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BUSINESS METHODS AND PATENTABLE SUBJECT MATTER FOLLOWING IN RE BILSKI: IS "ANYTHING UNDER THE SUN MADE BY MAN" REALLY PATENTABLE?

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Abstract

The Federal Circuit’s decision in In re Bilski sought to answer once and for all whether, and to what extent, business methods may be patented and to articulate the standard that governs the patentability of all processes. The court’s majority opinion both confirmed that there is no exclusion preventing the patenting of business methods and announced a new “machine-or-transformation” test to analyze patents on processes in all fields. Given the controversy surrounding this decision, it is not surprising that the Supreme Court subsequently granted certiorari.

This article first reviews the Federal Circuit’s Bilski decision, including its historical context and its ramifications in defining what may be patented. It then considers the questions facing the Supreme Court by addressing some of the criticisms of the Federal Circuit’s majority decision. Finally, it offers a solution that conforms to Supreme Court precedent and Constitutional requirements.

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I. INTRODUCTION

Despite Supreme Court precedent holding that "anything under the sun that is made by man" is patentable,¹ courts have struggled for decades to place reasonable limitations on the kinds of inventions that can be protected under United States patent statutes. It is well settled, for example, that laws of nature, natural phenomena, abstract ideas, and mathematical algorithms cannot be patented.² Defining the outer boundaries of patentable subject matter has become even more complicated due to the emergence of patents directed to computer-related inventions and methods for executing transactions over the Internet. Recently, "business method patents," i.e., those that purportedly cover novel methods for conducting certain business processes related to such activities as tax accounting³ and investment strategies,⁴ have generated enormous controversy.

The Federal Circuit's *en banc* decision in *In re Bilski* sought to answer once and for all whether, and to what extent, business methods may be patented and to articulate the standard that governs the patentability of all processes.⁵ The Federal Circuit's decision has, however, raised at least as many questions as it answered and has been the subject of well-reasoned criticism from within the court itself⁶ and from many quarters of the legal and business communities.⁷ The Federal Circuit's majority opinion addresses the

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5. *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc).
6. Nine of the sitting Federal Circuit judges signed on to the majority opinion. However, Judges Newman, Mayer and Rader each filed lengthy dissents fundamentally disagreeing with the majority's reasoning. *Id.* at 976. (Newman, J., dissenting), 998 (Mayer, J., dissenting)), 1011 (Rader, J., dissenting).
7. The range of criticism is well represented in the *amicus* briefs filed in support of *Bilski's* Writ Petition. See, e.g., Brief of Accenture and Pitney Bowes Inc. as *Amici Curiae* In Support of Petitioners, *Bilski v. Doll*, cert. granted, No. 08-964 (Supreme Court, March 2, 2009); Brief of *Amicus Curiae* American Intellectual Property Law Association In Support Of The Petition For A Writ Of Certiorari, *Bilski v. Doll*, cert. granted, No. 08-964 (Supreme Court, March 2, 2009); Brief of *Amicus Curiae* Boston Patent Law Association In Support Of Petitioners, *Bilski v. Doll*, cert. granted, No. 08-964 (Supreme Court, March 2, 2009); Brief of Koninklijke Philips Electronics N. V. as *Amicus Curiae* In Support Of Petitioners, *Bilski v. Doll*, cert. granted, No. 08-964 (Supreme Court, March 2, 2009); Brief of *Amicus Curiae* Medistem Inc. In Support Of The Petition For A
patentability of a claimed method for hedging risk in commodities trading.\(^8\) Contrary to the hopes of many, the court held there is no "exclusion" that prevents the patenting of business methods and that the patentability of such methods is governed by the same principles as all other processes. Additionally, *Bilski* announced a new "machine-or-transformation" test that it declared is now the exclusive test for determining the patentability of processes in all fields, including business methods.\(^9\) In view of the strong criticism of the majority opinion, as well as difficulties in applying this test that were openly acknowledged in the majority opinion,\(^10\) it was no surprise when the Supreme Court granted certiorari on June 1, 2009.\(^11\)

This article places *Bilski* into its historical context, addresses its ramifications in defining what may be patented, and analyzes the decision to be made by the Supreme Court. Following this introduction, Part Two briefly reviews the treatment of patentable subject matter leading up to the Federal Circuit's 1998 decision in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*,\(^12\) which gave rise to much of the recent controversy surrounding business method patents. Part Three discusses the *State Street* decision, its impact on the scope of patent-eligible subject matter, and the state of the law immediately prior to *Bilski*. Part Four discusses the Federal Circuit's decision in *Bilski*, and the significant changes it represents on issues of patentability. Part Five analyzes representative early decisions of the Federal Circuit, the district courts, and the Board of Patent Appeals and Interferences applying *In re Bilski*, and discusses early patterns emerging from these decisions. Finally, part Six analyzes some of the criticisms of the majority decision and proposes a solution to the question of patent-eligibility that would conform with Supreme Court precedent and Constitutional requirements.

