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Note

***CLS Bank International v. Alice Corp. Pty.* at the Federal Circuit: The Dilemma Presented by Computer Implementation of Abstract Ideas and How the Supreme Court Missed a Chance to Clear It Up**

*Nathan Peske**

The Alice Corporation held a series of patents related to a computerized system to mitigate the risk of non-payment in the settlement of trading obligations.¹ CLS Bank International filed suit seeking a judgment that Alice Corp.'s patents were invalid.² The district court found the patents to be invalid because they attempted to claim an abstract idea³ rather than a specific "process, machine, manufacture, or composition of matter."⁴ The United States Court of Appeals for the Federal Circuit reversed the district court decision,⁵ but on rehearing en banc the Federal Circuit affirmed the district court's holding that Alice Corp.'s patents failed to include patent-eligible subject matter.⁶ The Supreme Court affirmed the en banc Federal Circuit decision.⁷

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1. *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2349–50 (2014).
2. *CLS Bank Int'l v. Alice Corp. Pty.*, 768 F. Supp. 2d 221, 228 (D.D.C. 2011).
3. *Id.* at 255.
4. 35 U.S.C. § 101 (2012).
5. *CLS Bank Int'l v. Alice Corp. Pty.*, 685 F.3d 1341, 1356 (Fed. Cir. 2012).
6. *CLS Bank Int'l v. Alice Corp. Pty.*, 717 F.3d 1269, 1292 (Fed. Cir. 2013).
7. *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2349–50 (2014) ("Because the claims are drawn to a patent-ineligible abstract idea, they are not patent eligible under § 101.").

CLS Bank International v. Alice Corp. Pty. illustrates the conflicted state of case law on the patentability of software.⁸ Patents are not allowed to claim abstract ideas.⁹ Software, by its very nature, must incorporate abstract ideas.¹⁰ There is currently no defined test for whether a patent that incorporates abstract ideas impermissibly claims those ideas.¹¹ This case potentially called into doubt the validity of hundreds of thousands of software patents.¹²

This Comment analyzes the criteria for determining when a patent impermissibly claims an abstract idea. Section I examines the relevant patent law and controlling cases analyzing patents that incorporate abstract ideas. Section II describes the Federal Circuit's opinion in *CLS Bank International v. Alice Corp. Pty.*¹³ Section III analyzes the Supreme Court's subsequent decision and proposes a three-prong test to evaluate whether a patent that incorporates an abstract idea is valid or not. This Comment concludes that the Supreme Court should adopt the proposed three-prong test as a clear standard for evaluating patents that claim an abstract idea.

8. See *id.*; Fenwick & West, LLP, *Federal Circuit Undecided About Whether Software Is Patentable?*, LEXOLOGY (June 25, 2013), <http://www.lexology.com/library/detail.aspx?g=0fa7d1d4-b101-4eaf-85f9-4ea5afb1c6c8> ("The result of the various opinions in *CLS Bank* is that, on appeal, the patentability of a software patent will vary with the specific composition of the appellate panel.").

9. See, e.g., *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 116 (1853) ("[T]he discovery of a principle in natural philosophy or physical science, is not patentable.").

10. See, e.g., *CLS Bank Int'l*, 717 F.3d at 1320–21 (acknowledging that although software may be more of an abstract idea compared to a physical computer, adding the software to a computer does not convert the completed product into an abstract idea).

11. E.g., Fenwick & West, LLP, *supra* note 8 ("Furthermore, there was no majority agreement on what is the proper test for determining whether claims are invalid under § 101.").

12. *CLS Bank Int'l*, 717 F.3d at 1313 ("And let's be clear: if all of these claims, including the system claims, are not patent-eligible, this case is the death of hundreds of thousands of patents . . .").

13. *Id.*

I. HISTORY OF UNITED STATES PATENT LAW

A patent on an invention is defined as:

[A]n intellectual property right granted by the Government of the United States of America to an inventor ‘to exclude others from making, using, offering for sale, or selling the invention throughout the United States or importing the invention into the United States’ for a limited time in exchange for public disclosure of the invention when the patent is granted.¹⁴

Patents encourage new and useful inventions by granting the inventors the legal rights to their invention.¹⁵ This prevents a competitor from promptly copying and stealing an inventor’s work.¹⁶ Patent law comes from three sources: the original grant of authority in the Constitution, statutory authority under § 101 of U.S.C. Title 35 and subsequent case law by federal courts.¹⁷

A. UNITED STATES CONSTITUTION

During the Medieval period in England the sovereign granted patents on an *ad hoc* basis.¹⁸ These patents could be granted for already existing items and were often more to benefit the purse of the sovereign than the public good.¹⁹ In 1624 the English Parliament sought to tip the scales in favor of the public good by passing the Statute of Monopolies, which limited patents to fourteen years and only for “manners of new manufacture.”²⁰ The Statute of Monopolies also prohibited patents that were “mischievous to the state” or “generally

14. *What Is a Patent?*, U.S. PAT. TRADEMARK OFF., <http://www.uspto.gov/patents/index.jsp> (last visited Nov. 4, 2014).

15. Aaron Larson, *Patent Law*, EXPERTLAW (Sept. 2003), http://www.expertlaw.com/library/intellectual_property/patent_law.html.

16. *Id.*

17. See Debra D. Peterson, *Can This Brokered Marriage Be Saved? The Changing Relationship Between the Supreme Court and Federal Circuit in Patent Law Jurisprudence*, 2 J. MARSHALL REV. INTELL. PROP. L. 201, 202 (2003).

18. *A Brief History of the Patent Law of the United States*, LADAS & PARRY LLP (May 7, 2014), <http://ladas.com/a-brief-history-of-the-patent-law-of-the-united-states-2> [hereinafter *Brief History*] (“In medieval times, the grant of exclusive rights ‘monopolies’ by the sovereign had been a convenient way in which the sovereign could raise money without the need to resort to taxation. Such grants were common in many European countries.”).

19. *Id.*

20. *Id.*

inconvenient.”²¹ French patent law, however, chose to focus on an inventor’s right to his or her invention over the general public good.²² The French viewed invention as “the presentation of a service rendered to Society” and thought it “just that he who has rendered this service should be compensated by Society that received it.”²³

In the United States the granting of patents is one of the Enumerated Powers given to Congress.²⁴ Article I, Section 8 states that Congress shall have the power “To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”²⁵ This approach sought to organize the often inconsistent system of granting patents and balance the public interest of acquiring new and novel inventions against the private interest of inventors to retain the rights to their invention.²⁶

B. UNITED STATES CODE TITLE 35

Pursuant to the specific grant of Congressional authority in the Constitution, patents in the United States are codified in Title 35 of the United States Code.²⁷ Sections 101 through 103 of Title 35 lay out specific requirements for a patent.²⁸

Section 101 spells out what types of inventions can be patented.²⁹ It states that “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition

21. *Id.*

22. *Id.*

23. *Id.*

24. *See* U.S. CONST. art. I, § 8, cl. 8.

25. *Id.*; *see also* *Bilski v. Kappos*, 561 U.S. 593, 630–35 (2010) (chronicling the history of “Early American Patent Law”).

26. *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 146 (1989) (“The Patent Clause itself reflects a balance between the need to encourage innovation and the avoidance of monopolies which stifle competition without any concomitant advance in the ‘Progress of Science and useful Arts.’”) (quoting U.S. CONST. art. I, § 8, cl. 8); *Brief History*, *supra* note 18.

27. *E.g.*, 35 U.S.C. §§ 101, 102, 103 (2012).

28. *See* 35 U.S.C. §§ 101, 102, 103.

29. 35 U.S.C. § 101; Holland King, *Software Patentability After Prometheus*, 30 GA. ST. U. L. REV. 1111, 1114 (2014) (“Generally, the well-known maxim regarding subject matter patent eligibility is that “anything under the sun that is made by man” is patentable subject matter under 35 U.S.C § 101.”) (citations omitted).

of matter, or any new and useful improvement thereof, may obtain a patent”³⁰ This statutory language has repeatedly been interpreted by the Supreme Court as barring the patenting of abstract ideas.³¹ The Court recognizes that giving a patent holder an exclusive right to abstract ideas or general scientific principles could perhaps stimulate his or her research, but it would severely limit future invention and research by others in that area.³²

Section 102 is referred to as the novelty requirement.³³ It states that a person shall receive a patent unless the invention is already patented, has been published, or is in public use.³⁴ This ensures that inventors are disclosing new and novel inventions and not patenting something that is already known or in use by others.³⁵

Section 103 is the obviousness requirement.³⁶ Section 103 requires that:

A patent . . . may not be obtained . . . if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.³⁷

30. 35 U.S.C. § 101.

31. Rebecca Hanovice & Jonathan A. Muenkel, *US Patent Law and the Supreme Court: A Year in Review*, ACC DOCKET, Nov. 2014, at 90, 91–100; William J. Cass & Chad A. Denver, *Overcoming Section 101 Challenges For Patent Holders*, CORP. COUNS., June 2012, at 1, 1, available at <http://www.ipo.org/wp-content/uploads/2013/03/Overcomingsection101challenges1.pdf> (“A unanimous Court in both decisions reaffirmed that U.S. patent law prohibits patent protection for abstract ideas, laws of nature, and natural phenomena.”).

32. Cass & Denver, *supra* note 31 (“A rigid rule or categorical ban on patents for ‘inventions in areas not contemplated by Congress,’ would frustrate the purpose of patent law.”) (citation omitted).

33. Mike Ervin, *What Is 35 USC 102 and Patent Novelty?*, BUS. PATS., <http://www.the-business-of-patents.com/35-usc-102.html> (last visited Nov. 21, 2014).

34. 35 U.S.C. § 102 (2012).

35. See Christi J. Guerrini, *Defining Patent Quality*, 82 FORDHAM L. REV. 3091, 3098 & nn.22–27 (2014) (summarizing commentary about the perceived differences between patent validity and assessment of patent quality); Ervin, *supra* note 33.

36. *35 USC 103: What Is Obviousness? It Is Not Always Obvious*, BUS. PATS., <http://www.the-business-of-patents.com/35-usc-103.html> (last visited Nov. 20, 2014).

37. 35 U.S.C. § 103 (2012).

