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Software Patentability after Prometheus

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SOFTWARE PATENTABILITY AFTER *PROMETHEUS*

Holland King*

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INTRODUCTION

Since the advent of computers,¹ there has been an open question of whether software should receive similar patent protection to that of the hardware it runs on and competes with, or if it should be excluded from patentability as an abstract idea.² The courts have generally allowed for limited eligibility,³ but struggled to define the boundaries of that condition. Consequently, the line for patentability moves with the courts using a number of tests, frequently rejecting or devaluing a given test in favor of another.⁴ In a recent decision on patentable

1. Throughout this Note, “computer” is defined as “an automatic electronic machine for making rapid calculations or controlling operations that are expressible in numerical or logical terms.” 1 SHORTER OXFORD ENGLISH DICTIONARY 476 (6th ed. 2007). It will *not* mean, “a person employed to make calculations” as the Federal Circuit tried to define it. *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can.*, 687 F.3d 1266, 1277–78 (Fed. Cir. 2012).

2. See generally *Diamond v. Diehr*, 450 U.S. 175 (1981); *Parker v. Flook*, 437 U.S. 584 (1978); *Gottschalk v. Benson*, 409 U.S. 63 (1972). See discussion *infra* Part I.

3. See *Diehr*, 450 U.S. at 191–92 (allowing patentability for the use of a mathematical formula in an industrial process). *But see Flook*, 437 U.S. at 594–95 (denying patentability of a method for updating alarm limits); *Benson*, 409 U.S. at 64, 71–72 (rejecting a patent for a method of converting binary-coded decimal numerals into pure binary numerals). However, all three cases admit that there is the possibility of patentable subject matter.

4. The court in *State Street Bank* overruled the Freeman-Walter-Abele Test, noting it had “little, if any, applicability to determining the presence of statutory subject matter.” *State St. Bank & Trust Co. v. Signature Fin. Grp., Inc.*, 149 F.3d 1368, 1374 (Fed. Cir. 1998). At the same time, the court in *State Street Bank* set forth a “useful, concrete, and tangible result[s]” test. *Id.* at 1373 (quoting *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994)). The Supreme Court never accepted this test and questioned if it was even viable. See *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 136 (2006). In the case of *In re Bilski*, the Federal Circuit contemplated a new “technological arts” test, but declined to adopt it because it was too unclear. *In re Bilski*, 545 F.3d 943, 960 (Fed. Cir. 2008), *aff’d sub nom.* *Bilski v. Kappos*, 130 S. Ct. 3218 (2010). At the same time, the court named the test originally set forth in *Benson* as the machine-or-transformation test and would go on to use this test almost exclusively. *Id.* at 963. The Supreme Court would quickly reject the machine-or-transformation test as the sole standard for determining the patentability of inventions suspected as falling under the “abstract ideas” exception to patentability. *Kappos*, 130 S. Ct. at 3221. Nevertheless, by admitting that the machine-or-transformation test was a “useful and important clue” to patentability, the Supreme Court left the door open to the lower courts to continue using it as the only existing, accepted test. *Id.* at 3227. More recently, the Supreme

subject matter, the Supreme Court attempted to strengthen the barrier to patent eligibility by requiring more from the invention.⁵ The Federal Circuit applied this decision in recent cases,⁶ albeit while receiving blame for inconsistency.⁷ Even the Federal Circuit itself seems troubled by its own decisions, as evident in its decision to vacate one of these opinions for an en banc rehearing.⁸ The problem is not a direct result of the Supreme Court's most recent decision, but rather that "no one understands what makes an idea 'abstract.'"⁹ Currently, the only well-defined test available—the machine-or-transformation test¹⁰—is losing favor with the Supreme Court,¹¹ and has been criticized by the patent community.¹² This Note proposes that courts adopt an additional test, one whose factors incorporate the teachings of the Supreme Court as well as the patent community.

This Note examines the history of patentability of abstract ideas and the tests that courts have used to make the determination of whether an invention incorporating an abstract idea is patentable. Part I provides a history of the four seminal cases related to patentable subject matter, as well as some more recent on point decisions.¹³ Part

Court again noted that the machine-or-transformation test is not the only test; however, it declined to accept any other test proposed. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1303 (2012).

5. *Prometheus*, 132 S. Ct. at 1298–99. However, as discussed, the Court refused to accept any test set forth by the parties. See discussion *supra* note 4.

6. *CLS Bank Int'l v. Alice Corp. Pty. Ltd.*, 685 F.3d 1341, 1347 (Fed. Cir.), *vacated*, 484 F. App'x 559 (Fed. Cir. 2012); *Bancorp*, 687 F.3d at 1275–76.

7. Dennis Crouch, *Ongoing Debate: Is Software Patentable?*, PATENTLYO (July 27, 2012), <http://patentlyo.com/patent/2012/07/ongoing-debate-is-software-patentable.html>. ("Despite this attempted reconciliation, it is clear that the *CLS* majority has a different approach to subject matter eligibility questions.")

8. See *generally Alice*, 685 F.3d 1341. The court's decision to vacate came only after the *Bancorp* decision was handed down by a different panel of Federal Circuit judges. 484 F. App'x at 559.

9. Mark A. Lemley et al., *Life After Bilski*, 63 STAN. L. REV. 1315, 1316 (2011). See also *In re Alappat*, 33 F.3d 1526, 1542 n.18 (Fed. Cir. 1994) ("[A]bstract ideas constitute disembodied concepts or truths which are not 'useful' from a practical standpoint standing alone, i.e., they are not 'useful' until reduced to some practical application.").

10. The machine-or-transformation test, a test first introduced in *Gottschalk v. Benson*, continues to be used by the courts today with various degrees of success. See discussion *infra* Part II.A.

11. The Court, while not rejecting the machine-or-transformation test, did de-emphasize it from the status of the sole test, as the Federal Circuit would use it, to being a "useful and important clue" to patentability. *Bilski v. Kappos*, 130 S. Ct. 3218, 3227 (2010).

12. Lemley et al., *supra* note 9, at 1316 (calling for the complete abandonment of the machine-or-transformation test in favor of other more relevant tests).

13. See discussion *infra* Part I.

II changes focus to the various tests and factors that have been used by the courts, exploring the history of each, discussing the treatment by the Supreme Court, and determining the strengths and weaknesses of each.¹⁴ Based on the discussion in Part II, Part III proposes a new test to supplement the existing machine-or-transformation test.¹⁵

I. BRIEF HISTORY OF SOFTWARE PATENTABILITY

A. *The “Four Seminal Supreme Court Precedents”*¹⁶

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 § 101.¹⁷ This section, which remains relatively unchanged since its origin in 1790,¹⁸ sets forth four categories of patentable subject matter: process,¹⁹ machine,²⁰ manufacture,²¹ and compositions of matter.²² However, the Supreme

14. See discussion *infra* Part II.

15. See discussion *infra* Part III.

16. *Fort Props., Inc. v. Am. Master Lease LLC*, 671 F.3d 1317, 1320 (Fed. Cir. 2012) (“Four seminal Supreme Court precedents provide guidance regarding when an invention qualifies as a patent-eligible process as opposed to an abstract idea . . .”). These four seminal precedents include: *Bilski v. Kappos*, *Diamond v. Diehr*, *Parker v. Flook*, and *Gottschalk v. Benson*. *Id.*

17. *Kappos*, 130 S. Ct. at 3248 (noting Congress’s intention for statutory subject matter to “include[] anything under the sun that is made by man”) (quoting *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980)) (internal quotation marks omitted).

18. See *In re Comiskey*, 499 F.3d 1365, 1375 (Fed. Cir. 2007) (commenting on the history of the statute). One of the largest changes was made by Congress in the 1952 Patent Act, in which Congress replaced the word “art” with the word “process”; however, the words had been used interchangeably until that point. CRAIG ALLEN NARD, *THE LAW OF PATENTS* 157 n.2 (2d ed. 2011).

19. Process is defined by § 100 as a “process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.” 35 U.S.C. § 100(b) (2012). Another, less circular, definition is a “method, operation, or series of actions intended to achieve some new and useful end or result by changing a material’s chemical or physical characteristics.” BLACK’S LAW DICTIONARY 1325 (9th ed. 2009).

20. A machine is “[a] device or apparatus consisting of fixed and moving parts that work together to perform some function.” BLACK’S LAW DICTIONARY, *supra* note 19, at 1035.

21. Manufacture is defined as “[a] thing that is made or built by a human being (or by a machine), as distinguished from something that is a product of nature.” *Id.* at 1050.

22. Composition of matter is defined as a “combination[] of natural elements whether resulting from chemical union or from mechanical mixture, and whether the substances are gases, fluids, powders, or solids.” *Id.* at 325. See 35 U.S.C. § 101 (2006) (“Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”). While the America Invents Act changed much of Title 35, section 101 remains unchanged. See *generally* Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011).

Court has carved out three exceptions to these statutory categories: “‘laws of nature, physical phenomena, and abstract ideas.’”²³ These policy-based exclusions are generally premised on the idea that a fundamental concept or truth is free of any reservation and therefore is not patentable.²⁴ Due to the nature of the exceptions, the boundaries of each exception—the point at which the fundamental concept ends and patentable subject matter begins—is blurred and is often indeterminate. Every invention, at some level, builds on an exception: a rule of nature such as Newtonian mechanics to build a machine; a physical phenomenon such as using a naturally occurring mineral in the invention; or an abstract idea such as a mathematical formula to calculate when the invention should perform an action.²⁵ The question thus becomes whether the patent is claiming an invention made by man, or is only claiming the exception through a trick of patent drafting, commonly known as a draftsman’s trick.²⁶ The Supreme Court has provided clues in the “[f]our seminal” cases.²⁷

1. *Gottschalk v. Benson*

In *Gottschalk v. Benson*, one of the earliest cases dealing with a software patent, an inventor attempted to patent a computer algorithm that would convert decimals into binary.²⁸ In its analysis, the Court

23. *Fort Props., Inc. v. Am. Master Lease LLC*, 671 F.3d 1317, 1320 (Fed. Cir. 2012).

24. In *Diehr*, the Court summarizes the precedents that discuss the policy for having the exclusions. *Diamond v. Diehr*, 450 U.S. 175, 185–86 (1981). The Court goes on to offer what has become the textbook example of an unpatentable law of nature: “Einstein could not patent his celebrated law that $E = mc^2$ ” *Id.* (quoting *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980)) (internal quotation marks omitted).

25. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012) (“[A]ll inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.”); *Parker v. Flook*, 437 U.S. 584, 589 (1978) (“The line between a patentable ‘process’ and an unpatentable ‘principle’ is not always clear.”).

26. *Flook*, 437 U.S. at 594 (explaining that the incorporation of unpatentable material, such as a mathematical formula, does not bar patentability).

27. *Fort Props.*, 671 F.3d at 1320.