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9. *Id.* at 961.
10. *Id.* at 956.
11. *Bilski* v. Doll, 129 S. Ct. 2735 (June 1, 2009) (mem.).
II. HISTORICAL TREATMENT OF PATENTABLE SUBJECT MATTER

A. Patentable Subject Matter, Abstract Ideas, and the Mathematical Algorithm Exception

The Patent Act of 1952 broadly defines the statutory subject matter for which a patent can be obtained as "any new and useful, process, machine, manufacture, or composition of matter, or any new and useful improvement thereof . . . ." and the Supreme Court has construed this language broadly to reflect congressional intent that patentable subject matter "include anything under the sun that is made by man." Despite this seemingly unbounded definition, courts have placed numerous limitations on the scope of patentable subject matter. Laws of nature, natural phenomena, and abstract ideas are clearly not patentable, regardless of whether they fall within the statutory subject matter listed in the Patent Act.

The proscription against patenting abstract ideas has given rise to several categories of "exclusions" from the statutory subject matter. One such exclusion is the "mathematical algorithm" exception, under which a "scientific truth, or the mathematical expression of it, is not a patentable invention, [however,] a novel and useful structure created with the aid of knowledge of scientific truth may be." The Supreme Court provided guidance with regard to the mathematical algorithm exception in holding that claims directed to a method for converting binary-coded decimal numbers into pure binary numbers were not patentable. The Court noted that "[t]he claims were not limited to any particular art or technology, to any particular apparatus or machinery, or to any particular end use [and] purported to cover any use of the claimed method in a general-purpose digital computer of any type." The Court focused on whether or not the patent claims attempted to "wholly preempt" the recited algorithm, stating that:

18. Id. at 64.
The mathematical formula involved here has no substantial practical application except in connection with a digital computer, which means that . . . [if the claims are allowed], the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself.\textsuperscript{19}

As such, the claims were not allowed.\textsuperscript{20}

\textbf{B. Courts Have Made Several Attempts to Articulate Tests Governing The Patentability of "Abstract Ideas"}

Determining whether or not patent claims are directed to unpatentable abstract ideas can be a difficult task, even for courts that frequently handle patent disputes. To resolve questions of patentability in a consistent and predictable manner, courts have crafted numerous criteria to determine whether patents improperly cover abstract ideas. The Court of Customs and Patent Appeals articulated one such standard, referred to as the "technological arts" test.\textsuperscript{21} In permitting claims directed to a method for obtaining seismograms delineating subsurface formations in the earth's crust, the C.C.P.A. stated:

All that is necessary, in our view, to make a sequence of operational steps a statutory "process" within 35 U.S.C. § 101 is that it be in the \textit{technological arts} so as to be in consonance with the Constitutional purpose to promote the progress of 'useful arts.'\textsuperscript{22}

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\item The Court also noted that the patent laws \textit{could} be extended to cover such inventions, but that such change must originate in Congress. \textit{Id.}
\item Id. at 73. The Supreme Court has reaffirmed on more than one occasion that mathematical formulas, standing alone, are simply not patentable. \textit{See Diehr, 450 U.S. at 185} ("a mathematical formula, like a law of nature, cannot be the subject of a patent . . ."); \textit{Parker v. Flook}, 437 U.S. 584, 589 (1978) ("[r]easoning that an algorithm, or mathematical formula, is like a law of nature, \textit{Benson} applied the established rule that a law of nature cannot be the subject of a patent."). The Federal Circuit, for its part, has explained that the mathematical algorithm exception does not set forth a new category of unpatentable subject matter, but rather is merely an application of the principle that abstract ideas are not patent-eligible. \textit{See In re Alappat, 33 F.3d 1526, 1543 (Fed. Cir. 1994)} ("certain types of mathematical subject matter, standing alone, represent nothing more than abstract ideas until reduced to some type of practical application, and thus that subject matter is not, in and of itself, entitled to patent protection.").
\item \textit{In re Musgrave, 431 F.2d 882, 893 (C.C.P.A. 1970)}.
\item Id. (emphasis added). The C.C.P.A. also rejected the so-called "mental steps" test. \textit{Id.} at 892-893 ("The . . . board opinion further reveal[s] that the board repeatedly asserted that steps were 'mental' and rendered the claims non-statutory because they were not physical acts applied to physical things. This presumes that the law requires all steps of a statutory 'process' to be physical acts applied to physical things. We considered this matter in \textit{In re Prater, 415 F.2d 1378 (C.C.P.A. 1968)}"). In the first opinion by Judge Smith we showed how this erroneous idea
\end{enumerate}
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The C.C.P.A. based this "technological arts" test on the text of the United States Constitution, which grants Congress the power to "promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries..."23 under which courts have interpreted the term "useful arts" to mean "technological arts."24