A patent cannot be obtained if, based on what was known in that field at the time, the invention would be obvious to someone familiar with that field.³⁸ While an invention may be useful and novel it is not in the public interest to allow an inventor to make and then patent a trivial improvement.³⁹

C. CASE LAW

The case law surrounding patents has consistently held that abstract ideas are not patentable, with few exceptions.⁴⁰ One of the oldest cases in this area involves the inventor of the venerable telegraph, Samuel Morse.⁴¹ Morse was the first person to invent an electric telegraph that could transmit signals over long distances.⁴² In his patent for the device—in addition to the claims describing the device—Morse made the following claim:

I do not propose to limit myself to the specific machinery or parts of machinery described in the foregoing specification and claims; the essence of my invention being the use of the motive power of the electric or galvanic current, which I call electro-magnetism, however developed, for making or printing intelligible characters, signs or letters at any distances, being a new application of that power, of which I claim to be the first inventor or discoverer.⁴³

Morse was claiming not only his own device but also any system using electric current to transmit signals at a distance.⁴⁴ In *O'Reilly v. Morse*,⁴⁵ the Supreme Court

38. 35 USC 103: *What Is Obviousness? It Is Not Always Obvious*, *supra* note 36. A thorough discussion of § 103 is beyond the scope of this Comment. For additional background materials on obviousness and nonobviousness, see Christopher A. Cotropia, *Predictability and Nonobviousness in Patent Law After KSR*, 20 MICH. TELECOMM. & TECH. L. REV. 391, 395–437 (2014).

39. See Tun-Jen Chiang, *A Cost-Benefit Approach to Patent Obviousness*, 82 ST. JOHN'S L. REV. 39, 41 (2008) (stating that the true benefit of patents is not the creation of an invention, but rather the acceleration of inventions incentivized by the patent system).

40. See Jeremy D. Roux, *The Supreme Court and § 101 Jurisprudence: Reconciling Subject-Matter Patentability Standards and the Abstract Idea Exception*, 2014 U. ILL. L. REV. 629, 639 (citing *Diamond v. Diehr*, 450 U.S. 1048, 1056 (1981)).

41. *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 62 (1853).

42. *Id.* (crediting Morse as “the first and original inventor of the electromagnetic telegraph”); see Mary Bellis, *The Communication Revolution: Samuel Morse & the Telegraph*, ABOUT.COM INVENTORS, <http://inventors.about.com/od/indrevolution/a/telegraph.htm> (last visited Oct. 22, 2014).

43. *Morse*, 56 U.S. (15 How.) at 86.

44. *Id.* at 87.

invalidated Morse's famous eighth claim by holding that an abstract idea or natural principle is not patentable.⁴⁶

A case in the early 20th century, *Funk Bros. Seed Co. v. Kalo Inoculant Co.*,⁴⁷ had a similar holding to *Morse*.⁴⁸ The case dealt with certain bacteria that allowed crops to fix atmospheric nitrogen for their use.⁴⁹ Different types of bacteria were required for different crops and mixing the bacteria inhibited nitrogen fixing.⁵⁰ Kalo Inoculant Co. discovered a series of the nitrogen-fixing bacteria that did not interfere with each other and could be used on any kind of crop.⁵¹ When Kalo Inoculant Co. sued to stop infringement of its bacteria mix patent the Supreme Court invalidated the patent as lacking invention and merely an application of natural principles.⁵² The Court held that the phenomena of nature "are part of the storehouse of knowledge of all men"⁵³ and should be "free to all men and reserved exclusively to none."⁵⁴

In *Gottschalk v. Benson* the Supreme Court considered a computer programmed to execute an abstract idea.⁵⁵ Benson filed a patent for a program to convert binary-coded decimal numbers into pure binary numbers.⁵⁶ The Court acknowledged that "[a]n idea of itself is not patentable"⁵⁷ and that the abstract mathematical formula used in the program had no

45. *Id.* at 119–20.

46. *Id.* at 115–16.

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

48. *Compare id.* at 128–32 ("Even though it may have been the product of skill, it certainly was not the product of invention. There is no way in which we could call it such unless we borrowed invention from the discovery of the natural principle itself."), *with Morse*, 56 U.S. (15 How.) at 115–16.

49. *Funk Bros. Seed Co.*, 333 U.S. at 127.

50. *Id.*

51. *Id.* at 130.

52. *Id.* at 131–32 ("That is to say, there is no invention here unless the discovery that certain strains of the several species of these bacteria are non-inhibitive and may thus be safely mixed is invention.")

53. *Id.* at 130.

54. *Id.*

55. *Gottschalk v. Benson*, 409 U.S. 63, 64 (1972) ("The claims were not limited to any particular art or technology, to any particular apparatus or machinery, or to any particular end use.")

56. *Id.*

57. *Id.* at 67 (citing *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. (20 Wall.) 498, 507 (1874)).

practical use except when used with a computer.⁵⁸ The Court held that the patent would prohibit any other use of the formula and would effectively be a patent on the formula itself.⁵⁹

In a similar case, *Parker v. Flook*, the Supreme Court reviewed a patent for a mathematical formula used when calculating and updating alarm values used in catalytic conversion in the refining industry.⁶⁰ While the formula could be computed by hand, it was primarily useful, as disclosed in the patent, to be executed on a computer.⁶¹ This case is distinguished from *Benson* because the patent only sought to claim the use of the formula in the refining industry and the computer also performed additional activity after the calculation was completed,⁶² while the patent in *Benson* claimed every application of the formula and performed no additional steps.⁶³ Nonetheless, the Court invalidated the patent by holding that while a patent can incorporate a mathematical formula, it must include some other inventive concept to be valid.⁶⁴ Finding no such inventive concept in the patent, the *Parker* Court declined to “expand patent rights” and explicitly deferred the issue to Congress.⁶⁵

As years progressed, the Supreme Court diverged from the trend of invalidating patents containing abstract ideas in *Diamond v. Diehr*.⁶⁶ In *Diehr*, the Court reviewed a process for molding raw rubber into cured products.⁶⁷ The applicants had developed a method for measuring the internal temperature of a mold, calculating the cure time using a mathematical formula programmed into a computer, and signaling the mold to open at

58. *Id.* at 71.

59. *Id.* at 72.

60. *Parker v. Flook*, 437 U.S. 584, 585–86 (1978).

61. *Id.* (“The only difference between the conventional methods of changing alarm limits and that described in respondent’s application rests in the second step—the mathematical algorithm or formula.”).

62. *Id.* at 589–90.

63. *Benson*, 409 U.S. at 65.

64. *Flook*, 437 U.S. at 590–94 (“The notion that post-solution activity, no matter how conventional or obvious in itself, can transform an unpatentable principle into a patentable process exalts form over substance.”).

65. *See id.* at 594–95 (quoting *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 531 (1972)).

66. *Diamond v. Diehr*, 450 U.S. 175, 191–92 (1981).

67. *Id.* at 177.

the proper time similar to the system in *Flook*.⁶⁸ While acknowledging the limitations of *Benson* and *Flook*,⁶⁹ the Court held that this patent was a well-developed “industrial process for the molding of rubber products” rather than merely an attempt to patent an abstract mathematical formula.⁷⁰

In *Bilski v. Kappos* the Supreme Court again refused to uphold a patent incorporating an abstract idea.⁷¹ The patent application claimed a series of steps for hedging risk in the energy industry and a simple mathematical formula incorporating them.⁷² In examining the patent the Court reiterated the three exceptions to patent-eligibility under § 101: “laws of nature, physical phenomena, and abstract ideas.”⁷³ The Court held that risk-hedging is a basic economic technique and allowing a patent on risk-hedging would be a monopoly on an abstract idea.⁷⁴

In a more recent case on the matter, *Mayo Collaborative Services, v. Prometheus Laboratories, Inc.*, the Supreme Court examined a patent owned by Prometheus Laboratories, Inc. for the treatment of autoimmune diseases using thiopurine drugs.⁷⁵ The patent detailed a process where doctors administered drugs to the patient, measured the level of metabolites in the blood as a result, and adjusted the dosage according to formulas based on natural biological principles.⁷⁶ The Court recognized the history of jurisprudence running through its previous cases in holding that an abstract idea or

68. *Id.* at 177–79; *Flook*, 437 U.S. at 585–86.

69. *Diehr*, 450 U.S. at 191–92.

70. *Id.* at 192–93.

71. *Bilski v. Kappos*, 561 U.S. 593, 593–94 (2010).

72. *Id.* at 596–601 (“The question in this case turns on whether a patent can be issued for a claimed invention designed for the business world. The patent application claims a procedure for instructing buyers and sellers how to protect against the risk of price fluctuations in a discrete section of the economy.”).

73. *Id.* at 602 (quoting *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980)).

74. *Id.* at 611–13 (“These claims attempt to patent the use of the abstract idea of hedging risk in the energy market and then instruct use of well-known random analysis techniques to help establish some of the inputs into the equation.”).

75. *Mayo Collaborative Servs. v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289, 1290 (2012).

76. *Id.* at 1296–98.

law of nature cannot be patented.⁷⁷ In doing so, the Court held that the activity in *Mayo* was “well understood, routine, conventional activity already engaged in by the scientific community”⁷⁸ and was “not sufficient to transform unpatentable natural correlations into patentable applications of those regularities.”⁷⁹

II. CASE DESCRIPTION

CLS Bank International v. Alice Corp. Pty. addressed the validity of a series of patents for managing settlement risk when two parties conduct a financial transaction.⁸⁰ These patents incorporated abstract ideas about managing risk into a computerized system to execute them.⁸¹ The Federal Circuit was faced with the same issues addressed in the previous cases as to whether this computerized system impermissibly claimed the abstract ideas it incorporated.⁸²

The court first addressed the analysis used for determining if subject matter is patent-eligible or not⁸³ by citing the four statutory categories of patent-eligible subject matter, novelty, and non-obvious requirements in §§ 101, 102, and 103 of Title 35 United States Code.⁸⁴ It then cited the three judicial exceptions set forth in *Benson*: “[l]aws of nature, natural phenomena, and abstract ideas.”⁸⁵ The court then described the basic steps of analyzing patent eligibility, which are to determine if in an invention falls into one of the first four categories and does not fall into one of the second three.⁸⁶ If it

77. *Id.* at 1293 (citing *Diamond v. Diehr*, 450 U.S. 175, 185 (1981)).

78. *Id.* at 1298.

79. *Id.*

80. *CLS Bank Int'l v. Alice Corp. Pty.*, 717 F.3d 1269, 1274 (Fed. Cir. 2013).

81. *Id.*

82. *See id.* at 1277 (“The underlying concern is that patents covering such elemental concepts would reach too far and claim too much, on balance obstructing rather than catalyzing innovation.”).

83. *Id.* at 1276.

84. *Id.*

85. *Id.* at 1277 (citing *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)).