28. *Gottschalk v. Benson*, 409 U.S. 63, 64 (1972) (regarding patent application Serial No. 315,050). The Court describes the algorithm as follows:

The patent sought is on a method of programming a general-purpose digital computer to convert signals from binary-coded decimal form into pure binary form

The decimal system uses as digits the 10 symbols 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9. The value represented by any digit depends, as it does in any positional system of notation, both on its individual value and on its relative position in the numeral. Decimal numerals are

drew a direct comparison between the invention at bar and the claimed invention in *O'Reilly v. Morse*, the telegraph case.²⁹ In *Morse*, the Court found that the claim was not for the use of “electricity distinct from the particular process with which it [was] connected in his patent.”³⁰ Instead, the *Morse* patent attempted to claim all uses of electricity to convey a message without a limitation to a specific machine or apparatus.³¹ Without such limitation, the Court found, Morse not only attempted to monopolize more than he had described, or enabled, but also attempted to claim the concept of electromagnetic transmissions.³² In comparison, the Court in *Benson* determined that the formula had no other application than for a digital computer.³³ This contradicting logic of not claiming the algorithm specifically, but attempting to patent all uses of the algorithm, led the Court to reject the claim as it would effectively patent the algorithm itself.³⁴ Where Morse wanted to patent all uses of electricity to deliver a message,

written by placing digits in the appropriate positions or columns of the numerical sequence, i.e., ‘unit’ (100), ‘tens’ (101), ‘hundreds’ (102), ‘thousands’ (103), etc. Accordingly, the numeral 1492 signifies (1 103) (4 102) (9 101) (2 100).

The pure binary system of positional notation uses two symbols as digits—0 and 1, placed in a numerical sequence with values based on consecutively ascending powers of 2. In pure binary notation, what would be the tens position is the twos position; what would be hundreds position is the fours position; what would be the thousands position is the eights. Any decimal number from 0 to 10 can be represented in the binary system with four digits or positions

The BCD system using decimal numerals replaces the character for each component decimal digit in the decimal numeral with the corresponding four-digit binary numeral Thus decimal 53 is represented as 0101 0011 in BCD, because decimal 5 is equal to binary 0101 and decimal 3 is equivalent to binary 0011. In pure binary notation, however, decimal 53 equals binary 110101.

Id. at 65–67.

29. *Id.* at 68–69; *O'Reilly v. Morse*, 56 U.S. 62 (1853).

30. *Benson*, 409 U.S. at 69 (quoting *Dolbear v. Am. Bell Tel. Co.*, 126 U.S. 1, 535 (1888)).

31. *Id.*

32. *See Morse*, 56 U.S. at 124.

33. *Benson*, 409 U.S. at 71 (“The mathematical formula involved here has no substantial practical application except in connection with a digital computer”). Due to this finding, the Court declared that the patent would potentially preempt all uses of the formula, practical and otherwise. *Id.* at 72.

34. *Id.* at 71–72. Even with this finding, the Court left the door open to Congress to allow the patentability of this sort of issue. However, Congress has yet to move in either direction. Even today, there are calls for Congress to take action and resolve this issue. Christal Sheppard, *Solving a Knotty Problem: An Outrageous Call for Patent Reform Part Deux*, PATENTLYO (Aug. 7, 2012), <http://www.patentlyo.com/patent/2012/08/guest-post-by-christal-sheppard-solving-a-knotty-problem-an-outrageous-call-for-patent-reform-part-d.html>.

Benson wanted to patent all uses of the formula to convert decimals into binary. In *Flook*, below, the Court would come to understand *Benson* as standing for the idea that “the discovery of a novel and useful mathematical formula may not be patented.”³⁵

2. Parker v. Flook

Shortly after *Benson*, the Supreme Court again addressed software patentability in *Parker v. Flook*.³⁶ In *Flook*, the Court described the invention—a method to continuously update the desired alarm limit³⁷—as a method involving three steps:

[A]n initial step which merely measures the present value of the process variable (*e. g.*, the temperature); an intermediate step which uses an algorithm to calculate an updated alarm-limit value; and a final step in which the actual alarm limit is adjusted to the updated value.³⁸

As in *Benson*, the Court took issue with the invention being little more than the mathematical formula it encompassed.³⁹ The inventor argued, and the Court conceded, that in *Benson* a patent would have wholly preempted use of the formula.⁴⁰ Preemption of the formula would grant the inventor a monopoly over not only the invention but also the unpatentable mathematical formula, which was not true in *Flook*.⁴¹ Other versions of the formula were already in the public domain and would not be affected by the outcome of the case.⁴² Despite the

35. *Parker v. Flook*, 437 U.S. 584, 585 (1978).

36. *Id.* at 585–87 (evaluating a method for updating alarm limits, which the Patent and Trademark Office Board of Appeals rejected as directed to unpatentable subject matter).

37. An “alarm limit” is a value that will trigger an alarm once exceeded. *Id.* at 585.

38. *Id.*

39. *Id.* at 586. Notably, the Court observed that “[t]he patent application does not purport to explain how to select the appropriate margin of safety,” or other variables; it only calculates the new alarm limit. *Id.*

40. *Id.* at 589–90.

41. *Flook*, 437 U.S. at 590. The respondent specially claimed that the post-solution activity distinguished this case from *Benson*. *Id.*

42. *Id.* at 589–90. This patent attempted to only claim use within the petrochemical and oil-refining industries. *Id.*

inventor's arguments, the Court rejected the idea of any post-solution activity as a transformation for patentability.⁴³ It pointed to a common mathematical formula, the Pythagorean theorem, as an idea that an inventor could not wholly or partially patent regardless of the final steps attached to it.⁴⁴ Building on *Benson*, which restricted the ability to patent a formula, *Flook* now looked to inventions that attempted to patent a formula *and* some other activity. Any additional activity would not be enough to salvage the patentability of the invention; instead, the Court must evaluate the patent as if the formula were well known.⁴⁵

3. *Diamond v. Diehr*

In *Diamond v. Diehr*, the Court examined whether a process for curing rubber was patentable.⁴⁶ The Court recognized that, while the patent was for a process and therefore presumably patentable under § 101, because the process incorporated a number of mathematical formulas, it could fall into one of the judicial exclusions, such as a rule of nature.⁴⁷ The inventor used a well-known formula, the Arrhenius equation,⁴⁸ to determine when the ideal time was to open the press and

43. *Id.* at 590. In this instance, the post-solution activity was “the adjustment of the alarm limit to the figure computed according to the formula.” *Id.* While the courts never explicitly define the term “post-solution activity,” it is generally understood to mean any activity occurring after the use of the equation, abstract idea, or other unpatentable concept. Donald S. Chisum, *The Patentability of Algorithms*, 47 U. PITT. L. REV. 959, 993 n.125 (1986).

44. *Flook*, 437 U.S. at 590 (claiming that “the Pythagorean theorem would not have been patentable, or partially patentable”). *But see* U.S. Patent No. 4,137,652 col.1 l.5–10 (filed Nov. 7, 1977) (issued Feb. 6, 1979) (patenting an apparatus for verification of the Pythagorean theorem). While this patent is a mechanical apparatus, under the reasoning in *Flook*, the apparatus may be considered post-solution activity at the end of the formula. U.S. Patent No. 6,748,224 col.2 l.4–5 (filed Dec. 16, 1998) (issued June 8, 2004) (patenting a local positioning system based on the Pythagorean theorem).

45. *Flook*, 437 U.S. at 590–92 (noting the concept of post-solution activity—being able to transform an unpatentable principle into a patentable process—was an unacceptable exaltation of form over substance). However, the novel structure created with the aid of some formula would still be patentable. *Id.* at 592 (“We think this case must also be considered as if the principle or mathematical formula were well known.”).

46. *Diamond v. Diehr*, 450 U.S. 175, 177 (1981). The Court examined patent application Serial No. 602,463 claiming an invention for a process of molding uncured rubber into cured precision products. *Id.*

47. *Id.* at 185. In fact, the Patent and Trademark Office Board of Appeals rejected the claim as unpatentable. *Id.* at 175. As in both *Benson* and *Flook*, the use of a formula is the use of an abstract idea, one of the three exclusions to patentable subject matter. *See generally Flook*, 437 U.S. 584; *Gottschalk v. Benson*, 409 U.S. 63 (1972).

48. The formula is: $\ln v = CZ + x$. The required cure time is v , C is the activation constant, Z is the

remove the cured rubber product.⁴⁹ As in *Benson*, the *Diehr* invention was based on a well-known mathematical formula; and, similar to *Flook*, the inventor was attempting to claim that the additional activity in the patent claim was enough to salvage the patentability.⁵⁰ However, despite the similarities in both *Flook* and *Benson*, the Court did not consider the current case to be within the recognized exceptions.⁵¹ Instead, the Court found that the current claim, an industrial process to cure rubber, was “drawn to subject matter otherwise statutory.”⁵² In addition, the claim “does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer[,]”⁵³ in the *Benson* situation, a mathematical formula.⁵⁴ The Court also found the other steps in the claim, including installation of the rubber into the press, closing the mold, continuously determining the temperature of the mold, constantly recalculating the cure time via a digital computer, and automatically opening the press at the correct time, added significant activity to the formula in terms of patent law’s objective.⁵⁵ These additional steps, though post-solution activity, were significant by themselves.

The Court in *Diehr* focused on the presence or absence of the post-solution activity.⁵⁶ But the Federal Circuit would go on to construe the *Diehr* decision broadly, interpreting the Supreme Court’s reasoning as a test of the whole claim.⁵⁷ This would open a way forward for the courts to fully approve of software patentability in later cases.⁵⁸

temperature of the mold, and x is a constant based on the geometry of the mold. *Diehr*, 450 U.S. at 177 n.2.

49. *Id.* at 177–78.

50. *Id.* at 187.

51. *Id.* (“[T]he respondents here do not seek to patent a mathematical formula. Instead, they seek patent protection for a process of curing synthetic rubber.”).

52. *Id.* (drawing from *Benson* to note that a program servicing a computer is not patentable).

53. *Id.* (drawing from *Flook* to note that a law of nature or mathematical algorithm is not enough to exclude a process from patent protection).

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

55. *Id.* at 188, 192 (acknowledging the process incorporates a more efficient solution of the equation and that the claim is an attempt to patent an industrial process).

56. *See generally id.* at 175.

57. JANE C. GINSBURG & ROCHELLE COOPER DREYFUSS, *INTELLECTUAL PROPERTY STORIES* 216 (2006).

58. *Id.* at 217 (noting that *State Street Bank & Trust Co. v. Signature Financial Group, Inc.* and *AT&T Corp. v. Excel Communications, Inc.* removed any doubts as to the patentability of software).

Specifically, in *AT&T Corp. v. Excel Communications, Inc.*, the Federal Circuit clarified that *Diehr* is an example of how an algorithm could be a useful application.⁵⁹ Indeed, the *AT&T* case upheld the patentability of Boolean algebraic concepts.⁶⁰

4. *Bilski v. Kappos*

When an inventor tried to patent a process for hedging investment risks, the U.S. Patent Board rejected the application, starting a series of appeals that eventually led to the Supreme Court.⁶¹ The patent agent, the Board of Patent Appeals and Interferences, and the Federal Circuit all agreed that this process merely manipulated abstract ideas, and the inventor did not implement it on a specific machine or apparatus.⁶² Although the Supreme Court would go on to affirm the Federal Circuit, it only did so after setting aside the machine-or-transformation test⁶³ as the sole test for determining patent eligibility with respect to inventions suspected as consisting of abstract ideas.⁶⁴ The Court refused to completely denounce the test, noting that it is “a useful and important clue, an investigative tool,”⁶⁵ but this same language has allowed the Federal Circuit to continue to use the machine-or-transformation test as its primary test for patentability.⁶⁶

59. *Id.*

60. *Id.*

61. *Bilski v. Kappos*, 130 S. Ct. 3218, 3223–24 (2010) (affirming the Federal Circuit and the Patent and Trademark Office’s decision that the patent application for a method of hedging risk in the field of commodities trading was not eligible subject matter).

62. *Id.* at 3224.