Another influential test used for a time to determine whether a patent improperly claimed an abstract idea was referred to as the Freeman-Walter-Abele test, which arose from a trio of opinions issued by the Court of Customs and Patent Appeals.25 This test included two steps:

First, the claim is analyzed to determine whether a mathematical algorithm is directly or indirectly recited. Next, if a mathematical algorithm is found, the claim as a whole is further analyzed to determine whether the algorithm is "applied in any manner to physical elements or process steps," and, if it is, it "passes muster under section 101."26

The Federal Circuit subsequently crafted yet another standard defining patentable subject matter by requiring that the claim produce "a useful, concrete, and tangible result."27 For example, the court used this standard to find claims directed to a means for creating a smooth waveform display in a digital oscilloscope were patentable.28

Specifically, the court stated:

Although many, or arguably even all, of the means elements

arose from a dictum in [Cochrane v. Deener, 94 U.S. 780 (1876)], and is inconsistent with several later Supreme Court opinions. In Judge Baldwin's Prater opinion we readopted a large portion of Judge Smith's opinion on this point and again pointed out that it was a misconstruction to assume that 'all processes, to be patentable, must operate physically upon substances.'

24. See, e.g., In re Waldbaum, 457 F.2d 997, 1003 (C.C.P.A. 1972) ("The phrase 'technological arts,' as we have used it, is synonymous with the phrase 'useful arts' as it appears in Article I, Section 8 of the Constitution.") As discussed below, this test has been disapproved. See In re Bilski, 545 F.3d 943, 960 (Fed. Cir. 2008) (en banc).
25. See In re Freeman, 573 F.2d 1237, 1245 (C.C.P.A. 1978); In re Walter, 618 F.2d 758, 767 (C.C.P.A. 1980); In re Abele, 684 F.2d 902, 907 (C.C.P.A. 1982). As discussed below, this test was subsequently disapproved by the Federal Circuit. See State Street Bank & Trust Co. v. Signature Financial Group, Inc., 149 F.3d 1368, 1374 (Fed. Cir. 1998).
26. In re Pardo, 684 F.2d 912, 915 (C.C.P.A. 1982) (emphasis added). The Federal Circuit continued, at least for a time, to cite this test with approval. See, e.g., In re Alappat, 33 F.3d 1526, 1543 n. 21 (Fed. Cir. 1994).
27. See, e.g., Alappat, 33 F.3d at 1544. This test has also been disapproved. See Bilski, 545 F.3d at 959-60.
28. Id. at 1541-45.
recited in [the claim at issue] represent circuitry elements that perform mathematical calculations, which is essentially true of all digital electrical circuits, the claimed invention as a whole is directed to a combination of interrelated elements which combine to form a machine for converting discrete waveform data samples into...illumination intensity data to be displayed on a display means. This is not a disembodied mathematical concept which may be characterized as an 'abstract idea,' but rather a specific machine to produce a useful, concrete, and tangible result. Thus, the court determined that the claim at issue was "not 'so abstract and sweeping' that it would 'wholly pre-empt' the use of any apparatus employing the combination of mathematical calculations recited therein." Rather, the court found that the claim "is limited to the use of a particularly claimed combination of elements performing the particularly claimed combination of calculations to...produce a smooth waveform."

C. The Development of a "Business Method" Exception

In addition to the technological arts, Freeman-Walter-Abele, and "useful, concrete and tangible result" tests, a controversial "business method" exception arose to limit the patents from covering what might constitute abstract ideas. This controversial exception originated in a 1908 Second Circuit opinion holding that claims directed to an accounting method designed to prevent theft by hotel staff were invalid. However, despite decrying patents on business methods, the court actually based its holding of invalidity on a lack of novelty, and held that "there is no patentable novelty either in the physical means employed or in the method described and claimed."