86. *Id.* (“If the invention falls within one of the statutory categories, we must then determine whether any of the three judicial exceptions nonetheless bars such a claim—is the claim drawn to a patent-ineligible law of nature, natural phenomenon, or abstract idea?”).

satisfies both prongs of this test, then an invention is patentable.⁸⁷

The court went on to acknowledge that this simple test has, in practice, proven challenging to apply.⁸⁸ “The difficulty lies in consistently and predictably differentiating between, on the one hand, claims that would tie up laws of nature, natural phenomena, or abstract ideas, and, on the other, claims that merely ‘embody, use, reflect, rest upon, or apply’ those fundamental tools.”⁸⁹ The court stated that what is necessary is a system in making this determination and that Supreme Court precedents provide the outline for a system based on the probability of a claim monopolizing a fundamental concept.⁹⁰

After reviewing several influential Supreme Court cases on this subject⁹¹ the court identified several common themes that could be used in analyzing *Alice*.⁹² The first is that a claim should not be allowed to preclude the full scope of a fundamental concept.⁹³ Preemption within the confines of the patent is allowed,⁹⁴ but there must be some claims that reduce the limits of the coverage below the broadest range of the fundamental concept.⁹⁵ Second, the court observed that this analysis could not be formalistic or it would be easily evaded and left behind by the progress of technology.⁹⁶ A functionalistic approach is necessary to consider how a claim truly affects the goal of “preserving the ‘basic tools’ of scientific discovery for common use.”⁹⁷

87. *Id.*

88. *Id.*

89. *Id.* (quoting *Mayo Collaborative Servs. v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289, 1293 (2012)).

90. *Id.*

91. *Id.* at 1277–80 (reviewing *Mayo*, 132 S. Ct. at 1289; *Bilski v. Kappos*, 561 U.S. 593 (2010); *Parker v. Flook*, 437 U.S. 584 (1987); *Diamond v. Diehr*, 450 U.S. 175 (1981); *Gottschalk v. Benson*, 409 U.S. 63, 63 (1972)).

92. *CLS Bank Int'l*, 717 F.3d at 1280.

93. *Id.*

94. *Id.* at 1297–98.

95. *Id.* at 1281.

96. *Id.* (“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 counter-productive when applied to § 101.”).

97. *Id.*

The court prescribed the following approach: after the initial § 101 analysis of the statutory categories and judicial exceptions has been conducted,⁹⁸ the court must determine if an abstract idea is incorporated in the claims of the patent and unambiguously identify that abstract idea.⁹⁹ The court must then determine if there are additional substantive limitations within the claims that reduce the coverage to less than the full abstract idea itself.¹⁰⁰ Minor human contribution, trivial post-operation activity, and vague limitations will not be enough to meet this requirement.¹⁰¹

The court then analyzed the series of patents under this framework.¹⁰² In each case it found no significant limitations to restrict the claims beyond the full scope of the abstract idea involved and that the computer implementation did nothing to add to the patent.¹⁰³ The court concluded that the claims covered abstract methods and used computers to implement them and that “[a]bstract methods do not become patent-eligible machines by being clothed in computer language.”¹⁰⁴

III. ANALYSIS

A. FEDERAL CIRCUIT OPINION

The Federal Circuit’s en banc decision in *Alice* did a good job of recognizing the broad issues in patenting abstract ideas.¹⁰⁵ Its basic analysis of § 101 lays the foundations for this

98. *Id.* at 1282.

99. *Id.*

100. *Id.* (“With the pertinent abstract idea identified, the balance of the claim can be evaluated to determine whether it contains additional substantive limitations that narrow, confine, or otherwise tie down the claim so that, in practical terms, it does not cover the full abstract idea itself.”); see also *Mayo Collaborative Servs. v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289, 1300 (2012) (discussing a patent-eligible process claim that involved a law of nature but included additional steps “that confined the claims to a particular, useful application of the principle.”).

101. *CLS Bank Int’l*, 717 F.3d at 1283–84.

102. *Id.* at 1284–91.

103. *Id.*

104. *Id.* at 1292.

105. See *id.* at 1276–78, 1280–82 (“As § 101 itself explains, the ultimate question of patentability turns on whether, in addition to presenting a patent-eligible invention, the inventor also satisfies ‘the conditions and requirements of this title,’ namely, the novelty, nonobviousness, and disclosure requirements of 35 U.S.C. §§ 102, 103, and 112, among others.”).

Comment's proposed test of the patentability of abstract ideas.¹⁰⁶ A patent must meet the basic criteria for patentability (the first prong of the test).¹⁰⁷ The court recognized that "all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas,"¹⁰⁸ but that patents cannot claim an abstract idea so broadly that it hinders rather than encourages invention.¹⁰⁹ This analysis will make up the second and third prongs of the proposed test to determine § 101 validity.¹¹⁰

Despite its recognition of the broad issues and terse per curiam opinion—stating that the claims in *Alice* were not directed to eligible subject matter—the court failed to adopt a rationale that a majority of the panel could support.¹¹¹ The case produced no less than five concurring and dissenting opinions, as well as additional "reflections" by Chief Judge Rader.¹¹² Every opinion, whether concurring or dissenting, took a different approach on the reasoning the court should use.¹¹³

1. Judge Lourie's Concurrence

Judge Lourie, joined by four other judges, wrote a concurrence to the majority opinion holding that Alice Corp.'s claims were patent-ineligible subject matter.¹¹⁴ After

106. *See id.* at 1276–77.

107. *Id.* at 1276.

108. *Id.* at 1277 (citing *Mayo Collaborative Servs. v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289, 1293 (2012)).

109. *Id.*

110. *Id.* ("Accordingly, the basic steps in a patent eligibility analysis can be summarized as follows. We must first ask whether the claimed invention is a process, machine, manufacture, or composition of matter. If not, the claim is ineligible under § 101. If the invention falls within one of the statutory categories, we must then determine whether any of the three judicial exceptions nonetheless bars such a claim—is the claim drawn to a patent-ineligible law of nature, natural phenomenon, or abstract idea? If so, the claim is not patent eligible. Only claims that pass both inquiries satisfy § 101.")

111. *Id.* at 1273 ("An equally divided court affirms the district court's holding that the asserted system claims are not directed to eligible subject matter under that statute.")

112. *Id.* at 1273–1336.

113. *See id.*

114. *Id.* at 1273–74 (Lourie, J., concurring) ("As described more fully below, we would affirm the district court's judgment in its entirety and hold that the method, computer-readable medium, and corresponding system claims before us recite patent-ineligible subject matter under 35 U.S.C. § 101.")

discussing § 101¹¹⁵ and the relevant case law,¹¹⁶ the concurrence laid out its proposed framework for analyzing whether a computer-implemented claim is actually patent-eligible or merely an implementation of an abstract idea.¹¹⁷ The beginning of the proposed analysis invoked two basic threshold tests. The first is to determine that the patent does indeed fall within one of the four statutory classes (process, machine, manufacture, or composition of matter) laid out in § 101.¹¹⁸ The second is to determine whether the patent implicates abstract idea concerns at all.¹¹⁹

Judge Lourie sensibly pointed out that in many cases the patent will raise no abstract idea issues and the analysis need not proceed any further.¹²⁰ If there are § 101 abstractness concerns, Judge Lourie emphasized the importance unambiguously identifying the abstract idea potentially constrained.¹²¹ The amount of limitation allowed for a patent may depend on the abstract idea so it is important to have the abstract idea correctly identified.¹²²

After that determination, Judge Lourie explained that the focus should be on whether the claims narrow the scope of the patent sufficiently so that it does not attempt to claim the entire abstract idea.¹²³ To determine whether the scope is sufficiently narrow he focused on the “genuine human contribution” or “inventive concept” in the claims.¹²⁴ He took pains to point out that “inventive concept” as applied to a § 101 eligibility analysis is different from the “inventiveness”

115. *Id.* at 1276–77.

116. *Id.* at 1277–82.

117. *Id.* at 1282–84.

118. *Id.* at 1282 (“The first question is whether the claimed invention fits within one of the four statutory classes set out in § 101.”).

119. *Id.*

120. *Id.* (“Does the claim pose any risk of preempting an abstract idea? In most cases, the answer plainly will be no.”).

121. *Id.* (“In short, one cannot meaningfully evaluate whether a claim preempts an abstract idea until the idea supposedly at risk of preemption has been unambiguously identified.”).

122. *Id.*

123. *Id.* (citing *Diamond v. Diehr*, 450 U.S. 173 (1981) and *Mayo Collaborative Servs. v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289 (2012) as examples of patents that successfully made limited claims to an abstract idea while contrasting *Bilski v. Kappos*, 130 S. Ct. 3218 (2010) as a patent that did not).

124. *Id.* at 1283.

required for sufficient novelty and nonobviousness under § 102 and § 103.¹²⁵ Rather, the inventive concept in a § 101 analysis is used to determine if the patent is sufficiently distinguished from the abstract idea to be valid.¹²⁶ Judge Lourie also added that the inventive concept must be more than a “trivial appendix” to be sufficient to allow the patent.¹²⁷ He concluded that none of the three types of patent claims in the suit included sufficient inventive concept to distinguish them from the basic abstract idea of hedging against risk.¹²⁸

2. Chief Judge Rader’s Opinion

Chief Judge Rader wrote a concurrence-in-part, joined by one judge, and a dissent-in-part, partially joined by two more judges.¹²⁹ His opinion upheld the decision that the method and computer-readable medium claims were invalid but held that the system claims were valid.¹³⁰ The opinion laid out an analysis framework focusing on whether the claims include meaningful limitations on the scope of the patent.¹³¹

Foreshadowing his decision to uphold some of Alice Corp.’s claims, Chief Judge Rader started off his analysis by emphasizing the wide scope of § 101 eligibility.¹³² He pointed to the broad categories in § 101 and the sweeping provision that “any” process, machine, manufacture, or composition of matter can be patented as evidence of Congressional intent to allow a broad scope of patentable inventions.¹³³ This is further demonstrated by the 1952 amendments to the Patent Act granting broad protections to processes, including processes that contain a new use of an already existing invention.¹³⁴

125. *Id.* at 1282.

126. *Id.* at 1283.

127. *Id.* (“In addition, that human contribution must represent more than a trivial appendix to the underlying abstract idea.”).

128. *Id.* at 1284–92.

129. *Id.* at 1292.

130. *Id.* (Rader, C.J., concurring in part and dissenting in part).

131. *Id.* at 1294–1305.

132. *Id.* at 1294.