63. *Id.* at 3227 (“This Court’s precedents establish that the machine-or-transformation test is a useful and important clue, an investigative tool, for determining whether some claimed inventions are processes under § 101. The machine-or-transformation test is not the sole test for deciding whether an invention is a patent-eligible ‘process.’”). While a more complete treatment of the machine-or-transformation test is provided in Part II, the machine-or-transformation test is simply a determination of whether the process is tied to a specific machine or transforms an item from one state to another. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1301 (2012); *Diamond v. Diehr*, 450 U.S. 175, 183 (1981).

64. *Bilski*, 130 S. Ct. at 3226–27. Here the Court pointed to precedents as establishing the test but not the sole test. *Id.* This determination has support in both *Benson* and *Diehr*. In *Diehr*, the Court looked to both *Benson* and *Cochrane v. Deener* and found that “[t]ransformation and reduction of an article ‘to a different state or thing’ is the clue to the patentability.” *Diehr*, 450 U.S. at 188, 184 (quoting *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972)).

65. *Bilski*, 130 S. Ct. at 3227.

66. *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can.*, 687 F.3d 1266, 1278 (Fed. Cir. 2012) (finding the invention failed the machine-or-transformation test and consequently was not patentable).

However, the Court in *Bilski* refused to definitively state whether any invention or technology was categorically unpatentable.⁶⁷ The Court deferred that decision to the legislative branch, but suggested the statute, as written, allowed for a narrow area of patentability for business methods.⁶⁸ Here, the Court found that the inventor took an abstract idea, reduced it to a mathematical formula, and tried to patent the result.⁶⁹ The ability to patent the invention would be the same as having a monopoly over the initial abstract idea.⁷⁰ In deference to its decision in *Flook*, the Court again rejected the patentability of an invention that is an abstract idea that happens to be limited to a particular field of use.⁷¹

B. *Prometheus Sets the Standard*

After *Bilski*, the lower courts continued to rely heavily on the machine-or-transformation test.⁷² In *Mayo Collaborative Services v. Prometheus Laboratories*, the Federal Circuit again relied on the machine-or-transformation test to determine patentability.⁷³ In that

67. *Bilski*, 130 S. Ct. at 3228 (“It is important to emphasize that the Court today is not commenting on the patentability of any particular invention, let alone holding that any of the above-mentioned technologies from the Information Age should or should not receive patent protection.”).

68. *Id.* at 3229 (“This established rule of statutory interpretation cannot be overcome by judicial speculation as to the subjective intent of various legislators in enacting the subsequent provision. Finally, while § 273 appears to leave open the possibility of some business method patents, it does not suggest broad patentability of such claimed inventions.”). The Court even invited the Federal Circuit to create new tests. *Id.* at 3231. (“It may be that the Court of Appeals thought it needed to make the machine-or-transformation test exclusive precisely because its case law had not adequately identified less extreme means of restricting business method patents . . . [W]e by no means foreclose the Federal Circuit’s development of other limiting criteria that further the purposes of the Patent Act . . .”). Business methods are “a way or an aspect of a way in which a commercial enterprise is operated.” BLACK’S LAW DICTIONARY, *supra* note 19, at 227.

69. *Bilski*, 130 S. Ct. at 3231 (“The concept of hedging, described in claim 1 and reduced to a mathematical formula in claim 4, is an unpatentable abstract idea, just like the algorithms at issue in *Benson* and *Flook*.”).

70. *Id.* This analysis echoes the language used in *Flook*. *Parker v. Flook*, 437 U.S. 584, 595 (1978).

71. *Bilski*, 130 S. Ct. at 3231. Again, the Court rejected the post-solution components as salvaging the invention, noting that in this case “these claims add even less to the underlying abstract principle than the invention in *Flook* did.” *Id.*

72. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1296 (2012); *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can.*, 687 F.3d 1266, 1272 (Fed. Cir. 2012).

73. *Prometheus*, 132 S. Ct. at 1302. Two patents were at issue in this case, U.S. Patent No. 6,355,623 and U.S. Patent No. 6,680,302. *Id.* at 1295. Both patents were granted and licensed to Prometheus Laboratories, who brought suit against Mayo Collaborative Services for infringement. *Id.* at 1295–96. The District Court granted summary judgment in favor of Mayo due to the claims being directed to

case, the invention at issue was a process for determining the correct dosage of thiopurine drugs.⁷⁴ On appeal, the Supreme Court recognized that the invention claimed a law of nature.⁷⁵ However, the inquiry did not end there; the Court had to determine if the claimed process transformed the unpatentable natural law into a patentable application of that law.⁷⁶ When the Court looked to its own precedents, it found guideposts from *Flook*, *Morse*, *Benson*, and *Bilski*, which advised against the use of draftsman tricks⁷⁷ rejected claims that were too broad,⁷⁸ and required an inventive concept.⁷⁹ Using the teachings from those four cases, the Court found the claims to be an excluded law of nature—the relationship between the thiopurine drug and the molecules in the patient’s blood.⁸⁰ As a result, the Court found that the patent only included the “well-understood, routine, conventional activity previously engaged in by researchers in the field.”⁸¹

unpatentable subject matter. *Id.* at 1296. The Federal Circuit reversed using the machine-or-transformation test to find patentability. *Id.*

74. *Id.* at 1294–95. It is important to note that much of the process patented here was already known to the scientific community. *Id.* at 1295. The Court specifically pointed out that “scientists already understood that the levels in a patient’s blood of certain metabolites . . . correlated with the likelihood that a particular dosage of a thiopurine drug could cause harm or prove ineffective.” *Id.* Thiopurine drugs are composed of azathioprine, 6-mercaptopurine, and 6-thioguanine. Srikumar Sahasranaman et al., *Clinical Pharmacology and Pharmacogenetics of Thiopurines*, 64 EUR. J. CLINICAL PHARMACOLOGY 753, 753 (2008). They are commonly prescribed to treat chronic inflammatory diseases. *Id.*

75. *Prometheus*, 132 S. Ct. at 1296 (stating that “Prometheus’ patents set forth laws of nature”). However, the Court also recognized that “all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.” *Id.* at 1293. “[A] process is not unpatentable simply because it contains a law of nature or a mathematical algorithm.” *Id.* (quoting *Diamond v. Diehr*, 450 U.S. 175, 187 (1981)) (internal quotation marks omitted).

76. *Id.* at 1294 (“[T]o transform an unpatentable law of nature into a patent-eligible *application* of such a law, one must do more than simply state the law of nature while adding the words ‘apply it.’ . . . We must determine whether the claimed processes have transformed these unpatentable natural laws into patent-eligible applications of those laws.”).

77. *Id.* The Court looked to *Flook* for admonishment of patent statute interpretations that would lead to draftsman’s tricks. *Id.* Draftsman’s tricks refer to any attempt at obtaining a patent or avoiding a rejection by drafting the claims in a manner to disguise the actual subject. *Gottschalk v. Benson*, 409 U.S. 63, 72 (1972).

78. *Prometheus*, 132 S. Ct. at 1294. The Court followed *Morse* and *Benson*’s teachings to not uphold a patent that would broadly preempt the use of the unpatentable subject. *Id.*

79. *Id.* From *Flook* and *Bilski*, the Court understood that a process that includes a natural law may still be patentable if it has an “inventive concept” that ensures the patent amounts to more than just the natural law. *Id.* The idea of an “inventive concept” has not been an integral part of recent patent law. See discussion *infra* Part II.B.

80. *Prometheus*, 132 S. Ct. at 1296.

81. *Id.* at 1294.

According to the Court, the patent was on the administration of the drug; the patient then tells the doctor about the law of nature; and finally it includes a step that instructs the doctor to determine the amount of metabolite molecules in the blood.⁸² Due to the nature of these steps, the Court held, the patent would disproportionately tie up the underlying natural law⁸³ and, without some additional claim that was not a well-known conventional activity, the patent's only unique concept was a law of nature.⁸⁴ The process in *Diehr*, which was found patentable, contained steps that were not "in context obvious, already in use, or purely conventional[,]” while the steps in *Prometheus* did include activities that were not well understood at the time.⁸⁵

While *Prometheus* looked specifically at a law of nature exclusion and not an abstract idea, the Supreme Court has already used the holding to remand cases dealing with abstract ideas,⁸⁶ and the Federal Circuit has used the reasoning in analyzing software cases.⁸⁷ In the wake of the Court's decision in *Prometheus*, several cases were remanded for reconsideration based on the new holding.⁸⁸ Recently, the Federal Circuit issued decisions in the case of *CLS Bank v. Alice Corporation*⁸⁹ and *Bancorp Services v. Sun Life*.⁹⁰ Despite *Prometheus* not directly addressing software patents or abstract ideas, the Supreme Court addressed, and rejected, the Federal Circuit's test

82. *Id.* at 1297–98.

83. *Id.* at 1294. However, the Court would later claim “those in the field did not know the precise correlations between metabolite levels and likely harm or ineffectiveness.” *Id.* at 1295.

84. *Id.* at 1296.

85. *Id.* at 1299.

86. *See, e.g.,* *Ultramercial, LLC v. Hulu, LLC*, 657 F.3d 1323 (Fed. Cir. 2011), *vacated sub nom.* *Wildtangent, Inc. v. Ultramercial, LLC*, 132 S. Ct. 2431 (2012).

87. *See generally* *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can.*, 687 F.3d 1266 (Fed. Cir. 2012).

88. *See generally* *Ultramercial*, 132 S. Ct. 2431; *Ass'n for Molecular Pathology v. U. S. Patent and Trademark Office*, 653 F.3d 1329 (Fed. Cir. 2011), *vacated sub nom.* *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 132 S. Ct. 1794 (2012).

89. *See generally* *CLS Bank Int'l v. Alice Corp. Pty. Ltd.*, 685 F.3d 1341, 1347 (Fed. Cir.), *vacated*, 484 F. App'x 559 (Fed. Cir. 2012). While the Supreme Court did not remand this case, the decision is directly influenced by the discussion in *Prometheus*. *Id.* In *Prometheus*, the Supreme Court reversed the Federal Circuit for a second time, pointing out that the Federal Circuit's test for subject matter patentability was insufficient. *Id.* at 1356 (Prost, J., dissenting).

90. *Bancorp*, 687 F.3d at 1266. Similar to *Alice*, this case was not remanded by the Supreme Court. However, the timing of the *Prometheus* decision and the reasoning cited in the case show that the Federal Circuit is treating both cases under the new *Prometheus* guidance. *Id.*

for subject matter eligibility, which it used not only in law of nature cases but abstract idea cases as well.

1. CLS Bank International v. Alice Corporation

In *Alice*, the Federal Circuit evaluated a patent claiming a computer system for exchanging obligations between two parties using a trusted third party.⁹¹ However, shortly after the court issued its decision, it vacated it for an en banc rehearing.⁹² The following section discusses the original decision as it relates to *Bancorp* and shows the court's reasoning at the time. A discussion of the more recent en banc decision follows in a subsequent section.

a. Alice Panel Decision

To determine if the inventor directed the claim of the patent to a patent-eligible subject matter, the court focused on the concept of preemption.⁹³ The court took guidance from *Bilski*, *Morse*, and *Benson*, each holding that if the abstract idea preempts use in all other fields, then it works as a monopoly over the entire idea.⁹⁴ Looking to the machine-or-transformation test, the court questioned if a machine sufficiently limited the patent in some meaningful way.⁹⁵ The court used this second question to satisfy the first.⁹⁶ The fact that the patent was limited to a computer implementation meant the patent did not preempt all other fields of use.⁹⁷ However, this reasoning and the

91. *Alice*, 685 F.3d at 1343. The court is evaluating patents 5,970,479; 6,912,510; 7,149,720; and 7,725,375, all of which are owned by Alice Corporation. *Id.* The district court ruled the patents invalid for failure to claim patent-eligible subject matter. *Id.* at 1345.