Long after the Second Circuit's holding in Hotel Security Checking, the Federal Circuit seemed to acknowledge, albeit in dicta, the existence of the "business method" exception. In describing two decisions by its predecessor court, the Federal Circuit stated in In re Alappat that "a business methodology for deciding how salesmen

29. Id. at 1544. (emphasis added).
30. Id. (quoting Gottschalk v. Benson, 409 U.S. 63, 68-72 (1973)).
31. Id. at 1545 (Notably, the court also rejected the notion that "a programmed general purpose computer could never be viewed as patentable subject matter under Section 101").
32. Hotel Security Checking Co. v. Lorraine Co., 160 F. 467, 469 (2nd Cir. 1908) ("In the sense of the patent law, an art is not a mere abstraction. A system of transacting business disconnected from the means for carrying out the system is not, within the most liberal interpretation of the term, an art").
33. Id. at 472.
should best handle respective customers” and a “‘system’ for aiding a neurologist in diagnosing patients” did not fall within any subject matter patentable under section 101 of the Patent Act. Even though the CCPA decided both prior cases under the mathematical algorithm exception, and not any formal exception governing business methods, this discussion in In re Alappat arguably recognized the possibility that the business method exception had continuing application.

III. THE FEDERAL CIRCUIT’S STATE STREET DECISION AND A GOLDEN AGE FOR BUSINESS METHOD PATENTS

A. State Street Expressly Permitted Business Methods to be Patented.

The Federal Circuit waded deep into the controversy surrounding the patentability of business methods through the influential panel decision issued in State Street Bank & Trust Co. v. Signature Financial Group, Inc., which arguably opened the floodgates for the issuance of so-called “business method” patents. While holding that

34. In re Alappat, 33 F.3d 1526, 1541 (Fed. Cir. 1994) (discussing In re Maucorps, 609 F.2d 481, 486 (C.C.P.A. 1979) (holding that claims directed to optimizing the organization of sales representatives were unpatentable because the “claimed invention as a whole comprises each and every means for carrying out a solution technique for a set of equations wherein one number is computed from a set of numbers. Thus, appellant’s claims wholly preempt the recited algorithms . . .”) and In re Meyer, 688 F.2d 789, 796 (C.C.P.A. 1982) (holding that claims relating to a process and an apparatus for testing a complex system and analyzing the results of the tests were unpatentable because they “are [directed] to a mathematical algorithm representing a mental process that had not been applied to physical elements or process steps and [are], therefore, not limited to any otherwise statutory process, machine, manufacture, or composition of matter”).

35. Id. at 1541. During this time frame, at least one Federal Circuit Judge harshly criticized any recognition of a business method exception. Judge Newman, in a dissenting opinion, agreed with the Board of Patent Appeals and Interferences that the exception was a “fuzzy” concept, and went on to roundly criticize it. See In re Schrader, 22 F.3d 290, 297-98 (Fed. Cir. 1994) (Newman, J., dissenting) (“Indeed [the concept of a business method exception] is fuzzy; and since it is also an unwarranted encumbrance to the definition of statutory subject matter in section 101, my guidance is that it be discarded as error-prone, redundant, and obsolete. It merits retirement from the glossary of section 101.”). Judge Newman also noted that cases mentioning the possibility of a business methods exception were, in fact, decided on other grounds such as novelty or non-obviousness. Id. at 298.


37. “Business methods” are difficult to define. The USPTO’s classification for inventions that it deems “business methods,” Classification 705, states in part:

This is the generic class for apparatus and corresponding methods for performing data processing operations, in which there is a significant change in the data or for performing calculation operations wherein the apparatus or method is uniquely designed for or utilized in the practice, administration, or management
the patent-in-suit was directed to statutory subject matter, the Federal Circuit made three critical rulings by:

- Rejecting the Freeman-Walter-Abele test for determining whether a claimed invention is directed to unpatentable abstract idea;
- Following the useful, concrete and tangible result test to determine whether a claim that recites a fundamental principle is directed to patent-eligible subject matter; and
- "Laying to rest" the so-called "business method" exception to statutory subject matter.  

The dispute in State Street involved a declaratory judgment action brought by State Street Bank & Trust Co. ("State Street") against Signature Financial Group, Inc. ("Signature"). The patent-in-suit, U.S. Patent No. 5,193,056 ("the '056 Patent"), described a data processing system for use with an investment vehicle involving a purportedly novel "hub and spoke" concept. According to the patent, this form of investment was useful for minimizing fund operating costs by combining the assets of multiple investment funds (such as mutual funds, pension funds, common trust funds, and other types of institutional and retail funds) into one large asset base. This commingling of fund assets was achieved by creating a "partnership portfolio" (the "hub") in which each of the individual funds (the "spokes") invested all of their assets.

