique way.³⁰⁰

294. See, e.g., Nowotarski, *supra* note 200.

295. *Subject Matter Eligibility*, U.S. PATENT AND TRADEMARK OFFICE, (last modified Feb. 1, 2019), <https://www.uspto.gov/patent/laws-and-regulations/examination-policy/subject-matter-eligibility>.

296. *BASCOM Glob. Internet Servs. v. AT&T Mobility*, 827 F.3d 1341, 1353-54 (Fed. Cir. 2016) (Newman, J., concurring) (as quoted above).

297. See, e.g., Nowotarski, *supra* note 200.

298. *Id.*

299. U.S. CONST. art. III, § 2.

300. Denise Crouch, *Judge Lourie and Newman: Call for Congress to Act*, PATENTLY-O (June 1, 2018), <https://patentlyo.com/patent/2018/06/lourie-newman-congress.html> (emphasis added).

As part of the court's *en banc* denial in *Berkheimer v. HP Inc.*, [Case No.: 2017-1437 (Fed. Cir. May 31, 2018)], Judges Lourie and Newman joined together in an interesting concurring opinion that argues for some higher power to revisit the doctrine of patent eligibility to provide clarification and policy guidance. The opinion is republished below:...

I believe the law needs clarification by higher authority, perhaps by Congress, to work its way out of what so many in the innovation field consider are § 101 problems. **Individual cases, whether heard by this court or the Supreme Court, are imperfect vehicles for enunciating broad principles because they are limited to the facts presented. Section 101 issues certainly require attention beyond the power of the court.**³⁰¹

Since courts are literally tasked with deciding the eligibility of a specific claimed invention (and not others) it is doubtful that a single judicial opinion will generate a sufficient eligibility litmus for all future human ingenuity.³⁰²

At least with respect to the Court of Appeals and Patent Trial and Appeal Board, cases are typically staffed in three-judge panels unless the case is reviewed *en banc* or the panel is otherwise expanded. Sitting judiciaries vary widely on eligibility such that the composition of a panel could change the determination of eligibility.³⁰³ Thus, essentially the same invention could be reviewed by one set of judges and found eligible and another set of judges and be found ineligible.

Courts can, however, continue to dispel rumors about what types of inventions might categorically be ineligible for patent. Historically, court opinions have identified general categories of inventions that should not necessarily be found ineligible like in *Bilski* (with business methods) and *Gottschalk* (with software). Said cases, however, have done little to let the public know what types of business methods or computer software courts should consider eligible.

301. *Id.*

302. *Id.*

303. *See, e.g.*, *CLS Bank Int'l v. Alice Corp.*, 717 F.3d 1269, 1321 (Fed. Cir. 2013) (including four dissents (at least in part)). Hon. J. Newman predicted that the Alice standard increase "opportunistic litigation, whose result [would] depend on the random selection of the panel." *Id.* *See also*, *Amdocs Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288 (Fed. Cir. 2016) (Reyna, J., dissenting); *Smart Sys. Innovations v. Chi. Transit Auth.*, 873 F.3d 1364 (Fed. Cir. 2017) (Linn, J., dissenting); *Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307 (Fed. Cir. 2016) (Stoll, J., dissenting); *DDR Holdings v. Hotels.com*, 773 F.3d 1245 (Fed. Cir. 2014) (Mayer, J., dissenting); and *Visual Memory LLC v. NVIDIA*, 867 F.3d 1253 (Fed. Cir. 2017) (Hughes, J., dissenting).

Courts have also in some instances been helpful in identifying the policy concerns behind the judicial exclusions. Continuing to do the same in alignment with the original aim of the exclusions is imperative. Moreover, courts can insist that litigants provide expert testimony on issues like: (i) whether a concept is fundamental, or (ii) what practical applications there are for a fundamental concept.

Some Court of Appeals panels have indicated that the preemption analysis is not necessary where a court has already come to a determination of eligibility.³⁰⁴ However, it is difficult to see what policy concerns a non-preemption-type analysis on § 101's exclusions would serve. It is likely that courts need to return the preemption doctrine to centerstage.

304. *See, e.g., Return Mail, Inc. v. U.S. Postal Serv.*, 868 F.3d 1350, 1369–71 (Fed. Cir. 2017).