133. *Id.* (“In ‘choosing such expansive terms . . . modified by the comprehensive “any,” Congress plainly contemplated that the patent laws would be given wide scope.’”) (quoting *Bilski v. Kappos*, 130 S. Ct. 3218, 3225 (2010)).

134. *Id.* at 1294–95. For additional background on the legislative history of the 1952 amendment, see Alan J. Heinrich & Christopher T. Abernethy, *The*

Chief Judge Rader also noted testimony before the United States Senate during the passage of the amendments—quoted by the Supreme Court in the *Diehr* opinion¹³⁵—stating that patent-eligible subject matter was intended to include “anything that is under the sun that is made by man.”¹³⁶ He further noted the Supreme Court’s holding in *Diamond v. Chakrabarty* stating that “[t]he subject-matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and statutory goal of promoting ‘the Progress of . . . the useful Arts’”¹³⁷

After reviewing all of this evidence, Chief Judge Rader restated his view that § 101 is to be construed broadly.¹³⁸ Having established his position, Chief Judge Rader next turned to the exceptions to the broad scope of § 101: “laws of nature, natural phenomena, and abstract ideas.”¹³⁹ He pointed out that claims must be considered in their entirety since any claim, when broken down far enough, can be reduced to simply an abstract idea.¹⁴⁰ His analysis focused on whether the claims include “meaningful limitations” that limit the patent’s scope to an application, and not the abstract idea generally,¹⁴¹ instead of the human added “inventive concept” that Judge Lourie focused on in his opinion.¹⁴²

Chief Judge Rader laid out the boundaries of meaningful limitations in a few ways, starting with what is not a meaningful limitation. Claims that only describe or apply an abstract idea and preempt all other uses of it are not

Myriad Reasons to Hit “Reset” on Patent-Eligibility Jurisprudence, 47 LOY. L.A. L. REV. 117, 128–30 (2013).

135. *Diamond v. Diehr*, 450 U.S. 175, 182 (1981).

136. *CLS Bank Int’l*, 717 F.3d at 1295.

137. *Id.* at 1297 (quoting *Diamond v. Chakrabarty*, 447 U.S. 303, 315 (1980)).

138. *Id.* (“In sum, any analysis of subject matter eligibility for patenting must begin by acknowledging that any new and useful process, machine, composition of matter, or manufacture, or an improvement thereof, is eligible for patent protection. While a claim may not later meet the rigorous conditions for patentability, Section 101 makes these broad categories of claimed subject matter eligible for that consideration.”).

139. *Id.* (citations omitted).

140. *Id.* at 1298.

141. *Id.* at 1299–1300 (“The relevant inquiry must be whether a claim includes meaningful limitations restricting it to an application, rather than merely an abstract idea.”).

142. *Id.* at 1283.

meaningful limitations.¹⁴³ He cited the broadly applicable risk-hedging patent in *Bilski* as an example.¹⁴⁴ Similarly, he pointed out that claims do not include a meaningful limitation if they only spell out inconsequential additions such as the proper use or target of the abstract idea.¹⁴⁵ The last example given by Chief Judge Rader of claims that are not meaningfully limited are claims that are extremely general and provide no specific guidance.¹⁴⁶

Having addressed claims that are not meaningful limitations, Chief Judge Rader then went on to cite examples of claims that are meaningful limitations.¹⁴⁷ The first is the machine-or-transformation of matter test from *Bilski*.¹⁴⁸ He also cited claims that include limitations that are essential to the patent, such as the rubber curing process in *Diehr*.¹⁴⁹ While addressing computer-implemented claims, Chief Judge Rader pointed out that merely implementing an abstract idea on a computer does not make it patent eligible, but implementing an abstract idea in a particular way or using a specific computer may allow it to be patented.¹⁵⁰

As he finished laying out his analytical framework Chief Judge Rader again emphasized the broad nature of § 101.¹⁵¹ He emphasized that the exceptions for laws of nature, natural phenomena, and abstract ideas are judicially created and should be construed narrowly to avoid thwarting Congressional

143. *Id.* at 1300.

144. *Id.* (“Allowing petitioners to patent risk hedging would pre-empt use of this approach in *all fields*, and would effectively grant a monopoly over an abstract idea.”) (quoting *Bilski v. Kappos*, 130 S. Ct. 3218, 3231 (2010)).

145. *Id.* at 1300–01.

146. *Id.* at 1301.

147. *Id.* at 1302 (“A special purpose computer, *i.e.*, a new machine, specially designed to implement a process may be sufficient.”).

148. *Id.* at 1301 (“This Court’s precedents establish that the machine-or-transformation test is a useful and important clue . . . for determining whether some claimed inventions are processes under § 101.”) (quoting *Bilski*, 130 S. Ct. at 3227).

149. *Id.*

150. *Id.* at 1302 (“At bottom, where the claim is tied to a computer in such a way that the computer plays a meaningful role in the performance of the claimed invention, and the claim does not preempt virtually all uses of an underlying abstract idea, the claim is patent eligible.”).

151. *Id.* at 1303 (“The Section 101 eligibility inquiry determines whether a claim is limited meaningfully to permissible subject matter, as distinct from the validity requirements of the other sections.”).

intent.¹⁵² Under this framework Chief Judge Rader found Alice Corp.'s system claims valid since they incorporate a machine, the computer, and specific programmable software to carry out a function: managing risk in trading.¹⁵³ The specific nature of the claims and the detailed implementation of the process sufficiently distinguished the Alice Corp. patents from the abstract idea under his analysis.¹⁵⁴ For these reasons Chief Judge Rader and the concurring judges believed the system claims are in fact patent eligible.¹⁵⁵ His analysis of the method and computer-readable media claims concluded that those claims, however, are too general and merely restate the abstract idea of using escrow to mitigate risk.¹⁵⁶ This renders the method and computer-readable media claims patent ineligible.¹⁵⁷

3. Judge Moore's Opinion

Judge Moore, joined by three other judges, filed a dissent-in-part to Judge Lourie's opinion.¹⁵⁸ She believed that the Lourie opinion construed the judicial exceptions to § 101, which should be construed narrowly, far too broadly.¹⁵⁹ Like Chief Judge Rader, Judge Moore stated that the implementation of an abstract idea into a specific machine renders it patent eligible and held that the system claims were valid.¹⁶⁰ Judge Moore further warned that such broad construction of § 101 could completely destroy the ability to patent business methods, financial systems, and software.¹⁶¹

152. *Id.* at 1303–04 (“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.’”). These exceptions include the often cited “laws of nature, natural phenomena, and abstract ideas.” *Id.* at 1301 (quoting *Mayo Collaborative Servs. v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289, 1293 (2012)).

153. *Id.* at 1305.

154. *Id.* at 1306–11.

155. *Id.* at 1311.

156. *Id.* at 1311–12.

157. *Id.* at 1312–13.

158. *Id.* at 1313 (Moore, J., dissenting in part).

159. *Id.*

160. *Id.* at 1314–17.

161. *Id.* at 1313 (“And let’s be clear: if all of these claims, including the system claims, are not patent-eligible, this case is the death of hundreds of thousands of patents, including all business method, financial system, and

4. Judge Newman's Opinion

Judge Newman wrote a separate opinion concurring in part and dissenting in part.¹⁶² She decried the lack of a standard test for § 101 patent eligibility and the incompatible nature of the tests that have been created by the court.¹⁶³ She was primarily concerned that the lack of judicial consistency will lead to increased patent litigation and discourage inventors from trying to patent their inventions.¹⁶⁴ She proposed three basic principles for § 101 patent eligibility: that § 101 is inclusive and abstract idea patents will be eliminated by other sections of the Patent Act;¹⁶⁵ that the specific type of claim has no bearing on patent eligibility;¹⁶⁶ and that patented information can be used for experimental purposes without infringing on the patent.¹⁶⁷ Judge Newman concluded that all three types of claims in the Alice Corp. patents are valid under § 101, and the case should be remanded for determination under the other sections of the Patent Act.¹⁶⁸

5. Judge Linn's Opinion

Judge Linn, joined by Judge O'Malley, dissented from the majority opinion on all claims.¹⁶⁹ These two judges were the majority in the initial three-judge Federal Circuit opinion

software patents as well as many computer implemented and telecommunications patents.”)

162. *Id.* at 1321 (Newman, J., concurring in part).

163. *Id.* (“The court, now rehearing this case en banc, hoped to ameliorate this uncertainty by providing objective standards for section 101 patent-eligibility. Instead we have propounded at least three incompatible standards, devoid of consensus, serving simply to add to the unreliability and cost of the system of patents as an incentive for innovation.”)

164. *Id.* (“The uncertainty of administrative and judicial outcome and the high cost of resolution are a disincentive to both innovators and competitors.”)

165. *Id.* at 1322 (“The court should acknowledge the statutory purpose of section 101, to provide an inclusive listing of the ‘useful arts.’ Then, upon crossing this threshold into the patent system, examination of the particular subject matter on the substantive criteria of patentability will eliminate claims that are ‘abstract’ or ‘preemptive,’ on application of the laws of novelty, utility, prior art, obviousness, description, enablement, and specificity.”)

166. *Id.* (“I propose that the court make clear that patent eligibility does not depend on the form of the claim.”)

167. *Id.* (“I propose that the court reaffirm the long-standing rule that study and experimentation are not infringement, whether the experimentation is for basic or applied purposes.”)

168. *Id.* at 1327.

169. *Id.* (Linn, J., concurring in part).

upholding the Alice Corp. patents, so it is unsurprising that they supported the claims in this opinion as well.¹⁷⁰ Judge Linn's dissent stated that the majority erroneously departed from the record established by the trial court.¹⁷¹ After a detailed analysis of the district court proceedings,¹⁷² Judge Linn explained that both the Lourie and Rader opinions diverged from the record and construed the claims far too broadly.¹⁷³ Under the same reasoning that upheld the system claims in the Rader opinion,¹⁷⁴ the Linn opinion held that the method and media claims should be valid as well.¹⁷⁵

B. POLICY ANALYSIS

Evaluating software patents is made more difficult by conflicting public policy goals.¹⁷⁶ There is the traditional balance between the private interest in benefiting from the creation of novel inventions and the public interest in not allowing property rights and ideas to be tied up by a few patent holders.¹⁷⁷ This balance takes on a new twist with the ability of

170. *CLS Bank Int'l v. Alice Corp. Pty.*, 685 F.3d 1341, 1343 (Fed. Cir. 2012) (“[T]his court concludes that the system, method, and media claims at issue are not drawn to mere ‘abstract ideas’ but rather are directed to practical applications of invention falling within the categories of patent eligible subject matter defined by 35 U.S.C. § 101.”).