The "hub" made daily allocations of income, capital gains, expenses and/or investment losses to each of the funds comprising the spokes, which gave rise to a variety of complex administrative challenges, and the '056 Patent specifically claimed a data of an enterprise, or in the processing of financial data.

This class also provides for apparatus and corresponding methods for performing data processing or calculating operations in which a charge for goods or services is determined. . . .


38. State St. Bank, 149 F.3d at 1373-77.
39. Id. at 1370.
41. Id. at col. 1 ll. 27-40 and ll. 51-61.
42. Id. at col. 1 l. 61-col. 2 l. 2. The partnership portfolio was to be registered under the Investment Company Act of 1940 as an investment company, but the partnership portfolio was treated as a partnership for federal tax purposes and circumvented then-existing laws that restricted the commingling of fund assets. See id. at col. 1 ll. 42-50 and col. 1 l. 61-col. 2 l. 2.
43. Id. at col. 2 ll. 48-50; col. 2 l. 67-col. 3 l. 22. For example, since the "partners" of the partnership portfolio are funds whose assets change daily as customers made additional investments or withdrawals, each fund's interest in the partnership portfolio also changes daily. See id. at col. 2 l. 68-col. 3 l. 4. Further changes in the partnership interest of each fund arise as
processing system for implementing these transactions within the hub and spoke configuration.\textsuperscript{44} The patent includes one independent claim and five dependent claims, each of which is written in mean-plus-function format.\textsuperscript{45} Significantly, even though the claims merely recited a business method implemented on a personal computer, the Federal Circuit determined that claims were directed to a "machine" rather than to a "process."\textsuperscript{46} The court also noted that a "machine" is one of the four categories of proper statutory subject matter enumerated in 35 U.S.C. Section 101,\textsuperscript{47} and concluded that it was wholly improper to restrict the scope of the enumerated categories of patentable subject matter in view of the use of the term "any" in 35 U.S.C. §101.\textsuperscript{48}
Having found that the claims fell within one of the enumerated categories of patentable subject matter, the court analyzed the claims under two judicially-created exclusions—the “mathematical algorithm” exception and the “business method” exception. The court first noted that “mathematical algorithms are not patentable subject matter to the extent that they are merely abstract ideas,” and reasoned that “certain types of mathematical subject matter, standing alone, represent nothing more than abstract ideas until reduced to some type of practical application, i.e., “a useful, concrete and tangible result.” Applying this test, the Federal Circuit held that:

the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces “a useful, concrete and tangible result”—a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades. . . . “[T]he mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers, and storing numbers, in and of itself, would not render it non-statutory subject matter, unless, of course, its operation does not produce a “useful, concrete and tangible result.”

Thus, the Federal Circuit expressly adopted and applied the “useful, concrete and tangible result” test as governing the patentability of the claim.

The State Street decision rejected the Freeman-Walter-Abele test, finding that the earlier test could be “misleading” and had “little, if any, applicability to determining the presence of statutory subject matter” under Supreme Court precedent. The decision also expressly repudiated the so-called “business method” exception. The court stated that “[s]ince the 1952 Patent Act, business methods have been, and should have been, subject to the same legal requirements for patentability as applied to any other process or

limitations.” (Internal citations and quotations omitted)).

49. Id. at 1373-77.
50. Id. at 1373 (citing Diamond v. Diehr, 450 U.S. 175 (1981) and In re Alappat, 33 F.3d 1526, 1544 (Fed, Cir. 1994)) (emphasis added).
51. Id. at 1373-74 (citing Alappat, 33 F.3d 1526, 1544 (Fed, Cir. 1994)) (emphasis added).
52. See id. at 1373-75.
53. Id. at 1374.
54. Id. at 1375.
method.”55 and that “[w]hether the patent’s claims are too broad to be patentable is not to be judged under § 101, but rather under §§ 102, 103, and 112.”56 The court also noted that the business method exception had never been invoked by the Federal Circuit or the Court of Customs and Patent Appeals to deny patentability.57

Any remaining uncertainty regarding the patentability of business methods that included “process” claims rather than “machine” claims was addressed in the Federal Circuit’s subsequent opinion in AT&T Corp. v. Excel Communications, Inc.,58 which solidified the court’s interpretation favoring patentability. AT&T involved a patent directed to a message recording system for long-distance telephone calls.59 Unlike the claims at issue in State Street, which were directed to a “machine,” the claims at issue in AT&T recited a “process” for implementing a mathematical algorithm.60 In holding the claims patentable under 35 U.S.C. § 101, the Federal Circuit rejected arguments that method claims containing mathematical algorithms must produce a “physical transformation” or conversion of subject matter from one state to another to constitute patentable subject matter, and explained that a physical transformation “is not an invariable requirement, but merely one example of how a mathematical algorithm may bring about a useful application.”61 Similarly, the court rejected the argument that process claims must include physical limitations to constitute patentable subject matter, reasoning that, unlike apparatus claims written in means-plus-function format (such as the claims at issue in State

55. Id.

56. Id. at 1377. See 35 U.S.C. §§ 102-103, 112 (2004) (Section 102 governs novelty. Section 103 governs obviousness. Section 112 governs the specification including the written description, best mode, and enablement requirements).