92. *CLS Bank Int'l v. Alice Corp. Pty. Ltd.*, 484 F. App'x 559, 559 (Fed. Cir. 2012).

93. *Alice*, 685 F.3d at 1349.

94. *Id.*

95. *Id.* at 1350 (“In determining whether a claim is directed to a non-statutory abstract idea, the Supreme Court acknowledged this court’s ‘machine-or-transformation test [as] a useful and important clue, an investigative tool,’ but not as a dispositive test.”) (quoting *Bilski v. Kappos*, 130 S. Ct. 3218, 3227 (2010)).

96. *Id.* at 1355–56.

97. *Id.* (“It is clear, moreover, that the limitations . . . do not appear to preempt much in the way of innovation. While the use of a machine in these limitations is less substantial or limiting than the industrial uses examined in *Diehr* (curing rubber) or *Alappat* (a rasterizer), the presence of these limitations prevents us from finding it manifestly evident that the claims are patent ineligible . . .”).

heavy reliance on the machine-or-transformation test drew criticism from the dissent.⁹⁸

b. Alice En Banc Decision

The Federal Circuit vacated the panel’s decision in *Alice* in order to hear it en banc hoping to “ameliorate [the] uncertainty by providing objective standards for section 101.”⁹⁹ However, the court was unable to agree on a single standard, instead “propound[ing] at least three incompatible standards, devoid of consensus, serving simply to add to the unreliability.”¹⁰⁰ In total, the court issued six different opinions, and while equally divided on almost every point, a majority agreed that the method and related computer claims were “not directed to eligible subject matter.”¹⁰¹

In an opinion filed by Judge Lourie, he examined the Supreme Court’s opinions, including *Benson*, *Flook*, *Diehr*, *Bilski*, and *Prometheus*.¹⁰² From this analysis, he took away three common themes: “patents should not be allowed to preempt the fundamental tools of discovery”;¹⁰³ a warning “against overly formalistic approaches to subject-matter eligibility that invite manipulation by patent applicants”;¹⁰⁴ and a desire for a “flexible, claim-by-claim approach to subject-matter eligibility that avoids rigid line drawing.”¹⁰⁵ Judge Lourie went on to outline the process for determining whether a computer-implemented claim is directed to

98. *Id.* at 1356–57 (Prost, J., dissenting) (“The majority resists the Supreme Court’s unanimous directive to apply the patentable subject matter test with more vigor. Worse yet, it creates an entirely new framework that in effect allows courts to avoid evaluating patent eligibility under § 101 whenever they so desire. . . . As mentioned, however, the majority does not even attempt to inquire whether the claims disclose anything inventive. The bulk of the analysis focuses on the fact that the claims require ‘computer implementation,’ which the majority itself deems insufficient to pass muster under § 101.”).

99. *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 717 F.3d 1269, 1321 (Fed. Cir. 2013) (Newman, J., concurring in part and dissenting in part).

100. *Id.*

101. *Id.* at 1273 (per curiam). There are only five opinions officially, but Chief Judge Rader wrote separately under a heading of “Additional Reflections filed by RADER, Chief Judge” wherein he described how an analysis should be conducted. *Id.* at 1333–36 (Rader, J., additional reflections).

102. *Id.* at 1277–80 (Lourie, J.). Judge Lourie’s opinion was also joined by Judge Dyk, Prost, Reyna, and Wallach. *Id.* at 1273.

103. *Id.* at 1280.

104. *Id.* at 1281.

105. *Alice*, 717 F.3d at 1281.

subject matter that is patent-eligible under § 101.¹⁰⁶ First, the claim must fall within one of the four statutory categories: process, machine, manufacture, or composition of matter.¹⁰⁷ Once the statutory category has been established, the focus turns to the judicial exceptions, and whether the claim preempts one of the exceptions.¹⁰⁸ Judge Lourie rejected the idea of a supposed requirement that a patent must exhibit inventiveness if the term has the same meaning as used for § 102 and § 103.¹⁰⁹ Instead, the inventive concept requirement for § 101 only means “a genuine human contribution to the claimed subject matter[,]” one that is “more than a trivial appendix to the underlying abstract idea.”¹¹⁰ Based on this definition of “inventive concept,” he rejected the patent in question finding that the limitations added nothing to the substance of the claim.¹¹¹

Chief Judge Rader wrote two separate opinions, the first to concur-in-part,¹¹² and the second to provide “additional reflections.”¹¹³ Whereas Judge Lourie looked to Supreme Court cases, Judge Rader looked to the statute, detailing the history of the relevant language, especially concerning “invention.”¹¹⁴ Both judges agreed that the eligibility inquiry in § 101 “is not an inquiry into obviousness, novelty, enablement, or any other patent law concept.”¹¹⁵ However, Judge Rader eventually found that the claims were directed to an abstract concept—the use of an escrow to avoid risk.¹¹⁶ Each of the claim elements did little more than to recite steps in the abstract concept. The

106. *Id.* at 1282.

107. *Id.*

108. *Id.*

109. *Id.*

110. *Id.* at 1283.

111. *Alice*, 717 F.3d at 1286.

112. *Id.* at 1292. The Chief Judge was joined by Judges Linn, Moore, and O’Malley. *Id.*

113. *Id.* at 1333 (Rader, C.J., additional reflections). Here the Chief Judge is not joined by any other judges, and this does not appear to be an actual opinion, but truly contemplations by the Chief Judge.

114. *Id.* at 1294 (Rader, C.J., concurring in part and dissenting in part). (“We begin with the text of the statute.”). This is also the focus of Judge Rader’s additional reflections: “Thus, I find myself writing again as I did in 1992. And I find myself resorting to exactly the same phrase: When all else fails, consult the statute!” *Id.* at 1335 (Rader, C.J., additional reflections).

115. *Id.* at 1302 (Rader, C.J., concurring in part and dissenting in part).

116. *Id.* at 1312.

claim here was “indistinguishable from the [ineligible] claim in *Bilski*.”¹¹⁷

In a dissent filed by Judge Moore, he expressed concern over the analysis and the outcome, claiming “this case is the death of hundreds of thousands of patents, including all business method, financial system, and software patents as well as many computer implemented and telecommunications patents.”¹¹⁸ While the flaw in the other opinions was clear for Judge Moore—they “trample[d] upon a mountain of precedent”¹¹⁹—the correct analysis was even simpler: “But if meaningfully tying a method to a machine can be an important indication of patent-eligibility, how can a claim to the *machine itself*, with all its structural and functional limitations, *not* be patent-eligible?”¹²⁰ He went on to note that a machine is a concrete thing, not an abstract idea.¹²¹ And while software is not so concrete, its only purpose is to “effectively rewire[] a computer, making it a special purpose device capable of performing operations it was not previously able to perform.”¹²² This led Judge Moore to find at least the systems claims eligible.¹²³

In his opinion, Judge Newman proposed three principles: (1) “[t]he court should hold that section 101 is an inclusive statement of patent-eligible subject matter”;¹²⁴ (2) “[t]he court should hold that the form of the claim does not determine section 101 eligibility”;¹²⁵ and (3) “[t]he court should confirm that experimental use of patented information is not barred.”¹²⁶ The first principle would do away with the other criteria such as the judicial exceptions.¹²⁷ As long as the subject matter of a

117. *Alice*, 717 F.3d at 1312 (Rader, C.J., concurring in part and dissenting in part).

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

119. *Id.* at 1314.

120. *Id.* (emphasis in the original).

121. *Id.* at 1316.

122. *Id.* at 1317.

123. *Alice*, 717 F.3d at 1321.

124. *Id.* at 1322 (Newman, J., concurring in-part and dissenting in part). While this appears to be a bright-line test—eligibility based purely on whether the claim is within an eligible subject matter—Judge Newman specifically notes that a bright-line test is unavailable to this area of the law. *Id.* at 1321. Indeed, Judge Newman claims that such a test is unnecessary. *Id.*

125. *Id.* at 1322.

126. *Id.*

127. *Id.* Judge Newman goes on to note that if this principle is followed, then “an all-purpose definition

patent falls within a statutory class, eligibility exists.¹²⁸ Other sections, such as §§ 102, 103, and 112, would duly handle issues with breadth of a claim.¹²⁹ The second principle goes directly to the Supreme Court's bar on draftsman's tricks.¹³⁰ The third principle would "remove the doubts we have sown[.]"¹³¹ and provide a right to "experiment with the information disclosed in patents."¹³² Based on these principles, Judge Newman would have found all the claims eligible under § 101.¹³³

Judge Linn authored an opinion finding fault with the opinions of both Chief Judge Rader and Judge Lourie because they ignored the record of the case.¹³⁴ The record, while always important, was especially important in this case since it revealed limitations on the claims.¹³⁵ Based on these limitations and a narrow reading of the judicial exception, Judge Linn would have found all claims as patent-eligible.¹³⁶

2. Bancorp Services, L.L.C. v. Sun Life Assurance Co.

Less than a month after the decision in *Alice*, the Federal Circuit decided *Bancorp*.¹³⁷ There, the court examined a patent on a system of administering and tracking the value of life insurance policies that are held in separate accounts, including corporate-owned and bank-owned

of 'abstractness' or 'preemption,'" is not needed. *Id.*

128. *Id.* at 1326. However, Judge Newman relies on legislative intent. *Id.* The exceptions are not new and have survived several legislative revisions, the most recent of which occurred in 2011. *See generally* Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011).

129. *Alice*, 717 F.3d at 1326 (Newman, J., concurring in-part and dissenting in part).

130. *Id.* at 1322. *See also* discussion *infra* Part II.A.

131. *Alice*, 717 F.3d at 1325 (Newman, J., concurring in-part and dissenting in part).

132. *Id.*

133. *Id.* at 1327.

134. *Id.* (Linn, J., dissenting) (noting that the opinions "suffer from the same flaw: they are divorced from the record to which we are bound."). Judge Linn was joined by Judge O'Malley. *Id.*

135. *Id.* at 1328. Judge Linn noted that throughout the record, CLS stipulated a favorable claim construction for Alice. *Id.* This stipulation resulted in an electronic implementation being read into every claim. *Id.*

136. *Id.* at 1333.

137. *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can.*, 687 F.3d 1266 (Fed. Cir. 2012). This case started as one of infringement, but the district court invalidated all claims. *Id.* at 1272. The court of appeals reversed and remanded. *Id.* The district court invalidated the claims again based on the ruling in *Bilski*. *Id.* The 2012 *Bancorp* decision addressed the appeal from that ruling. *Id.* at 1273.

accounts.¹³⁸ The fact that the system was implemented on, and limited to, a computer was not enough to convince the court that the claims were patent-eligible.¹³⁹ The court required that the computer act as an integral part of the claimed invention, something that would facilitate the process in a way that a human could not.¹⁴⁰ The computer was only employed for the most basic functions and did not impose any meaningful limitations on the claims.¹⁴¹ The court compared the claims to those in *Bilski* and found “no material difference.”¹⁴² In both cases, the court found the claims did not affect a transformation, and the computer implementation only made the process more efficient.¹⁴³ The key difference between the holding in *Bancorp* and the holding in *Alice* is that, in *Alice*, the court was able to show that the computer provided a significant limitation—a computer that created and maintained shadow records¹⁴⁴—whereas in *Bancorp* the computer was

138. *Id.* at 1269. Patents 5,926,792 and 7,249,037 were specifically at issue. Both patents are owned by Bancorp. *Id.* The court described the invention in the following terms:

The asserted patents disclose specific formulae for determining the values required to manage a stable value protected life insurance policy. For example, the specification discloses creating and initializing a fund by performing particular “calculations and comparisons” to determine an “initial unit value of the policy.” The specification then discloses “processing [that] is required at regular intervals to track existing funds.” Such processing includes the calculation of “fees” for the individuals who manage the life insurance policy. That processing also includes the computation of values used for determining “surrender value protection investment credits,” which, as we previously explained, “means the difference between the actual value of a protected investment and the targeted return value of that investment at the time the protected life insurance policy is surrendered.” Those computations include the concept of a “targeted return”

Id. at 1270 (citations omitted).