171. *CLS Bank Int'l*, 717 F.3d at 1327.

172. *Id.* at 1327–29.

173. *Id.* at 1329–32.

174. *See supra* text accompanying note 155.

175. *CLS Bank Int'l*, 717 F.3d at 1332 (“For the reasons we describe herein, moreover, we would employ the same rationale we employed for the system claims to find the method and media claims patent eligible as well.”).

176. *See id.* at 1277. (“Thus, even inventions that fit within one or more of the statutory categories are not patent eligible if drawn to a law of nature, a natural phenomenon, or an abstract idea. The underlying concern is that patents covering such elemental concepts would reach too far and claim too much, on balance obstructing rather than catalyzing innovation.”).

177. *E.g.*, Robin Feldman, *The Open Source Biotechnology Movement: Is It Patent Misuse?*, 6 MINN. J.L. SCI. & TECH. 117, 160 (2004) (“[T]he current patent system strikes a balance between the positive incentive effects that will redound to the public benefit and any negative effects that the creation of patent rights may produce.”); *see* Mike Ervin, *US Patents—A Brief History: The US Patent Office*, BUS. PATS., <http://www.the-business-of-patents.com/us-patents.html> (last visited Nov. 22, 2014) (“[A]n invention needed to be new and useful, as well as ‘non-obvious’ to be granted a patent. This amendment, which required patents to be non-obvious, was implemented to keep individuals from taking ownership or taking away from the base pool of knowledge in a particular field.”); *Brief History*, *supra* note 18.

software to possess no physical characteristic, only manifesting itself in the physical world through the ideas and manipulations it incorporates.¹⁷⁸

1. Encouraging Innovation Versus the Public Good

One of the classic tensions since the creation of patents has been the pull between inventors, who want to have as broad a property right as possible to protect their inventions, and the public, who want a narrow property right to allow use and development of the inventions by others or without paying royalty fees.¹⁷⁹ This is increasingly true in the information age, where computers and software are permeating every facet of society.¹⁸⁰ From computer controlled manufacturing processes like those found in *Diehr*,¹⁸¹ to online websites,¹⁸² to apps on smartphones,¹⁸³ abstract ideas are being implemented in software everywhere we look.¹⁸⁴

The software market is increasing every year.¹⁸⁵ This affects both sides of the inventor versus public equation. There is a huge market for software patents¹⁸⁶ with intense

178. *Hardware vs. Software*, DIFFEN, http://www.diffen.com/difference/Hardware_vs_Software (last visited Nov. 8, 2014).

179. See *Brief History*, *supra* note 18 (describing the development of patent law through a series of reforms struggling to balance the inventor's profits and society's needs).

180. Wes Lambert, *Computers Are Everywhere*, TEK HANDY (June 27, 2013), <http://www.tekhandy.com/computers-are-everywhere> ("It wasn't but two generations ago that computers were only making the first strides into our lives, but now they surround us.").

181. See *Diamond v. Diehr*, 450 U.S. 175 (1981).

182. See *generally Products*, SYMPPLICITY, <http://www.symplicity.com/products> (last visited Aug. 22, 2014) (listing examples of web-based application software available).

183. See *generally Google Play*, GOOGLE, <https://play.google.com/store/apps> (last visited Aug. 22, 2014) (listing the top apps in various categories for Android mobile devices).

184. See Devan R. Desai & Gerard N. Magliocca, *Patents, Meet Napster: 3D Printing and the Digitization of Things*, 102 GEO. L.J. 1691 (2014) for an innovative discussion of the many legal questions that may arise in patents and other areas of law when digital mediums can be turned back into physical things by individuals with new technologies like 3D printing.

185. *Global Software*, REPORT LINKER (Apr. 2014), <http://www.reportlinker.com/p0188773-summary/Global-Software.html> (reporting that the global software market grew 11.3% annually between 2009 and 2013 and is expected to grow 9.2% annually between 2013 and 2018).

186. *Id.* (reporting that the global software market had total revenues of \$554.5 billion in 2013).

competition.¹⁸⁷ Increasingly, patent markets are spurred onward by non-creative investors, rather than inventors.¹⁸⁸ Inventors are eager to patent their inventions and cash in on them.¹⁸⁹ Inventors are also wary of their competitors and aware that weak or narrow patent protection will leave them vulnerable to competitors.¹⁹⁰ Thus, the broad and diverse market for software patents magnifies the traditional private inventor interest in strong, broad patents.

The public interest, on the other hand, has also magnified. Software development, especially for mobile devices, is no longer the provenance of a few big companies.¹⁹¹ Medium and small businesses, as well as individuals, are heavily involved in the software market.¹⁹² This large array of developers leaves many opportunities for new, novel, and useful software patents.¹⁹³ Even a free mobile app can yield a profit over the course of many downloads.¹⁹⁴

187. See Charles Duhigg & Steve Lohr, *The Patent, Used as a Sword*, N.Y. TIMES (Oct. 7, 2012), <http://www.nytimes.com/2012/10/08/technology/patent-wars-among-tech-giants-can-stifle-competition.html>; see also *Software Developers*, BUREAU LAB. STAT., U.S. DEPARTMENT LAB. (Jan. 8, 2014), <http://www.bls.gov/ooh/Computer-and-Information-Technology/Software-developers.htm> (reporting 1,018,000 software development jobs in 2012 and predicting a twenty-two percent growth rate through 2022).

188. Yuichi Watanabe, *Patent Licensing and the Emergence of a New Patent Market*, 9 HOUS. BUS. & TAX L.J. 445, 479 (2009) (“The emergence of patent licensing firms demonstrates a positive progression in response to the demands of the patent licensing market, which historically has been dominated by large corporations.”).

189. See generally Mary Bellis, *Turning an Invention Idea into Money, Lesson Eight: How Do I Make Money From My Invention?*, ABOUT.COM INVENTORS, http://inventors.about.com/od/fundinglicensingmarketing/a/Making_Money.htm (last visited Aug. 22, 2014) (describing the ways an inventor can make money from an invention). But see Watanabe, *supra* note 188, at 477–79.

190. See Duhigg & Lohr, *supra* note 187 (describing the effects of recent increases in litigation over software patents).

191. See Carl Erickson, *The Size of Software Product Development Companies*, GREAT NOT BIG (Mar. 24, 2011), <http://greatnotbig.com/2011/03/the-size-of-software-product-development-companies> (“It’s pretty clear from eye-balling the data above that there are a whole lot of small companies in our segment and relatively few large ones.”).

192. See *id.*

193. The lack of large software developers leaves many opportunities for smaller developers to find a niche or unmet need in the software market. See *id.* But see Watanabe, *supra* note 188, at 445 (noting that opportunities exist for small companies or individuals to make valid patents, but these small

There are valid arguments on both sides of the inventor versus public balancing test.¹⁹⁵ It is an important consideration, but other factors will clearly have to be examined as well.

2. The Difficulty of Analyzing the Use of Abstract Ideas

Patents are required to claim a “process, machine, manufacture, or composition of matter.”¹⁹⁶ Before the information age, a patent almost always had to be tied to some kind of physical device.¹⁹⁷ This made it relatively easy to distinguish one patent from another.¹⁹⁸

With the arrival of computers, that changed.¹⁹⁹ Now the same generic hardware can be used to run different programs, with limited exceptions.²⁰⁰ Alternatively, the same programs

patent holders may face barriers becoming competitive in the patent marketplace because of large companies).

194. Tero Kuittinen, *Missing the Dazzling Profit Potential of Free Apps*, BGR (Nov. 19, 2012, 11:55 AM), <http://bgr.com/2012/11/19/mobile-app-market-analysis-free-apps> (“This past year has proven that free apps are more profitable than paid apps.”).

195. See *Brief History*, *supra* note 18 (describing the conflicting and valid aims of protecting individual inventors’ rights and the public good).

196. 35 U.S.C. § 101 (2012).

197. See Desai & Magliocca, *supra* note 184, at 1691–93; John Perry Barlow, *Economy of Ideas*, WIRED, http://www.wired.com/wired/archive/2.03/economy.ideas_pr.html (last visited Aug. 22, 2014) (“A patent, until recently, was either a description of the form into which materials were to be rendered in the service of some purpose, or a description of the process by which rendition occurred. In either case, the conceptual heart of patent was the material result. If no purposeful object could be rendered because of some material limitation, the patent was rejected It had to be a thing, and the thing had to work.”).

198. Cf. Charles A. Bieneman, *Patent Practice Lessons from Alice Corp. v. CLS Bank*, SOFTWARE INTELLECTUAL PROP. REP. (June 22, 2014), <http://swipreport.com/for-non-lawyers/patents> (“Infringement of a software patent can be difficult to prove, sometimes requiring detailed and complicated journeys through source code.”).

199. See Desai & Magliocca, *supra* note 184, at 1691–99.

200. *Multitasking and Multiprocessing*, MICROSOFT TECHNET, <http://technet.microsoft.com/en-us/library/cc767883.aspx> (last visited Nov. 8, 2014) (“On a single-processor multitasking system, multiple processes don’t actually run at the same time since there’s only one processor. Instead, the processor switches among the processes that are active at any given time. Because computers are so fast compared with people, however, it appears to the user as though the computer is executing all of the tasks at once.”).

could be used on multiple different types of computers.²⁰¹ In light of these developments, the courts had to begin examining the ideas behind a program rather than merely analyzing its physical elements or operation.²⁰² In cases like *Benson* and *Flook*, the courts ruled that even though the patent may have been novel and nonobvious, at its core, it claimed an abstract idea.²⁰³

However, courts have failed to specify a consistent test for abstract ideas.²⁰⁴ In *Morse*, the Supreme Court discussed the invalidation of the Nielsen patent for a blast furnace.²⁰⁵ The Nielsen patent was struck down because it failed to specify a best or particular method for constructing the forge, or heating and directing the air, and merely recited a general principle.²⁰⁶ In *Kalo*, the Court held that qualities and manifestations of natural phenomena are not patentable because they are free to all men.²⁰⁷ In *Benson*, the patent was invalidated because the Court held it effectively constituted a patent on a mathematical formula.²⁰⁸ The patent in *Flook* was struck down because it failed to include an inventive concept to distinguish it from a mere implementation of an abstract idea.²⁰⁹ The *Diehr* patent was upheld because the abstract idea was part of a larger process for curing rubber.²¹⁰ The risk-hedging in *Bilski* was struck down as an attempted monopoly on an abstract idea.²¹¹

201. Cory Janssen, *Porting*, TECHOPEDIA, <http://www.techopedia.com/definition/8925/porting> (last visited Nov. 8, 2014) (“Porting is the process of adapting software in an environment for which it was not originally written or intended to execute in.”).