57. Id. at 1375-76. Indeed, the Court observed that Hotel Security Checking Co. v. Lorraine Co., the case typically credited for establishing the business method exception, relied on another ground to find the patent-in-suit invalid. Id. at 1376. That did not mean, however, that all business method inventions were patentable. Such inventions still had to fall within the one of the four enumerated categories of subject matter listed in 35 U.S.C. § 101, could not constitute one of the categories of non-patentable subject matter as set forth by the Supreme Court, namely “laws of nature, natural phenomena, and abstract ideas,” and a business method that employed a mathematical algorithm would have to produce “a useful, concrete and tangible result” in order to be patentable. See, e.g., In re Nuijten, 500 F.3d 1346, 1354 (Fed. Cir. 2007) (“If a claim in a patent covers material not found in any of the four statutory categories, that claim falls outside the plainly expressed scope of patentable subject matter, even if the subject matter is otherwise new and useful.”).


59. Id. at 1353.

60. Id. at 1354-55, 1358.

61. Id. at 1358-59.
process claims do not require supporting structure in the written description corresponding to the recited process steps. In view of this analysis, the court held that the claims at issue fell "comfortably within the broad scope of patentable subject matter under Section 101."63

B. State Street Generated A Storm of Controversy.

Thus, after the Federal Circuit's opinions in State Street and AT&T, patents directed to business methods could clearly qualify as patentable subject matter so long as they produced a "useful, concrete, and tangible result," and those that included process claims did not have to recite any structural limitations to be patentable. These holdings generated an extraordinary level of controversy within the legal, academic and business communities. One concern was that the quality of business method patents that began issuing after State Street was much lower than that of other patents.64 Additionally, some believed that business patents simply should not be permitted because of their perceived negative impact on business and innovation. For example, Professor Lawrence Lessig of Stanford University Law School argued repeatedly that the explosion of business method and software patents would have a "devastating effect" on the future of cyberspace by advantaging large institutions that can afford the transaction costs associated with obtaining such patents at the expense of smaller companies and open source initiatives.65 Similarly, the Seventh Circuit's Judge Posner expressed concern over the issuance of "what would have in the olden days been thought dubious improvements in business methods . . .," and wrote that such patents would lead to stifling licensing fees.66 Indeed, the controversy over

62. Id. at 1359.
63. Id.
65. Lawrence Lessig, The Death Of Cyberspace, 57 WASH. & LEE L. REV. 337, 345-346 (2000) ("There are patents for selling software on the web; patents for running reverse auctions on the web; patents for ecommerce on the web; patents for just about every activity you might dream to engage in on the World Wide Web. Cyberspace is being littered with claims of intellectual property; it is becoming filled with suits demanding payment before progress can continue.").
66. Hon. Richard A. Posner, Do We Have Too Many Intellectual Property Rights?, 9 MARQ. INTELL. PROP. L. REV. 173, 184 (2005) ("[W]hen a firm now contemplates making a new product or adopting a new method of doing business, it confronts a much larger array of existing patents than in the old days -- a veritable thicket of patents. What this means is that firms incur additional expenses in negotiating for patent licenses.")
business method patents was so great that remedial legislation was introduced, although never passed, in Congress,\textsuperscript{67} and the U.S. Patent and Trademark Office instituted procedures to specially address the perceived weaknesses of business method patents.\textsuperscript{68}

In addition to these commentators, the Federal Circuit itself arguably gave signals that \textit{State Street}’s holdings were being applied too expansively. For example, \textit{In re Comiskey} held that certain method claims directed to a novel way of requiring and conducting arbitration that required use of a mechanical device were patentable, whereas similar claims that did not specifically require the use of a mechanical device were unpatentable.\textsuperscript{69} The court explained that “the present statute does not allow patents to be issued on particular business systems—such as a particular type of arbitration—that depend entirely on the use of mental processes.”\textsuperscript{70} Another post-\textit{State Street} decision, \textit{In re Nuijten}, addressed the patentability of an electrical signal under § 101,\textsuperscript{71} and, in a more restrictive holding, concluded that an electrical signal was not patentable because “transitory embodiments are not directed to statutory subject matter.”\textsuperscript{72}