139. *Id.* at 1278 (“The computer required by some of Bancorp’s claims is employed only for its most basic function, the performance of repetitive calculations, and as such does not impose meaningful limits on the scope of those claims.”).

140. *Id.* (“To salvage an otherwise patent-ineligible process, a computer must be integral to the claimed invention, facilitating the process in a way that a person making calculations or computations could not.”). Unfortunately, the courts never explain how a computer can “facilitate[e] the process in a way that a person . . . could not.” *Id.*

141. *Id.*

142. *Id.*

143. *Bancorp*, 687 F.3d at 1278 (“As in *Bilski*, the claims do not effect [sic] a transformation, and the fact that the required calculations could be performed more efficiently via a computer does not materially alter the patent eligibility of the claimed subject matter.”).

144. *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 685 F.3d 1341, 1347 (Fed. Cir.), *vacated*, 484 F. App’x 559 (Fed. Cir. 2012).

not found to play a significant part in any of the claims, but was only used to process the information more quickly.¹⁴⁵

3. *What is an Abstract Idea?*

The common problem in determining whether an invention is claiming an abstract idea or patent-eligible subject matter is that “no one understands what makes an idea ‘abstract’”¹⁴⁶ This is due, in part, to a lack of clarity about the line between software and non-software patents.¹⁴⁷ The Federal Circuit proposed a definition of an abstract idea as “disembodied concepts or truths which are not ‘useful’ from a practical standpoint standing alone,”¹⁴⁸ “as anything that does not meet the *Bilski* machine-or-transformation test[,]”¹⁴⁹ and a “disqualifying characteristic [that] should exhibit itself so manifestly as to override the broad statutory categories of eligible subject matter and the statutory context that directs primary attention on the patentability criteria of the rest of the Patent Act.”¹⁵⁰ The second definition is inconsistent with *Bilski* and *Prometheus*.¹⁵¹ The first is not helpful.¹⁵² The third definition has not gained traction in the courts and does little to move the definition forward. A number of proposals have been set forth, by the courts and the patent community, in an effort to provide a new way of testing whether an invention is directed to an abstract idea or patent-eligible subject matter.

145. *Bancorp*, 687 F.3d at 1280.

146. Lemley et al., *supra* note 9, at 1316.

147. *Id.* at 1327 (“There is no clear division between ‘software’ and ‘nonsoftware’ patents, or a computer system that implements a ‘business method’ and one that implements another type of process, or between ‘technological’ and ‘nontechnological’ inventions.”).

148. *In re Alappat*, 33 F.3d 1526, 1542 n.18 (Fed. Cir. 1994).

149. *In re Ferguson*, 558 F.3d 1359, 1367 (Fed. Cir. 2009) (Newman, J., concurring).

150. *Research Corp. Techs., Inc. v. Microsoft Corp.*, 627 F.3d 859, 868 (Fed. Cir. 2010).

151. In both *Bilski* and *Prometheus*, the Court explicitly rejected the machine-or-transformation test as the sole test for patentability. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1296 (2012) (“[T]he ‘machine or transformation test’ is not a definitive test of patent eligibility, but only an important and useful clue.”); *Bilski v. Kappos*, 130 S. Ct. 3218, 3221 (2010) (“The machine-or-transformation test is not the sole test for patent eligibility under § 101.”).

152. All inventions have a usefulness requirement under § 101, so to require an invention to be useful as part of the subject matter threshold is to require the invention to fulfill the utility obligation twice and does not address any other statutory requirements. 35 U.S.C. § 101 (2006).

One suggestion is to abandon the machine-or-transformation test completely,¹⁵³ and instead, frame the question as whether the claims are too broad, rather than directed to an idea that is too abstract.¹⁵⁴ The underlying theory suggests that the broader a claim is the more general and abstract it becomes and the more likely it is to restrict future inventions.¹⁵⁵ However, the Court in *Prometheus* appeared to reject this theory, at least in some situations.¹⁵⁶

In *Ultramercial, LLC v. Hulu, LLC*, the Federal Circuit proposed another test.¹⁵⁷ This test would evaluate two factors in determining patentability: (1) the complexity of the computer program, i.e., how intricate and complex creation of the software program was; and (2) whether the invention required an Internet website.¹⁵⁸ While the Supreme Court has not commented on this test, the patent community raised well-founded criticism as software complexity can be artificially induced.¹⁵⁹

Finally, another proposal is that courts focus on the method by which the patentee achieves his goal: looking to the actual algorithms, procedures, and methods in the software.¹⁶⁰ This, however, would affect a large-scale change in how software is patented and evaluated

153. Lemley et al., *supra* note 9, at 1317 (advocating the rejection of the machine-or-transformation test for being ambiguous).

154. Mark Lemley proposes a five-factor test asking whether: (1) “the claimed invention [is] potentially generative of many kinds of new inventions[.]” (2) “the industry rel[ies] heavily on cumulative invention[.]” (3) “the technological field [is] fast-moving[.]” (4) “the patentee disclosed a small number of embodiments but claimed a broad inventive principle[.]” and (5) “the patentee made an important contribution relative to the prior art[.]” *Id.* at 1341.

155. *Id.* at 1337–38.

156. *Prometheus*, 132 S. Ct. at 1303 (“[E]ven a narrow law of nature . . . can inhibit future research.”).

157. *Patent Law—Patentable Subject Matter—Federal Circuit Applies New Factors in Deciding Patentability of a Computer Program*, 125 HARV. L. REV. 2167, 2168 (2012) [hereinafter *Deciding Patentability*].

158. *Ultramercial, LLC v. Hulu, LLC*, 657 F.3d 1323, 1328 (Fed. Cir. 2011).

159. *Deciding Patentability*, *supra* note 157, at 2168 (“[A] requirement of complex programming is not a useful indicator. Programming complexity does not separate out abstract from nonabstract programs . . .”). The International Obfuscated C Code Contest is an annual contest to write the most obfuscated and obscure code possible, much of which requires intentional and artificial introduction of complexity into an otherwise simple program. See INT’L OBFUSCATED C CODE CONTEST, <http://www.ioccc.org/index.html> (last visited Mar. 21, 2014). This contest demonstrates that a judicial test of complexity could turn software programming into an extension of draftsmen tricks as discussed in Part II. See discussion *infra* Part II.

160. See generally Mark A. Lemley, *Software Patents and the Return of Functional Claiming*, 2013 WIS. L. REV. 905 (2013).

by the courts, requiring courts to become experts in the area of software design and programming.

II. AN EXAMINATION OF THE TESTS AND FACTORS USED BY THE COURTS

While the machine-or-transformation test is the primary test used by the courts to determine if an invention is directed to patentable subject matter, it is not the only test proposed or used by the courts.¹⁶¹ This section examines several of these tests and the factors that originated from the courts' attempts at creating a new test subsequent to *Bilski*.

A. Machine-or-Transformation

The machine-or-transformation test is, at its core, a determination of whether the process is tied to a specific machine,¹⁶² or transforms an item from one state to another.¹⁶³ This test received the Supreme Court's initial approval in *Gottschalk v. Benson*.¹⁶⁴ Since that case, it has been the only test the Supreme Court has not *completely* rejected.¹⁶⁵ However, even with this longevity, the Court¹⁶⁶ and the

161. See *supra* note 4.

162. See generally *Gottschalk v. Benson*, 409 U.S. 63 (1972). The Court initially described the invention as:

Respondents filed in the Patent Office an application for an invention which was described as being related 'to the processing of data by program and more particularly to the programmed conversion of numerical information' in general-purpose digital computers. They claimed a method for converting binary-coded decimal (BCD) numerals into pure binary numerals. The claims were not limited to any particular art or technology, to any particular apparatus or machinery, or to any particular end use.

Id. at 64. The Court goes on to discuss how an invention may be patentable even without a machine limitation but did not find that to be the case in the instant facts. *Id.* at 70–73.

163. *Diamond v. Diehr*, 450 U.S. 175, 183 (1981) (“A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing.”) (quoting *Cochrane v. Deener*, 94 U.S. 780, 787–88 (1877)).

164. The Court refused to take the position that a process would not qualify if it was not tied to a particular machine or transformed to another form. *Benson*, 409 U.S. at 71. At the same time, the Court implied that if a process did meet one of those criteria, it would qualify. *Id.*

165. See *supra* note 4.

166. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1303 (2012) (opposing the idea that the machine-or-transformation test “trumps the ‘law of nature’ exclusion”); *Bilski v. Kappos*,

patent community¹⁶⁷ have criticized it. Since *Bilski v. Kappos*, the Court explicitly rejected the idea that the machine-or-transformation test is the only test available to the lower courts.¹⁶⁸ While the Court could have made the machine-or-transformation test the safe-haven of patentability, it relegated the test to an “important and useful clue” instead.¹⁶⁹ The lower courts continue to use it as the premier test,¹⁷⁰ partly because no other tests have survived Supreme Court review.¹⁷¹ However, this does not come without a cost. In *Bilski* and *Prometheus*, the Supreme Court overturned two Federal Circuits decisions, both of which incorporated reasoning based on the machine-or-transformation test.¹⁷² In both instances, the Supreme Court found the test insufficient for modern inventions.¹⁷³ Even so, the Court continues to define the test as an “important and useful clue” in determining patentable subject matter.¹⁷⁴

130 S. Ct. 3218, 3226 (2010) (rejecting the machine-or-transformation test as the sole test because it violates statutory interpretation principles).

167. Lemley et al., *supra* note 9, at 1315 (urging rejection of the machine-or-transformation test).

168. *Prometheus*, 132 S. Ct. at 1303; *Bilski*, 130 S. Ct. at 3226. In rejecting the machine-or-transformation test as the sole test, the Court cited precedent to show that it was never meant to be the sole test. *Bilski*, 130 S. Ct. at 3226.

169. *Bilski*, 130 S. Ct. at 3226. The Court attacked the use of the test on several levels. First, the Court criticized the test as violating statutory interpretation principles: “Adopting the machine-or-transformation test as the sole test for what constitutes a ‘process’ (as opposed to just an important and useful clue) violates these statutory interpretation principles.” *Id.* Next, the Court attacked the idea that the test was ever meant to be an exclusive test: “The Court of Appeals incorrectly concluded that this Court has endorsed the machine-or-transformation test as the exclusive test.” *Id.* More recent cases, however, have rejected the broad implications of this dictum; and, in all events, later authority shows that it was not intended to be an exhaustive or exclusive test. *Id.*

170. *See Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can.*, 687 F.3d 1266, 1278 (Fed. Cir. 2012).

171. *See supra* note 4.