202. See *Copyrighting Software vs. Patenting Software*, HARV. U. OFF. TECH. DEV., <http://otd.harvard.edu/inventions/ip/software/compare> (last visited Aug. 22, 2014) (“Increasingly software is being described as a collection of processes, as a unique machine, or both, enabling the protection of the inventive concepts behind an original program.”).

203. See *Parker v. Flook*, 437 U.S. 584, 594–95 (1987); *Gottschalk v. Benson*, 409 U.S. 63, 71–72 (1972).

204. Charles Bieneman, *supra* note 198 (“[T]he ‘abstract idea’ test is vague and subjective, and its application in *Alice Corp.* leaves many questions relating to patent-eligibility frustratingly unanswered.”).

205. *O’Reilly v. Morse*, 56 U.S. (15 How.) 62, 114–16 (1853).

206. *Id.* at 115–16.

207. *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948).

208. *Benson*, 409 U.S. at 71–72.

209. *Parker v. Flook*, 437 U.S. 584, 594–95 (1987).

210. *Diamond v. Diehr*, 450 U.S. 175, 192–93 (1981).

211. *Bilski v. Kappos*, 561 U.S. 593, 611–12 (2010).

While the Supreme Court has declined to provide an explicit test, some general principles can be derived from its precedent. A patent that is essentially an abstract idea is not valid.²¹² Mere implementation on a computer is not enough to save a patent.²¹³ An abstract idea coupled with some other inventive concept²¹⁴ or incorporated into an industrial process²¹⁵ has a better chance of surviving challenge.

C. SUPREME COURT DECISION

The Federal Circuit's fractured opinions in *Alice* accurately reflect the fractured case law on the subject of software incorporating abstract ideas.²¹⁶ After the Supreme Court granted certiorari, observers hoped the Supreme Court would finally take a clear position on the issue²¹⁷ and perhaps even address the larger issue of the patentability of software in general.²¹⁸ Many were skeptical that the Supreme Court would issue a broad ruling on the matter and would instead rule narrowly on the facts of the case.²¹⁹

212. See *Mayo Collaborative Servs. v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289, 1305 (2012); *Bilski*, 561 U.S. at 608–11; *Funk Bros. Seed Co.*, 333 U.S. at 131–32.

213. See *Benson*, 408 U.S. at 71–72.

214. See *Flook*, 437 U.S. at 594.

215. See *Diehr*, 450 U.S. at 191–93.

216. See Evan Finkel, *Federal Circuit's Split Decision on Software Patents in CLS Bank Satisfied No One and Confused All*, PILLSBURY L. (May, 28 2013), <http://www.pillsburylaw.com/siteFiles/Publications/AlertMay2013IPFederalCircuitsSplitDecisionOnSoftwarePatentInCLSBankSatisfiedNoOneAndConfusedAll.pdf> (“The Federal Circuit and the district courts have been struggling with the issue for the last three years, rendering decisions that are simply irreconcilable with one another. Federal Circuit panels called upon to determine the patent-eligibility of computer-implemented inventions based on similar fact patterns often arrived at contradictory conclusions, some finding the patent claims patent-eligible and others finding the opposite.”) (citation omitted).

217. See, e.g., Brian Fung, *The Supreme Court's Decision on Software Patents Still Doesn't Settle the Bigger Question*, WASH. POST (June 20, 2014), <http://www.washingtonpost.com/blogs/the-switch/wp/2014/06/20/the-supreme-courts-decision-on-software-patents-still-doesnt-settle-the-bigger-question> (“What many were hoping for was some kind of legal test from the court that would help businesses determine what kinds of software could be patented.”).

218. See *id.*

219. See, e.g., Michael Borella, *Supreme Court Grants Cert. in Alice Corp. v. CLS Bank Intl.*, PAT. DOCS (Dec. 6, 2013), <http://www.patentdocs.org/2013/12/supreme-court-grants-cert-in-alice-corp-v-cls-bank-intl.html> (“It is possible, if not likely, that the Supreme Court will provide an opinion focused

In the opinion, the Court acknowledged that it must avoid the monopolization of the building blocks of innovation without destroying patent law by invalidating every patent that incorporates any abstract idea.²²⁰ The Court stated that its goal is to separate patents that claim the “buildin[g] block[s]’ of human ingenuity from those that integrate the building blocks into something more, thereby transform[ing] them into a patent-eligible invention.”²²¹ Patents that claim the building blocks of human ingenuity are invalid.²²² Patents that integrate the building blocks into a larger invention pose no risk of preempting them and may safely be granted.²²³

The Court drew heavily on the *Mayo* decision to analyze the facts in *Alice*.²²⁴ Specifically, the Court revitalized the two-step test from *Mayo* for separating patents that claim abstract ideas from patents that only claim patent-eligible applications of them.²²⁵ The first step is to determine if the claims include a patent-ineligible abstract idea.²²⁶ If so, courts must then determine if the claims contain an additional “inventive concept” that separates the patent from the abstract idea.²²⁷

Having selected the *Mayo* test, the Court then applied it to the facts in *Alice*.²²⁸ Applying the first step, the Court examined Alice Corp.’s patents with respect to the abstract idea of intermediated settlement.²²⁹ It cited the mathematical algorithm in *Benson*, the mathematical formula in *Flook*, and the business method in *Bilski* as examples of other abstract

on the facts of the case, narrow in scope, and just different enough from *Prometheus* to oblige the Federal Circuit to conduct yet another round of § 101 soul searching.”).

220. *Alice Corp. Pty. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2354 (2014).

221. *Id.*

222. *Id.* at 2354–55.

223. *Id.*

224. *See id.* at 2355.

225. *Id.* (citing *Mayo Collaborative Servs. v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289, 1297 (2012)).

226. *Id.* (“We must first determine whether the claims at issue are directed to one of those patent-ineligible concepts.”).

227. *Id.* (“We have described step two of this analysis as a search for an ‘inventive concept’—*i.e.*, an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself.’”).

228. *Id.* at 2356–60.

229. *Id.* at 2356.

ideas.²³⁰ Based on the similarity between these cases and *Alice*, the Court concluded that the claims were directed to the abstract idea of intermediated settlement.²³¹

The Court made short work of Alice Corp.’s argument that abstract ideas are limited to scientific and natural principles which are “preexisting, fundamental truth[s]” that “exis[t] in principle apart from any human action.”²³² Alice Corp. was arguing that its business method did not fall in the category of abstract ideas that cannot be patented.²³³ The Court pointed out that the concept of risk-hedging in *Bilski* was also a “method of organizing human activity” rather than a transcendent natural principle and that patent had been struck down as claiming an abstract idea.²³⁴ The Court declined to engage in an extended analysis of abstract ideas and simply stated that the concept of intermediated settlement at hand was similar enough to the risk-hedging in *Bilski* that both were clearly abstract ideas.²³⁵

Since Alice Corp.’s claims were directed to an abstract idea, the Court then turned to the search for a transformative inventive concept to render the application patent-eligible.²³⁶ Drawing from *Mayo*, the Court stated that an inventive concept must include additional features to distinguish the patent from the abstract idea; it cannot merely be a simple statement of the abstract idea with the words “apply it,” and it must do more than add conventional steps stated generally.²³⁷ Reviewing *Benson*, *Flook*, and *Diehr*, the Court noted that implementing an abstract idea on a computer will not save a patent.²³⁸ *Benson* and *Flook* were struck down on this basis while *Diehr* was upheld, not because it was implemented on a computer,

230. *Id.* at 2355–56.

231. *Id.* at 2356 (“[T]he concept of intermediated settlement [is] the use of a third party to mitigate settlement risk.”).

232. *Id.* (quoting *Mayo Collaborative Servs. v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289, 1297 (2012)).

233. *Id.*

234. *Id.* at 2356–57 (citing *Bilski v. Kappos*, 130 S. Ct. 3218, 3218 (2010)).

235. *Id.* (“Like the risk hedging in *Bilski*, the concept of intermediated settlement is ‘a fundamental economic practice long prevalent in our system of commerce.’”) (citing *Bilski*, 130 S. Ct. at 3218 and numerous economic and financial analysis materials generally).

236. *Id.* at 2357.

237. *Id.*

238. *Id.* at 2357–58.

but because it improved an existing industrial process.²³⁹ The Court then combined these two principles to conclude that adding “apply it with a computer” to an abstract idea will not transform the idea into a patent-eligible invention.²⁴⁰

After establishing this groundwork, the Court turned to the final question of whether Alice Corp.’s claims did more than apply an abstract idea with a computer.²⁴¹ The Court concluded they did not.²⁴² The steps performed by the computer such as electronic recordkeeping, obtaining and manipulating data, and issuing automated instructions fell into the category of “purely conventional.”²⁴³ This is the same category as the steps that failed to save the patents in *Mayo*.²⁴⁴ Alice Corp.’s method claims did nothing to improve the computer.²⁴⁵ It was simply present as an instrument to execute a patent-ineligible abstract idea.²⁴⁶ The opinion concluded with a brief section invalidating the system and media claims,²⁴⁷ and a one-paragraph concurrence stating that business methods do not qualify for patent protection, as seen in *Bilski*.²⁴⁸

And that is that. The Court declined to address the larger issue of software patents, clarify what is or is not an abstract idea,²⁴⁹ or even add much clarity to the *Mayo* test.²⁵⁰ After all, much of the analysis in *Alice* involved quotes directly from the

239. *Id.* (“In other words, the claims in *Diehr* were patent eligible because they improved an existing technological process, not because they were implemented on a computer.”).

240. *Id.* at 2358 (“These cases demonstrate that the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention. Stating an abstract idea ‘while adding the words apply it’ is not enough for patent eligibility. Stating an abstract idea while adding the words ‘apply it with a computer’ simply combines those two steps, with the same deficient result.”) (quoting *Mayo Collaborative Servs. v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289, 1294 (2012)).

241. *Id.* at 2359.

242. *Id.*

243. *Id.*

244. *Id.*

245. *Id.* at 2359–60.

246. *Id.* at 2360.

247. *Id.*

248. *Id.* at 2360–61 (citing *Bilski v. Kappos*, 130 S. Ct. 3218 (2010)).

249. *See id.* at 2357 (“In any event, we need not labor to delimit the precise contours of the ‘abstract ideas’ category in this case.”).