On the other hand, some commentators opined that the criticism of the Federal Circuit’s holding in \textit{State Street} was overblown. For example, one suggested that “[t]he negative statements about business method patents are . . . largely based on fundamental misunderstandings.”\textsuperscript{73} According to the authors, the advent of the Internet resulted in a debate between “free cyberspace advocates

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\item 70. \textit{Id}. at 1378.
\item 71. \textit{In re Nuijten}, 500 F.3d 1346, 1348 (Fed. Cir. 2007).
\item 72. \textit{Id}. at 1353.
\end{thebibliography}
[who] call for absolutely unregulated use of and access to the Internet..." and "proponents of... patents [on Internet-related processes who] see the Internet as simply another frontier of technology for which patents have played a useful role in fostering innovation and protecting financial investments by entrepreneurs." The article states that Internet patents "can play a crucial role in securing funding for start-up e-commerce companies." It also downplays the possibility of business method patents "effectively monopolizing broad regions of commercial cyberspace...", suggesting that "very few, if any, patents have come into public focus that, if properly construed, would foreclose reasonable competition." The article opined that criticisms of the quality of business method patents were not supported by evidence, and it concluded by predicting that "[i]n a few years we might well look back and wonder what all the fuss over business method patents was about."

IV. IN RE BILSKI AND THE EVOLUTION OF PATENTABLE SUBJECT MATTER

Following State Street, the controversy regarding the allowance of business method patents and the debate regarding the overall scope of patentable subject matter set the table for a seminal opinion to define and clarify the limits of patentability in this area. That opinion would be served by the en banc Federal Circuit in In re Bilski.

A. The Board's Decision in Ex Parte Bilski

In re Bilski came to the Federal Circuit via the Board of Patent Appeals and Interferences ("the Board"), and involved a patent application for an invention directed to a method for hedging risk in commodity trading. Claim 1, which exemplifies all of the claims at issue, was a process claim that did not recite any structure to implement its steps. The patent examiner rejected claim 1, as well as

74. Id. at 31.
75. Id.
76. Id.
77. Id.
78. Id. at 55.
79. Claim 1, read as follows:
  1. A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:
     (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity
all other claims, because it “merely manipulates [an] abstract idea and solves a purely mathematical problem without any limitation to a practical application [.] Therefore, the invention is not directed to the technological arts.”\textsuperscript{80} Additionally, the patent claims were not limited to operation on a computer, and, accordingly, were not limited to any specific apparatus.\textsuperscript{81}

The Board of Patent Appeals and Interferences agreed with the examiner that the claims were not patentable, but reached its conclusion on very different grounds. The Board rejected the “technological arts” test as unsupported by case law, and further rejected the purported requirement that claims recite a specific apparatus for performing the process steps because such claims need not recite a specific apparatus as long as “there is a transformation of physical subject matter from one state to another.”\textsuperscript{82} Nonetheless, the Board found the claims unpatentable because they 1) did not involve any patent-eligible transformation, 2) attempted to “preempt any and every possible way of performing the steps of the [claimed process], by human or any kind of machine or by any combination thereof,” and 3) did not produce a “useful, concrete and tangible” result as required for process claims not reciting any structure.\textsuperscript{83}

\textbf{B. The Federal Circuit’s En Banc Decision in Bilski}

1. The Federal Circuit Adopted the “Machine-Or-Transformation” Test to Determine Patentability

The Federal Circuit affirmed the Board’s decision that the claims at issue were not directed to patent-eligible subject matter, and “clarif[ied] the standards applicable in determining whether a claimed

\textit{at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;}
\textit{(b) identifying market participants for said commodity having a counter-risk position to said consumers; and}
\textit{(c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.}


81. \textit{Id.} at *4.
82. \textit{Id.} at **41-42.
83. \textit{Id.} at **46-47, **49-50.
method constitutes a statutory ‘process’ under § 101.'\textsuperscript{84} The “machine-or-transformation” test strictly adopted by the en banc court greatly alters the boundaries of patentability relative to the Federal Circuit’s previously-favored “useful, concrete and tangible result” test.