172. In *Bilski*, the Court declined to use the machine-or-transformation test to determine if a business method patent for risk hedging was patentable; instead, the Court looked at whether the patent would preempt the use of the formula. *Bilski*, 130 S. Ct. at 3226–28. Similarly, in *Prometheus* the Court again declined the use of the machine-or-transformation test in favor of evaluating the other activity in the patent. *Prometheus*, 132 S. Ct. at 1303.

173. *Prometheus*, 132 S. Ct. at 1303 (“Regardless, in stating that the ‘machine-or-transformation’ test is an ‘important and useful clue’ to patentability, we have neither said nor implied that the test trumps the ‘law of nature’ exclusion.”); *Bilski*, 130 S. Ct. at 3227 (“The machine-or-transformation test may well provide a sufficient basis for evaluating processes similar to those in the Industrial Age—for example, inventions grounded in a physical or other tangible form. But there are reasons to doubt whether the test should be the sole criterion for determining the patentability of inventions in the Information Age.”).

174. *Prometheus*, 132 S. Ct. at 1303; *Bilski*, 130 S. Ct. at 3226.

There are calls for the complete abandonment of the test,¹⁷⁵ as the test is criticized for being ambiguous and creating as many uncertainties as it solves.¹⁷⁶ Despite its shortcomings, the machine-or-transformation test continues to be the only test that the Supreme Court has not struck down.¹⁷⁷ It currently acts as a safe haven in the sea of patent uncertainty—if an inventor can tie the invention to a machine, or affect a material transformation, then courts are more prone to find it directed to patentable subject matter.¹⁷⁸

B. Inventive Concept

While determining patentability, the Court in *Parker v. Flook* looked for an “inventive concept” in addition to the formula claimed.¹⁷⁹ The Court described the “inventive concept” as some activity worthy of patent protection without the underlying mathematical formula, asking if the invention did not incorporate the formula, would it still be patentable?¹⁸⁰ The respondent argued that the theory of an inventive concept belonged to a § 102 novelty requirement¹⁸¹ or a § 103 non-obvious requirement¹⁸² analysis;¹⁸³ however, the Court found this argument unpersuasive.¹⁸⁴ Instead, it

175. Lemley et al., *supra* note 9, at 1315 (supporting rejection of the machine-or-transformation test).

176. *Id.* at 1322 (“The machine-or-transformation test is problematic. It contains a number of ambiguities, leads to some bizarre results, and poorly tracks the stated goal of preventing the patenting of abstract ideas.”). The ambiguities are succinctly rephrased as a question of: “Does the machine-or-transformation test apply only to process claims?” *Id.*

177. *See supra* note 4.

178. Note that in *Prometheus*, the Supreme Court did not hold that the invention created a transformation but was still unpatentable; instead, the Court did not find a transformation, and therefore, the invention did not satisfy the machine-or-transformation test and was not directed to patentable subject matter. *Prometheus*, 132 S. Ct. at 1305.

179. *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.”).

180. *Id.* at 592 (“We think this case must also be considered as if the principle or mathematical formula were well known.”).

181. 35 U.S.C. § 102 requires the invention to be “novel” through a series of conditions that determine if the invention is known at the time. 35 U.S.C. § 102(a) (2012).

182. 35 U.S.C. § 103 requires the invention to be non-obvious to “a person having ordinary skill in the art.” 35 U.S.C. § 103 (2012).

183. *Flook*, 437 U.S. at 592. This argument is similar to Lemley’s argument used against claim broadness with § 112. *See infra* note 212.

184. *Flook*, 437 U.S. at 592 (“Respondent argues that this approach improperly imports into § 101 the considerations of ‘inventiveness’ which are the proper concerns of §§ 102 and 103. This argument is based on two fundamental misconceptions.”).

insisted that a well-known unpatentable formula might still be patentable if it was claimed in an inventive application.¹⁸⁵

While not stated in the *Flook* case, the idea of an inventive concept has two desirable effects. First, it removes the question of whether the formula itself is patentable. While an abstract idea is often described as a mathematical formula, if the formula is removed from consideration, then the court does not have to deal with the issue of whether the formula is an abstract idea or something more concrete. Second, the court can require an additional patentable component as a part of the invention. With this change in focus, the question becomes: is the inventive concept patentable? If not, then the entire invention fails. In *Flook* the Supreme Court found each component of the invention obvious and well known.¹⁸⁶ Once the Court considered the method well known, the rest of the invention failed to be patentable.¹⁸⁷

Problems quickly arose with this theory. In *Diamond v. Diehr*, the dissent noted that the Court of Appeals regularly criticized the inventive concept requirement, especially for mixing the unrelated provisions of § 101 and 102.¹⁸⁸ Nevertheless, the Supreme Court moved forward defending it. Given the popularity of the machine-or-transformation test, the Supreme Court tied the concept back into the machine-or-transformation test claiming “it was clear that patentability could not be predicated upon a mental step. Under the ‘function of a machine’ doctrine, a process which amounted to nothing more than a description of the function of a machine was unpatentable.”¹⁸⁹ However, the dissent in *Diehr* in turn criticized the majority for not properly applying *Flook* and the inventive concept

185. *Id.* at 594 (“Even though a phenomenon of nature or mathematical formula may be well known, an inventive application of the principle may be patented. Conversely, the discovery of such a phenomenon cannot support a patent unless there is some other inventive concept in its application.”).

186. *Id.* (“Here it is absolutely clear that respondent’s application contains no claim of patentable invention.”).

187. *Id.*

188. *Diamond v. Diehr*, 450 U.S. 175, 204 (1981) (Stevens, J., dissenting) (“[I]n general *Flook* was not enthusiastically received by that court. In *In re Bergy*, . . . the majority engaged in an extensive critique of *Flook*, concluding that this Court had erroneously commingled ‘distinct statutory provisions which are conceptually unrelated.’”) (quoting *In re Bergy*, 596 F.2d 952, 959 (1979)).

189. *Id.* at 195–96.

requirement, commenting that it had done no better than the lower courts.¹⁹⁰

The Court revived this concept in *Prometheus*, but made no attempt to expand on the theory or address the criticisms.¹⁹¹ Despite the limited analysis by the Court, it provided a clue as to where an inventive concept becomes important. The Court noted that the inventive activity in *Prometheus* was stronger than that in *Flook* but not as strong as in *Diehr*.¹⁹² In the end, it would not be enough to save the patent,¹⁹³ so the range between the patent-eligible invention in *Diehr* and unpatentability narrowed, even if by a small margin of the unpatentable process claimed in *Prometheus*.

C. Draftsman's Tricks

The Supreme Court diligently guards against any tests or factors that could be easily circumvented by a “draftsman’s trick.”¹⁹⁴ Starting in *Benson*, when the Court struggled with the question of whether software should be patentable, it recognized that patents were being issued indirectly through drafting tricks.¹⁹⁵ In *Flook*, the Court rejected the notion that implementing an idea in some specific fashion was enough to result in patentability.¹⁹⁶ This, according to the Court, would simply depend on draftsman’s art.¹⁹⁷ Again in *Diehr*, the Court

190. *Id.* at 211 (“The Court misapplies *Parker v. Flook* because, like the [lower court], it fails to understand or completely disregards the distinction between the subject matter of what the inventor *claims* to have discovered . . . and the question whether that claimed discovery is in fact novel . . .”).

191. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1294 (2012). The Court explained that it examined the claims in light of the precedents, one of which requires the claims to incorporate an “inventive concept.” *Id.* Then the Court stated that the invention did not fulfill this requirement and moved on without much additional analysis. *Id.*

192. *Id.* at 1299 (“The claim before us presents a case for patentability that is weaker than the (patent-eligible) claim in *Diehr* and no stronger than the (unpatentable) claim in *Flook*.”).

193. *Id.* at 1305 (invalidating the claims of *Prometheus*’s patents).

194. *Id.* at 1294; *Diehr*, 450 U.S. at 191–92; *Parker v. Flook*, 437 U.S. 584, 593 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 72 (1972).

195. *Benson*, 409 U.S. at 72 (“Indirect attempts to obtain patents and avoid the rejection, by drafting claims as a process, or a machine or components thereof . . . have confused the issue further and should not be permitted.”).

196. *Flook*, 437 U.S. at 593 (“[R]espondent incorrectly assumes that if a process application implements a principle in some specific fashion, it automatically falls within the patentable subject matter of § 101 . . .”).

197. *Id.* (“It would make the determination of patentable subject matter depend simply on the draftsman’s art and would ill serve the principles underlying the prohibition against patents for ‘ideas’ or

attacked “insignificant post-solution activity” as enabling a talented draftsman to evade any patentability limitations.¹⁹⁸ *Prometheus* acknowledged this idea, but did not dwell on it for long.¹⁹⁹

Unfortunately, the longstanding restriction on draftsman’s tricks is not helpful in determining patentability. Instead, it is useful in determining the validity of a factor in testing for patentability. If a draftsman’s trick can satisfy the factor, then it is not a valid factor. Consequently, any new factor or test must be tested through the lens of susceptibility to the art of draftsmen.

D. Claim Breadth

The Court in *Prometheus* considered the breadth of the patent’s claims as a point of discussion when determining eligibility.²⁰⁰ This guidance originally came from both *Morse* and *Benson*.²⁰¹ In *Morse* the Court rejected the invention for broadly attempting to claim all uses of electricity to transmit messages,²⁰² while in *Benson* the Court considered whether the claim was so broad as to preempt the formula.²⁰³ The Court also looked to contemporary commentators that supported such a factor.²⁰⁴

In *Life after Bilski*, the authors advocated a multifactor test to determine if a claim was drafted too broadly.²⁰⁵ The factors set forth are policy-focused, evaluating: (1) whether the invention has the potential to generate many kinds of new inventions;²⁰⁶ (2) if the industry tends to rely on cumulative inventions;²⁰⁷ (3) how fast-

phenomena of nature.”).

198. *Diehr*, 450 U.S. at 191–92 (“[I]nsignificant post-solution activity will not transform an unpatentable principle into a patentable process.”).

199. *Prometheus*, 132 S. Ct. at 1294.

200. *Id.* (“[The Court’s precedents] warn us against upholding patents that claim processes that too broadly preempt the use of a natural law.”).

201. *Id.*

202. *O’Reilly v. Morse*, 56 US 62, 101–02 (1853).

203. *Gottschalk v. Benson*, 409 U.S. 63, 71–72 (1972).

204. *Prometheus*, 132 S. Ct. at 1301–02 (referencing Mark A. Lemley et al., *Life After Bilski*, 63 STAN. L. REV. 1315 (2011)).

205. See generally Lemley et al., *supra* note 9 (setting forth a new test).

206. *Id.* at 1341.

207. *Id.*

moving the technological field is;²⁰⁸ (4) the number of embodiments disclosed by the inventor in relation to how broad the inventive principle is;²⁰⁹ and (5) the contribution of the inventor relative to the prior art.²¹⁰ Similar to the arguments set out in defense of the inventive concept, commentators draw a distinction between broadness analysis under 35 U.S.C. § 112 and analysis under § 101.²¹¹ The focus of § 112 is on the disclosures at the time of filing and whether they are sufficient to warrant the claim.²¹² In contrast, § 101 is focused on preventing further innovation from being hindered by a claim of a “fundamental . . . building block[] of human thought.”²¹³

Despite the history of this test, the Supreme Court does not appear ready to fully accept it.²¹⁴ However, to some degree, while it has been accepted and used by the Court, the test is vague and undefined in its current form. The multiple factors set forth in *Life After Bilski* provide a reasonable starting point to define the test, although some factors—such as the inventor’s contribution relative to the prior art—are just as vague as the original test. Such factors are easy to determine in hindsight, but do not easily lend themselves to an ad hoc evaluation.