250. *Id.* The Court may have, at the least, expanded the application of the test by comparing the facts of *Mayo* and the present case. *Id.* (“*Mayo* itself is instructive.”).

Mayo opinion.²⁵¹ Despite the fact that the patents at hand were for software, the Court did little to discuss or even mention software.²⁵² Instead, the Court focused on computers themselves.²⁵³ In short, the Supreme Court affirmed the *Mayo* test, but did little to explicitly craft precedent that would help apply the test in future cases based on similar facts.²⁵⁴

Responses from academics and lawyers have been mixed. Some observers gave the *Alice* opinion credit for making it clear that incorporating an abstract idea on a computer will not be patent eligible unless it actually improves the computer.²⁵⁵ Others did not disparage it, but commented that it failed to provide much clarity on the subject.²⁵⁶ Many were openly

251. See, e.g., *id.* at 2354–55.

252. See, e.g., *id.* at 2352 (“Petitioner Alice Corporation is the assignee of several patents that disclose schemes to manage certain forms of financial risk. According to the specification largely shared by the patents, the invention ‘enables the management of risk relating to specified, yet unknown, future events.’ The specification further explains that the ‘invention relates to methods and apparatus, including electrical computers and data processing systems applied to financial matters and risk management.’”) (citations omitted).

253. *Id.* at 2357 (“The introduction of a computer into the claims does not alter the analysis at *Mayo* step two.”).

254. *Analysis of Alice Corporation Pty. Ltd. v. CLS Bank International, FROMMER LAWRENCE & HAUG LLP* (June 25, 2014), <http://www.flhlaw.com/Analysis-of-Alice-Corporation-Pty-Ltd-v-CLS-Bank-International-06-25-2014/> (“While the decision does not completely abrogate the ability to patent business methods or software, the Supreme Court stayed true to its precedents by making clear that the ‘mere recitation’ of some generic technological structure does not transform an abstract idea into patent-eligible subject matter. But the opinion provides little guidance on what exactly constitutes an ‘abstract idea.’ Thus, it is likely that there will be further litigation in the near future to provide clarity on what constitutes an abstract idea under § 101, especially in the realm of software and business methods.”).

255. See, e.g., Daniel Fisher, *Saying ‘Do It On A Computer’ Not Enough to Save Patent, Supreme Court Rules*, FORBES (June 19, 2014, 11:53 AM), <http://www.forbes.com/sites/danielfisher/2014/06/19/saying-do-it-on-a-computer-not-enough-for-a-patent-supreme-court-rules> (“[T]he court made it utterly clear that simply applying an abstract idea to computers won’t work unless the patent covers a process that makes the computers run more effectively.”).

256. See, e.g., *id.* (“Today they closed the circle in *Mayo* and *Bilski* and brought a grand unifying approach . . . Usually when you get a grand unifying theory, you get clarity. Not here.”); Daniel Nazer & Vera Ranieri, *Bad Day for Bad Patents: Supreme Court Unanimously Strikes Down Abstract Software Patent*, ELECTRONIC FRONTIER FOUND. (June 19, 2014), <https://www.eff.org/deeplinks/2014/06/bad-day-bad-patents-supreme-court-unanimously-strikes-down-abstract-software> (“Admittedly, the Supreme

critical of the Court's failure to address any issues beyond the facts of this case.²⁵⁷ One law professor went as far as to compare the "depth of the non-answer" in the *Alice* opinion to the computer's bizarre and opaque answer of "42" when asked "What is the meaning of life?" in the novel, *The Hitchhiker's Guide to the Galaxy*.²⁵⁸ While it may provide some guidance, the patent community will have to wait for another case for more clarity on patents of abstract ideas.

D. PROPOSED TEST

Due to the significance of this issue for software patents many interested parties had hoped that the Supreme Court would set forth a clear test for the patentability of software that incorporates abstract ideas.²⁵⁹ The ongoing uncertainty in the case law in this area has left many software developers unsure about the ongoing viability of the patents they have been granted or the patentability of their future inventions.²⁶⁰ Accordingly, the next time they are confronted with this issue

Court did not offer the clearest guidance on when a patent claims merely an abstract idea.").

257. See, e.g., Fung, *supra* note 217 ("It was supposed to be the most important patent case of the decade It turned out to be a little bit like fireworks that fizzled. It didn't really seem to move the needle much either way."); Brad Greenberg, TWITTER (June 19, 2014, 10:04 AM), <https://twitter.com/bradagreenberg/status/479640933726973952> ("That obscurity, coupled w/ 'we need not labor to delimit,' translates to: someone else figure it out, see ya in 5 years").

258. See Rob Merges, *Symposium: Go Ask Alice—What Can You Patent After Alice v. CLS Bank?*, SCOTUSBLOG (Jun. 20, 2014, 12:04 PM), <http://www.scotusblog.com/2014/06/symposium-go-ask-alice-what-can-you-patent-after-alice-v-cls-bank> ("Reading the opinion reminds me of a famous passage in *The Hitchhiker's Guide to the Galaxy*. Acolytes wait at the feet of a giant supercomputer, which 7.5 million years before had been asked 'What is the meaning of life?' Finally, after eons of waiting, the computer spoke. Its answer was: '42.' The acolytes went forth, armed with this non-answer. And life went on. So it is with us, in the patent field. We have met our '42,' and its name is *Alice*. Now life must go on."); see also DOUGLAS ADAMS, *THE HITCHHIKER'S GUIDE TO THE GALAXY* 181 (Del Rey Books 2005) (1979).

259. See Sally Abel et al., *Intellectual Property Bulletin—Spring 2013: Federal Circuit Undecided About Whether Software Is Patentable?*, JD SUPRA (June 26, 2013), <http://www.jdsupra.com/legalnews/intellectual-property-bulletin-spring-43926> ("A grant of *certiorari*, then, may signal the Supreme Court's desire to provide a substantive opinion on the patentability of software.").

260. See *id.* ("Patent holders, inventors, and even the courts have recently struggled with the limits of what can be patented.").

the Supreme Court should adopt the following modified version of the three-prong test laid out in the Federal Circuit Court's decision of *Alice*²⁶¹ instead of the more vague *Mayo* test they used this time.

1. Retain Threshold Tests

The threshold tests for patentable subject matter discussed in *Alice* form the first prong of the proposed test. The first part of this prong is to determine if the invention falls within the four statutory classes of matter discussed in § 101: process, machine, manufacture, or composition of matter.²⁶² If the invention falls within one of the statutory classes it should also be evaluated for novelty under § 102,²⁶³ and then obviousness under § 103.²⁶⁴

This prong will serve a purpose similar to that of the legal concept of standing required in civil suits.²⁶⁵ Much like standing, if a patent case can be dismissed at this point for failure to fall within a statutory class of matter, lack of novelty, or obviousness then the case need not be decided on the merits.²⁶⁶ Thus, a court need not reach the more complex issue of whether the software improperly incorporates an abstract idea.

2. Determine Substantial Usage of Abstract Ideas

Once a patent has been given a presumption of validity,²⁶⁷ it must then be evaluated for its content of abstract ideas. Many patents will clearly not contain any abstract ideas or will

261. *See generally* *CLS Bank Int'l v. Alice Corp. Pty.*, 717 F.3d 1269, 1282–84. (Fed. Cir. 2013).

262. *Id.* at 1282; 35 U.S.C. § 101 (2012).

263. *CLS Bank Int'l*, 717 F.3d at 1282; 35 U.S.C. § 102.

264. *CLS Bank Int'l*, 717 F.3d at 1282; 35 U.S.C. § 103.

265. *CLS Bank Int'l*, 717 F.3d at 1280–81 (analyzing first whether the subject matter fits within these four categories to determine if the analysis need continue).

266. *See Standing*, LEGAL INFO. INST., CORNELL UNIV. (Aug. 19, 2010, 5:24 PM), <http://www.law.cornell.edu/wex/standing> (“Only those with enough direct stake in an action or law have ‘standing’ to challenge it. A decision that a party does not have sufficient stake to sue will commonly be put in terms of the party’s lacking ‘standing.’”).

267. *CLS Bank Int'l*, 717 F.3d at 1284 (“[I]t bears remembering that all issued patent claims receive a statutory presumption of validity.”).

not come close to foreclosing an abstract idea.²⁶⁸ These patent suits, like the ones that fail the threshold tests, can then easily be dismissed without requiring a court to proceed to examine the merits.²⁶⁹

Determining whether an invention substantially incorporates an abstract idea will require analysis of the principles involved²⁷⁰ and how thoroughly they are incorporated.²⁷¹ For example, a medieval inventor filing a patent for his newly invented counterweight trebuchet would be utilizing many abstract ideas from physics such as potential energy, force, torque, and Newton's Second Law.²⁷² But he would not substantially incorporate any of those concepts, only execute them.

On the other hand, a computer program that converts numbers from binary-coded decimal numbers into pure binary—such as that found in *Benson*—could be said to substantially incorporate an abstract idea.²⁷³ The abstract idea incorporated is not merely incidental to the operation of the system but essential and central to its operation.

Substantial usage of abstract ideas can be tested according to two related factors. The first factor is the abstractness of the patent itself. Patents that include a device or tangible elements in the physical world such as a telegraph or trebuchet would be at less risk of substantially incorporating an abstract idea.²⁷⁴ Patents that are more abstract such as a method for

268. *See id.* at 1282.

269. *Cf.* Stefan Blum, *Ex Parte Reexamination: A Wolf in Sheep's Clothing*, 73 OHIO ST. L.J. 395, 425–28 (2012) (changing expectations about litigation outcome without getting to the merits would likely impact patent infringers' litigation strategy or amenability to settlement).

270. *See supra* text accompanying notes 121–22.

271. *See supra* text accompanying note 123.

272. *Trebuchet Physics*, REAL WORLD PHYSICS PROBLEMS, <http://www.real-world-physics-problems.com/trebuchet-physics.html> (last visited Nov. 8, 2014).

273. *See* *Gottschalk v. Benson*, 409 U.S. 63, 64–67 (1972); *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014).