E. Current Direction

It was against this chaotic background that the Federal Circuit decided both *CLS Bank v. Alice Corporation*²¹⁵ and *Bancorp Services v. Sun Life*.²¹⁶ Both cases provide a brief glimpse into the next generation of factors that may be used by the court.

208. *Id.*

209. *Id.*

210. *Id.*

211. Lemley et al., *supra* note 9, at 1329–32.

212. *Id.* at 1330 (“First, § 112 merely examines whether the disclosure is sufficient to warrant the claims.”).

213. *Id.* at 1328.

214. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1303 (2012) (noting that a broadness analysis is a relative test since even a narrow law of nature could prevent further innovation).

215. *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 685 F.3d 1341, 1347 (Fed. Cir.), *vacated*, 484 F. App’x 559 (Fed. Cir. 2012).

216. *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can.*, 687 F.3d 1266, 1280 (Fed. Cir. 2012).

1. Practicality

In *Alice*, the court considered if the invention would prove useful from a practical standpoint.²¹⁷ However, practicality and usefulness were not enough to ultimately pull the court away from its familiarity with the machine-or-transformation test, which it would rely upon to determine the outcome.²¹⁸ The basis for practicality is that an abstract idea is not useful without some practical application.²¹⁹ When reviewing an invention for patentability, the court should focus on the practical application portion of the patent. Unfortunately, in *Alice*, the court did not spend much time on this concept before deeming it too abstract and retreating back to the machine-or-transformation test.²²⁰

While the court gave little reasoning for rejecting the practicality test, it is not hard to understand why this is the right conclusion. First, the concept of usefulness is almost as hard to define as the concept of abstractness. As the Federal Circuit and the Supreme Court have acknowledged, all inventions could be ultimately stripped down to an unpatentable subject matter, whether it is an abstract idea, law of nature, or natural phenomenon.²²¹ In addition, the courts have rejected a part of the idea of usefulness,²²² and the remaining parts of the usefulness test are applied as the substantial utility test.²²³ While both

217. *Alice*, 685 F.3d at 1355. The Federal Circuit looked to its precedent and found the requirement of practicality and believed the invention before it was a “practical application of a business concept.” *Id.*

218. *Id.* at 1356. The court found that the use of a machine in this invention prevented a finding of ineligibility under § 101, but noted that it could still be invalid under other provisions of the statute. *Id.*

219. *Id.* at 1349 (“This court has also attempted to define ‘abstract ideas,’ explaining that ‘abstract ideas constitute disembodied concepts or truths which are not “useful” from a practical standpoint standing alone, i.e., they are not “useful” until reduced to some practical application.’”) (quoting *In re Alappat*, 33 F.3d 1526, 1542 n.18 (Fed. Cir. 1994)).

220. *Id.* (“Notwithstanding these well-intentioned efforts and the great volume of pages in the Federal Reporters treating the abstract ideas exception, the dividing line between inventions that are directed to patent ineligible abstract ideas and those that are not remains elusive.”).

221. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012) (“For all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.”).

222. *Juicy Whip, Inc. v. Orange Bang, Inc.* 185 F.3d 1364, 1366 (Fed. Cir. 1999). The Federal Circuit rejected the morality requirement set forth by Justice Story, claiming such a requirement was no longer the law and had not been so for decades. *Id.* at 1366–67. The courts used the morality requirement to deny patents to those inventions that failed to meet public policy or morality aspects of the utility requirement. Cynthia M. Ho, *Splicing Morality and Patent Law: Issues Arising from Mixing Mice and Men*, 2 WASH. U. J.L. & POL’Y 247, 248 (2000).

223. The substantial utility test requires a process to be developed to the point that a specific benefit

tests—utility and abstractness—originate in § 101, they are different and separate tests. However, if the Supreme Court continues on its current path of absorbing all other Title 35 tests into § 101,²²⁴ then this test for practicality will most likely persist and be adopted by the Court as well.

2. *Sufficient Machine Limitation*

Where *Alice* looked to utility, *Bancorp* took the machine prong of the machine-or-transformation test and focused almost exclusively on whether the machine sufficiently limited the invention.²²⁵ The court required the computer to be integral to each claim, but—finding insufficient support for this limitation²²⁶—the court looked to see if the claims presented any additional features.²²⁷ Finding neither integral computer restrictions nor additional features, the Federal Circuit found the claims invalid as abstract ideas.²²⁸

In anticipation of comparison between the two cases, the Federal Circuit claimed the conclusion in *Bancorp* was consistent with the holding in *Alice*.²²⁹ The *Bancorp* court made an effort to draw a comparison between its decision and the conclusion in *Alice*.²³⁰

exists in the invention's current form. *Brenner v. Manson*, 383 U.S. 519, 534–35 (1966).

224. *CLS Bank Int'l v. Alice Corp. Pty. Ltd.*, 717 F.3d 1269, 1276–77 (Fed. Cir. 2013) (rejecting the concept that § 101 should encompass novelty and obviousness tests which are properties of §§ 102 and 103).

225. *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can.*, 687 F.3d 1266, 1280 (Fed. Cir. 2012) (“The district court correctly held that without the computer limitations nothing remains in the claims but the abstract idea of managing a stable value protected life insurance policy by performing calculations and manipulating the results. . . . Bancorp asserts that its claims are not abstract because they are limited to use in the life insurance market. In *Bilski* the Supreme Court discredited a similar argument . . .”).

226. *Id.* at 1279 (“It is the management of the life insurance policy that is ‘integral to each of [Bancorp’s] claims at issue,’ not the computer machinery that may be used to accomplish it.”).

227. *Id.* (“When the insignificant computer-based limitations are set aside from those claims that contain such limitations, the question under § 101 reduces to an analysis of what additional features remain in the claims.”).

228. *Id.* at 1281.

229. *Id.* at 1280. As the court noted, the two cases were handled at essentially the same time—*Alice* was decided shortly after the oral arguments in *Bancorp* were heard. *Id.* at 1280. The court released both decisions in the same month. Not only does the timing provide critics reason to compare the cases, but the similarity between subject matter further encourages comparison. *See generally id.*; *CLS Bank Int'l v. Alice Corp. Pty. Ltd.*, 685 F.3d 1341, 1347 (Fed. Cir.), *vacated*, 484 F. App'x 559 (Fed. Cir. 2012).

230. *Bancorp*, 687 F.3d at 1280–81 (“[O]ur conclusion is not inconsistent with *CLS*, which we decided after hearing oral arguments in this appeal. . . . [U]nlike in *CLS*, the claims here are not directed to a ‘very specific application’ of the inventive concept; as noted, Bancorp seeks to broadly claim the unpatentable

Despite these attempts, the patent community has already started to criticize the courts for being inconsistent.²³¹ After the decision in *Bancorp*, CLS Bank filed a petition for rehearing en banc claiming the two decisions were wholly inconsistent.²³² The Federal Circuit agreed enough to vacate *Alice* and request new briefs and oral arguments.²³³

III. A PATH FORWARD

In its order vacating the case of *CLS Bank v. Alice Corporation*, the Federal Circuit requested that both parties submit briefs proposing which test the court should adopt to determine whether an invention is an abstract idea or is directed to eligible subject matter.²³⁴ As noted, the court has attempted to adopt a number of tests with only limited success.²³⁵ This latest request is another attempt at crafting a test that the Supreme Court will accept as a threshold test for identifying patentable subject matter. With an examination of the factors used by the courts complete, this Note proposes a new test for patentability based on this examination in section A, and discusses the future of the machine-or-transformation test in section B. In section C, this Note applies this new test to three historical cases as an example of the application.

abstract concept of managing a stable value protected life insurance policy.”).

231. Crouch, *supra* note 7 (“Despite this attempted reconciliation, it is clear that the *CLS* majority has a different approach to subject matter eligibility questions.”). *But see* David Kappos, *Some Thoughts on Patentability*, U.S. PAT. & TRADEMARK OFFICE (July 27, 2012), http://www.uspto.gov/blog/director/entry/some_thoughts_on_patentability (“Hopefully, the guidance supplied by the Federal Circuit in *CLS Bank* can help us as we continue to work on reducing pendency and enhancing quality of issued patents.”).

232. Petition for Rehearing En Banc, *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 717 F.3d 1269 (Fed. Cir. 2013) (No. 2011-1301), 2012 WL 3986423, at *10–11 (arguing the decision in *Bancorp* while consistent with other contemporary cases, is not reconcilable with the holding in *Alice*.)

233. *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 484 F. App’x 559, 559–60 (Fed. Cir. 2012). The court requested that both parties address two questions: (1) “[w]hat test should the court adopt to determine whether a computer-implemented invention is a patent ineligible ‘abstract idea’; and when, if ever, does the presence of a computer in a claim lend patent eligibility to an otherwise patent-ineligible idea?”; and (2) “[i]n assessing patent eligibility under 35 U.S.C. § 101 of a computer-implemented invention, should it matter whether the invention is claimed as a method, system, or storage medium; and should such claims at times be considered equivalent for § 101 purposes?” *Id.*

234. *Id.*

235. *See supra* note 4.

A. ICoMSE

The ICoMSE²³⁶ test proposed here is a three-factor test that balances the presence of an inventive concept, the amount of market success achieved by the invention, and the number of embodiments disclosed. Next, this Note explores each factor in more depth.

1. Inventive Concept

The ICoMSE should incorporate the inventive concept from *Parker v. Flook* as its first factor.²³⁷ As the Court in *Flook* described it, the inventive concept is ““a novel and useful structure created with the aid of knowledge of scientific truth””²³⁸ Although *Flook* used the inventive concept as a definitive test, the mere presence of an inventive concept should not be enough to salvage a patent on an otherwise abstract idea. Similar to the Supreme Court’s discussion regarding a broadness test in *Prometheus*,²³⁹ the presence of an inventive concept should be a relative factor, determined by considering the likelihood that the invention will preempt the underlying concept. In addition, this factor should be weighed in conjunction with other factors. If an inventive concept is present, it should move the decision toward patentability, but the remaining factors are required to complete the analysis.

2. Market Success

The next factor evaluates the invention’s success in the marketplace. Commercial success is an indicator of whether the application is useful and needed by the public. A more practical application,²⁴⁰ one that is less abstract, will normally fulfill a need of the market, and thereby, enjoy more commercial success. The courts already consider how

236. The acronym ICoMSE is derived from the factors: Inventive Concept, Market Success, and number of Embodiments.

237. *Parker v. Flook*, 437 U.S. 584, 594 (1978).

238. *Id.* at 591.

239. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1300–01 (2012) (commenting that even a test such as claim broadness has its limitations).

240. The Federal Circuit instructs that an abstract idea is not useful until it is reduced to a practical application. *In re Alappat*, 33 F.3d 1526, 1542 n.18 (Fed. Cir. 1994).

successful an invention is, as a secondary consideration for obviousness.²⁴¹ Using this factor, the courts would evaluate the invention's success in the market as an indication of whether it is more abstract or more practical. The courts can use much of the existing case law, such as requiring a nexus between licenses and commercial success,²⁴² to complete this analysis. Unfortunately, this factor will be the hardest one to evaluate. Courts must examine commercial success after the market has a chance to utilize the invention.²⁴³ The courts can analyze venture capital funding, licensing deals, and other pre-sale activity and use that analysis to estimate the amount of market success an invention will achieve.

3. *Number of Embodiments*

As one of the factors in the *Life After Bilski* test,²⁴⁴ and one of the requirements of 35 U.S.C. § 112,²⁴⁵ a factor that evaluates the number of embodiments disclosed by the invention is relatively well-defined. Embodiment is the “tangible manifestation of an invention.”²⁴⁶ Under § 112, multiple embodiments are required when an invention attempts to claim an entire genus.²⁴⁷ Similarly, the broader a claim is over an abstract idea, the more embodiments the invention must disclose. *Life after Bilski* suggests that this analysis should be conducted after all the others because it is not a clear-cut analysis, instead relying on views of experts.²⁴⁸ However, because this factor is balanced against the other three factors, the court should analyze it simultaneously with them. The more embodiments an invention discloses, the more this

241. Secondary considerations include “commercial success, long felt but unresolved needs, failure of others, etc.” *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17–18 (1966). Other considerations are regularly proposed for adoption by the courts. Natalie A. Thomas, Note, *Secondary Considerations in Nonobviousness Analysis: The Use of Objective Indicia Following KSR v. Teleflex*, 86 N.Y.U. L. REV. 2070, 2076 (2011).

242. *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1324 (Fed. Cir. 2004).

243. But by definition, this creates a bias against non-operating patent trolls, or companies that collect patents but only use them for litigation purposes.

244. Lemley et al., *supra* note 9, at 1329–32.

245. 35 U.S.C. § 112 (2012).

246. BLACK'S LAW DICTIONARY, *supra* note 19, at 599.

247. “[I]t has been consistently held that the naming of one member of such a group is not, in itself, a proper basis for a claim to the entire group.” *In re Grimme*, 274 F.2d 949, 952 (C.C.P.A. 1960).

248. Lemley et al., *supra* note 9, at 1345.

factor weighs in favor of patentability. In contrast, when the invention discloses fewer embodiments, the remaining factors will have to support a more critical review. The number of inventions required to justify patentability will determine the weight of the other factors, as well as the broadness of the patent claims—a fact and circumstances test for the courts.

B. *The Future of the Machine-or-Transformation Test*

The Supreme Court made it clear that the machine-or-transformation test is not the sole test for determining patentability.²⁴⁹ However, the Court has continued to affirm the test as an “important and useful clue.”²⁵⁰ While the test has received its share of criticisms,²⁵¹ this is in part because the Federal Circuit continues to extend it beyond its limits. The machine-or-transformation test should continue to exist as a tool for the courts in determining patentability. As one tool, the courts should use the machine-or-transformation test in the right situation, while other tests, such as the one set forth in the *Life after Bilski* or the one this Note presents, can be used in other situations, each based on the test’s strengths. The courts can continue to use the machine-or-transformation test in the event that a machine, such as a GPS unit,²⁵² limits the invention or the invention affects a transformation as in the manufacturing of fat acids.²⁵³ Similarly, the courts can apply the scope-broadness test or the test proposed by this Note, if adopted, in other situations that do not fit neatly into the machine-or-transformation niche. With the variety of inventions, and methods for drafting claims, each test can have its place in a court’s toolbox. As inventions move further away from a tangible process as industrial manufacturing, the machine-or-transformation test may see less use, but it should not be overturned for the mere fact it has been over-used in the past.

249. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1303 (2012); *Bilski v. Kappos*, 130 S. Ct. 3218, 3227 (2010).

250. *Prometheus*, 132 S. Ct. at 1303.

251. Lemley et al., *supra* note 9, at 1316.

252. *See generally* *SiRF Tech., Inc. v. Int’l Trade Comm’n*, 601 F.3d 1319 (Fed. Cir. 2010).

253. *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972).

C. Application

To demonstrate how ICoMSE can be used by the courts, this section applies to the facts of three cases—*Bancorp Services v. Sun Life* because the Federal Circuit recently decided this case, *Parker v. Flook* due to its reputation for being poorly decided,²⁵⁴ and *Diamond v. Diehr* as a contrast to *Flook*, both in terms of reasoning and outcome. In each, the discussion ignores the machine-or-transformation test, as well the dilemma over whether the courts should apply ICoMSE or the machine-or-transformation test in each case. While this Note does not advocate the repeal of the machine-or-transformation test, its application is not the focus of the test.

1. Bancorp Services, L.L.C. v. Sun Life Assurance Co.

To apply the test, the court should first determine if the invention at issue—the life insurance administration system²⁵⁵—contains an inventive concept. In *Bancorp*, the Federal Circuit did much of this analysis already. It searched for and was unable to find any inventive concept.²⁵⁶ Instead, it found an implementation of an algorithm—an implementation that was not tied to a computer.²⁵⁷ Therefore, the first factor of the inventive concept is lacking in this invention. This factor will weigh against the validity of the patent.

Next, the court should consider the number of embodiments. The *Bancorp* case considered two patents.²⁵⁸ Each patent disclosed only one embodiment.²⁵⁹ While this is sufficient for the application, it does little to increase the likelihood that the invention is not abstract. This factor will also weigh against the validity of the patent.

254. Lemley et al., *supra* note 9, at 1335–36 (noting that the *Flook* case had doctrinal problems but reached the right result because it agreed with the authors’ proposed test).

255. *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can.*, 687 F.3d 1266, 1269 (Fed. Cir. 2012). *See also supra* note 138.

256. *Bancorp*, 687 F.3d at 1280–81 (stating that the claims were not directed to an application of an inventive concept, resulting in a finding of invalidity of the patent).

257. *Id.* at 1280.

258. *Id.* at 1269.

259. *Id.* at 1270–72.

Finally, the court should evaluate the market success of the invention. While the record is silent as to this factor, Bancorp was suing Sun Life for infringement,²⁶⁰ implying a level of market success. When another company is using the patent through a license or infringement, the invention is fulfilling a need. Unless additional information negates this conclusion, this factor will weigh in favor of patent validity.

In sum, the factors weigh against a finding of patent validity, a finding that mirrors the Federal Circuit's ruling.²⁶¹

2. Parker v. Flook

Similarly, the Court in *Flook* makes the analysis of the first factor, the inventive concept, relatively easy. In *Flook*, the Supreme Court searched the patent claims for an inventive concept but found none.²⁶² Unfortunately, the post-solution activity in *Flook* was not enough to transform the subject matter of the invention from a mathematical formula to patent-eligible subject matter.²⁶³ In the case of *Flook*, the inventive concept factor again weighs against patentability.

While the patent office never issued the final patent for the application in *Flook*, the claims were included in the Court's opinion.²⁶⁴ Here again, the application only disclosed one embodiment of the invention.²⁶⁵ Unlike in *Bancorp* where the patent was issued,²⁶⁶ the disclosed embodiment in *Flook* was not enough to convince even the patent office of the invention's patentability.²⁶⁷ Again, this factor weighs against patentability.

260. *Id.* at 1272.

261. *Id.* at 1281.

262. *Parker v. Flook*, 437 U.S. 584, 594 (1978) ("Respondent's process is unpatentable under § 101, not because it contains a mathematical algorithm as one component, but because once that algorithm is assumed to be within the prior art, the application, considered as a whole, contains no patentable invention.").

263. *Id.* at 594–95.

264. *Id.* at 596–97.

265. *Id.* (describing the invention and listing only one disclosed embodiment in the submitted patent application).

266. *Bancorp*, 687 F.3d at 1269.

267. *Flook*, 437 U.S. at 587.

In evaluating market success for *Flook*, the facts of the case provide little useful information. This was not a case of infringement, but a situation in which the inventor was appealing a patent application's denial.²⁶⁸ Accordingly, there is no discussion of the invention's effect on the market, and the resulting success or failure. Without additional information, it is impossible to conclude whether the invention in *Flook* would have been commercially successful.

With two of the three factors weighing against patentability, and the third being inconclusive, this invention also fails this test for patentability.

3. *Diamond v. Diehr*

Again in *Diehr*, the Court's analysis provides the analysis for the first prong, the inventive concept. While in *Diehr*, the majority refrained from using the term "inventive concept," the same post-solution activity the Court used to find patentability also qualifies as an inventive concept.²⁶⁹ To find patentability, the Court ignored the formula the invention incorporated, and looked at the additional activity to determine if the invention contained any patentable subject matter.²⁷⁰ The courts must follow this same procedure in order to determine if the invention includes an inventive concept. Since the Court did find the post-solution activity was enough to justify patentability, it is enough to satisfy the inventive concept factor.

Again in *Diehr*, the invention discloses only one embodiment.²⁷¹ While this meets the requirements for a patent application, it only does the bare minimum required. With only one embodiment disclosed, the invention does not satisfy the second factor, otherwise, this factor would weigh in favor of every patent, making it a useless prong. Only with multiple embodiments does this factor start to weigh in favor of patentability, and the greater the number of embodiments, the more it

268. *Id.*

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

270. *Id.* The Court worked through the analysis of insufficient post-solution activity but ultimately concluded that the activity here was patentable. *Id.*

271. U.S. Patent No. 4,334,142 (filed Aug. 20, 1980). The *Diehr* Court did not discuss the claims of the patent in detail and was silent as to the number of embodiments. *See generally Diehr*, 450 U.S. 175.

favors patentability. Without multiple embodiment disclosures, the second prong weighs against a finding of patentability for the *Diehr* invention.

Similar to *Flook*, the invention in *Diehr* was not an issued patent, but an appeal of the rejection of an application.²⁷² This again means that the invention achieved limited commercial success. However, in this case, the inventor would have implemented the invention for a production process, providing *Diehr*'s employer, and patent transferee,²⁷³ a competitive advantage. While not conclusive, these facts provide a slight weighting for a conclusion of patentability.

In total, two of the three factors favor patentability, although one only marginally so. The ICoMSE test draws from the wide history of patent law in order to incorporate factors that address concerns of the courts and the patent community. The first factor, the inventive concept, is taken from the history of the patentability test.²⁷⁴ The second factor, market success, is derived from the related history of obviousness testing.²⁷⁵ And finally, the third factor, the number of embodiments, comes from commentators in the patent community.²⁷⁶

CONCLUSION

It is a safe bet that the boundaries of the abstract idea exclusion to patentable subject matter will continue to elude both inventors and the courts. While finding the machine-or-transformation test insufficient for modern inventions,²⁷⁷ the Supreme Court continues to reject new tests of patentability.²⁷⁸ Courts should avoid abandoning the machine-or-transformation test altogether, but should limit its use to situations in which the invention incorporates a machine limitation or affects a

272. *Diehr*, 450 U.S. at 181.

273. U.S. Patent No. 4,334,142 (filed Aug. 20, 1980) (noting that Federal-Mogul Corporation of Southfield, Mich. is the assignee).

274. See discussion *supra* Part III.A.1.

275. See discussion *supra* Part III.A.2.

276. See discussion *supra* Part III.A.3.

277. See discussion *supra* Part II.A.

278. See discussion *supra* Part II.

transformation.²⁷⁹ For the remaining situations, the courts need a new test; one that evaluates the patentability based on several factors, drawing cues from the market, public policy, and existing court doctrine. ICoMSE evaluates patentability based on the presence of an inventive concept, the market success of the invention, and the number of embodiments disclosed.²⁸⁰ This will provide the courts with another test for patentability, one that has learned from the precedents of the Supreme Court and takes cues from the market.

279. See discussion *supra* Part III.B.

280. See discussion *supra* Part III.A.