274. *See* *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 70–71 (1853) (describing the elements of the Morse telegraph including a table, frame, electromagnet, battery, and wire); *Trebuchet Physics*, *supra* note 272 (providing a diagram showing a frame, beam, heavy counterweight, sling, and pouch).

transmitting signals electronically at a distance,²⁷⁵ converting binary-coded decimal numbers to pure binary,²⁷⁶ or hedging business risk²⁷⁷ are more likely to substantially incorporate an abstract idea because there is not much else in the patent to distinguish its scope from the abstract idea itself.²⁷⁸ The more abstract and less tangible the patent, the more difficult it will be to prove it is a valid patent.²⁷⁹

The second factor will be centrality of the abstract idea to the patent.²⁸⁰ If the abstract idea is not central to the operation of the patent there is no substantial usage.²⁸¹ The trebuchet example previously discussed depends on abstract physical principles, but those principles are not central to its actual operation.²⁸² Even a much more abstract method such as card counting, which depends heavily on the mathematical principles of probability, does not utilize them for its actual operation.²⁸³ Patents that substantially use an abstract idea will often be patents like those found in *Benson* or *Bilski* where the central operation of the patent is essentially executing the abstract idea incorporated.²⁸⁴ These patents lack either a

275. See *Morse*, 56 U.S. (15 How.) at 86 (Morse's eighth claim explicitly did not limit the patent to any specific machinery and instead claimed generally using electric current to transmit characters at a distance).

276. See *Benson*, 409 U.S. at 64–67.

277. See *Bilski v. Kappos*, 561 U.S. 593, 597–600 (2010).

278. See Stephen Pulley, *An "Exclusive" Application of an Abstract Idea: Clarification of Patent-Eligible Subject Matter after Bilski v. Kappos*, 2011 BYU L. REV. 1223, 1256–57 (making a similar argument in the wake of *Bilski*, 561 U.S., concluding that more cleanly defined patent validity exclusionary rules would lead to application of the "abstract ideas" framework under § 101 "in a more constitutionally sound manner amid the growth of the Information Age.").

279. See *id.* at 611–13; *Benson*, 409 U.S. at 72–73.

280. For example, abstract ideas and process under § 101 can be separated, although the distinction goes to arcane early English law. See *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2360 (2014) (Sotomayor, J., joined by Ginsburg and Breyer, JJ., concurring).

281. *CLS Bank Int'l v. Alice Corp. Pty.*, 717 F.3d 1269, 1302 (Fed. Cir. 2013).

282. See *Trebuchet Physics*, *supra* note 272.

283. Cf. *Card Counting*, WIZARD ODDS, <http://wizardofodds.com/games/blackjack/card-counting/introduction> (last updated Oct. 27, 2009) ("Experienced card counters still play by the basic strategy the great majority of the time.").

284. See *Bilski*, 561 U.S. at 597–600 (discussing calculations for hedging risk by attempting to reduce financial loss caused by price fluctuations in

physical element or other additional elements significantly distinguishing them from the abstract idea they incorporate.²⁸⁵

3. Evaluate Whether the Claim Unduly Burdens Use of the Abstract Idea by Others

This step is the most important because it specifically addresses whether the patent restricts the ability of abstract ideas to remain “free to all men and reserved exclusively to none.”²⁸⁶ A patent can have a presumption of patentability, substantially incorporate an abstract idea, and still avoid unduly burdening the use of that abstract idea by other inventors.²⁸⁷ It is the patents that make it difficult or impossible for others to utilize the abstract idea that must be identified and invalidated.²⁸⁸

The key factor for this step is how thoroughly the patent forecloses the use of the abstract idea. This can be measured by examining the difference between the abstract idea itself and the final incorporation included in the patent.²⁸⁹ There must be a substantial creative difference between the idea in the abstract or incorporated as calculations on paper and the usage in the invention.²⁹⁰ An invention that merely takes advantage of the information in the abstract idea or scientific principle is not patentable.²⁹¹ An invention that simply executes an abstract algorithm, no differently than it could be executed with pen and paper, is not patentable.²⁹² An invention that only

commodities markets); *Benson*, 409 U.S. at 65–67 (conversion of binary-coded decimal numbers to pure binary).

285. See, e.g., *Benson*, 409 U.S. at 72–73.

286. *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948).

287. See generally *Diamond v. Diehr*, 450 U.S. 175 (1981) (upholding a patent on a process for curing rubber using an application of the Arrhenius equation).

288. See generally *Benson*, 409 U.S. at 72 (“[T]he patent would wholly preempt the mathematical formula and in practical effect would be a patent on the algorithm itself.”).

289. *Id.* at 72–73.

290. See *Bilski*, 561 U.S. at 611–13.

291. *Funk Bros. Seed Co.*, 333 U.S. at 130; *O’Reilly v. Morse*, 56 U.S. (15 How.) 62, 115–16 (1853).

292. *Bilski*, 561 U.S. at 611–13; *Benson*, 409 U.S. at 71–72.

executes unrelated operations²⁹³ or adds routine additional steps²⁹⁴ is not patentable.

The patent must incorporate the abstract idea in such a way that it is distinguishable from the idea by itself and leaves the idea free to be used by others.²⁹⁵ This may be by incorporating it in a device²⁹⁶ or some other physical implementation.²⁹⁷ It may also be accomplished by incorporating it in an industrial process that produces a useful product.²⁹⁸ A piece of software may use an abstract idea in combination with novel data to produce a useful result.²⁹⁹ All of these incorporations leave room for use of the abstract idea in other devices, methods, or pieces of software without impermissibly foreclosing their use.³⁰⁰

The details of this test can be examined by applying them as an example to the method that a Global Positioning System (GPS) uses to calculate location. GPS uses an abstract geometrical principle called trilateration.³⁰¹ Trilateration in two dimensions allows the calculation of a location based on the knowledge that a point lies on the perimeter of three different circles (i.e., a distance of each circle's radius away from that circle's center) because those three circles can only intersect at one point.³⁰² A similar process can be used with four spheres in three dimensions.³⁰³

293. *Parker v. Flook*, 437 U.S. 584, 590 (1987).

294. *Mayo Collaborative Servs. v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289, 1291 (2012).

295. *Funk Bros. Seed Co.*, 333 U.S. at 130.

296. *See Morse*, 56 U.S. (15 How.) at 85–87 (describing how abstract ideas are implemented into the physical aspects of Morse's telegraph design).

297. *See Diamond v. Diehr*, 450 U.S. 175, 192–93 (1981).

298. *Id.*

299. *See generally* Patrick Bertagna, *How Does a GPS Tracking System Work?*, EE TIMES (Oct. 26, 2010, 1:25 PM), http://www.eetimes.com/document.asp?doc_id=1278363 (explaining how the mathematical principles of trilateration are used to calculate location based on GPS satellite signals).

300. *See Gottschalk v. Benson*, 409 U.S. 63, 71–72 (1972) (holding that patents on processes must be such that other processes are able to use the same abstract idea).

301. *What Is Trilateration?*, ROSE INDIA TECH. PVT. LTD. (Feb. 15, 2008), <http://roseindia.net/technology/gps/what-is-trilateration.shtml> (“GPS receivers calculate the position of objects in two dimensional or three dimensional space using a mathematical process called trilateration.”).

302. *Id.*

303. *Id.*

GPS depends on a constellation of twenty-four satellites that rotate around the earth.³⁰⁴ These satellites send out location and timing signals received by GPS receivers.³⁰⁵ Provided that the receiver can receive signals from at least four satellites, it then uses the principles of three-dimensional trilateration to calculate location based on the location and distance to each satellite.³⁰⁶

GPS, whether evaluated as a device or a method, incorporates the abstract geometrical principle of trilateration.³⁰⁷ It does not use trilateration in a rote way to calculate an abstract location based on the location and distance of an abstract set of points.³⁰⁸ Rather it uses the input from GPS satellites to calculate useful information—the precise location of a GPS receiver on or above the Earth's surface.³⁰⁹ The GPS patent only claims the use of trilateration for “determining the positions of a plurality of vehicles traveling on or above a defined sector of the earth's surface.”³¹⁰ It makes no claims to the general use of trilateration.³¹¹ Other users are still free to use trilateration for land surveying,³¹² allowing robots to locate each other,³¹³ or any other potential use. In this example GPS has not unduly burdened the use of an abstract idea by others.

304. Bertagna, *supra* note 299.

305. *Id.*

306. *Id.*

307. *See id.*

308. *See What Is Trilateration?*, *supra* note 301.

309. *See Bertagna, supra* note 299.

310. Satellite-Based Vehicle Position Determining System, U.S. Patent No. 4,359,733 (filed Sept. 23, 1980) (issued Nov. 16, 1982), *available at* <http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=%2Fnethtml%2FPTO%2Fsrchnum.htm&r=1&f=G&l=50&s1=4359733.PN.&OS=PN/4359733&RS=PN/4359733>.

311. *See id.*

312. *See* David DiBiase et al., *Trilateration*, PA. ST. U., http://www.e-education.psu.edu/natureofgeoinfo/c5_p12.html (last visited Aug. 22, 2014).

313. *See* PAUL M. MAXIM ET AL., *TRILATERATION LOCALIZATION FOR MULTI-ROBOT TEAMS* (2008), *available at* <http://homepages.ius.edu/suhettia/papers/icinco.pdf>.

IV. CONCLUSION

The software development industry is large, dynamic, and rapidly growing. It affects almost every aspect of our daily lives.³¹⁴ This industry faces unique challenges in patenting its products due to the intangible nature of software.³¹⁵ Yet, the Supreme Court has failed to propagate a clear test on how to evaluate software patents that implement abstract ideas despite the high hopes for the *Alice* ruling.³¹⁶ This uncertainty threatens the future of software patents and discourages the very innovation patents are intended to create.³¹⁷ To restore software patents to a firm footing, the Supreme Court should set as the standard the three-prong test proposed in this Comment.

This test immediately invalidates patents that fail to qualify under § 101 and that have little or no relation to an abstract idea. It then proceeds to an analysis of the abstract idea claimed and whether it unduly burdens its use by others. The test eliminates spurious claims while balancing the interests of the inventor and the public to encourage innovation while leaving the laws of nature free to all.

314. See *Global Software*, *supra* note 185.

315. See Matt Flinders, *Protecting Computer Software—Analysis and Proposed Alternative*, 7 J. HIGH TECH. L. 71, 74 (2007) (“The unique characteristics of software, however, create troubling conflicts under [intellectual property laws].”).

316. See *supra* note 217 and accompanying text.

317. Ling Cheung Hughes & James H. Morris, *No, ‘Alice’ Wasn’t a ‘Death Knell’ for Software Patents*, NAT’L L.J. (Sept. 8, 2014), <http://www.nationallawjournal.com/id=1202669092811/No-Alice-Wasnt-a-Death-Knell-for-Software-Patents?slreturn=20140919235617> (“Worried inventors, companies and investors have been reconsidering business and intellectual property strategies for fear that computer-implemented inventions are no longer eligible for patents.”).