As the court explained:

The Supreme Court... has enunciated a definitive test to determine whether a process claim is tailored narrowly enough to encompass only a particular application of a fundamental principle rather than to pre-empt the principle itself. A claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.\textsuperscript{85}

Another principle guiding the Federal Circuit’s analysis appears to be whether the claimed method attempts to cover all uses of an algorithm or abstract idea.\textsuperscript{86}

The [Supreme] Court in Diehr thus drew a distinction between those claims that “seek to pre-empt the use of” a fundamental principle, on the one hand, and claims that seek only to foreclose others from using a particular “application” of that fundamental principle, on the other. Patents, by definition, grant the power to exclude others from practicing that which the patent claims. Diehr can be understood to suggest that whether a claim is drawn only to a fundamental principle is essentially an inquiry into the scope of that exclusion, i.e., whether the effect of allowing the claim would be to allow the patentee to pre-empt substantially all uses of that fundamental principle. If so, the claim is not drawn to patent-eligible subject matter.\textsuperscript{87}

The Federal Circuit explained this basic principle by contrasting the Supreme Court’s analysis in two of its leading cases. In Diehr, “the [Supreme] Court held that the claims at issue did not pre-empt all uses of the Arrhenius equation but rather claimed only a process for curing rubber... which incorporates in it a more efficient solution of the

\begin{footnotes}
\footnote{84. In re Bilski, 545 F.3d 943, 949 (Fed. Cir. 2008) (en banc).}
\footnote{85. Id. at 954 (emphasis in original). The court appeared to find particular significance in the Supreme Court’s statement in Gottschalk v. Benson that “[t]ransformation and reduction of an article ‘to a different state or thing’ is the clue to the patentability of a process claim that does not include particular machines.” Id. at 955-56 (emphasis in original) (quoting Gottschalk v. Benson, 409 U.S. 63, 770 (1972)).}
\footnote{86. Id. at 953.}
\footnote{87. Id. (internal citations omitted, emphasis added).}
\end{footnotes}
equation." Accordingly, "one would still be able to use the Arrhenius equation in any process not involving curing rubber, and more importantly, even in any process to cure rubber that did not include performing 'all of the other steps in their claimed process.' As such, the claims in Diehr were patentable.

In Gottschalk v. Benson, on the other hand, the Supreme Court reviewed "claims drawn to a process of converting data in binary-coded decimal ('BCD') format to pure binary format via an algorithm programmed onto a digital computer." The Supreme Court held that "[b]ecause the algorithm had no uses other than those that would be covered by the claims (i.e., any conversion of BCD to pure binary on a digital computer), the claims pre-empted all uses of the algorithm and thus they were effectively drawn to the algorithm." The Supreme Court acknowledged that Gottschalk presented a difficult case because the claims were drafted so that the process was implemented on a machine. However, the Court held the claims unpatentable, since "the limitations tying the process to a computer were not actually limiting because the fundamental principle at issue, a particular algorithm, had no utility other than operating on a digital computer.

The Federal Circuit's decision in In re Bilski specifically emphasized that process claims attempting to preempt all uses of an algorithm are unpatentable:

A claimed process involving a fundamental principle that uses a particular machine or apparatus would not pre-empt uses of the principle that do not also use the specified machine or apparatus in the manner claimed. And a claimed process that transforms a particular article to a specified different state or thing by applying a fundamental principle would not pre-empt the use of the principle to transform any other article, to transform the same article but in a manner not covered by the claim, or to do anything other than transform the specified article.

In other words, the Federal Circuit viewed the machine-or-transformation test as "the clue" to determining whether a claim "would pre-empt substantially all uses of [a] fundamental principle,"

88. Id. (quoting Diamond v. Diehr, 450 U.S. 175, 188 (1981)).
89. Id. (quoting Diehr, 450 U.S. at 187).
90. Id. (quoting Gottschalk, 409 U.S. at 67 (1972)).
91. Id. at 954.
92. Id. at 955.
93. Id. at 955 (citing Gottschalk, 409 U.S. at 71-72 (1972)).
94. Id. at 954.
rendering the claim unpatentable.95

The Federal Circuit also provided important guidance regarding application of the machine-or-transformation test.96 First, the machine-or-transformation test is a two-branched inquiry, and an applicant may show that a process claim is directed to statutory subject matter by showing either that the claim is tied to a particular machine or that the claim transforms an article.97 In this formulation, "the use of a specific machine or transformation of an article must impose meaningful limits on the claim’s scope to impart patent-eligibility," and "the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity."98 Furthermore, the Federal Circuit reiterated the Supreme Court’s admonition that "mere field-of-use limitations are generally insufficient to render an otherwise ineligible process claims patent-eligible."99

The court provided only limited guidance concerning application of the "machine" branch by noting that the claims at issue do not "limit any process step to any specific machine or apparatus."100 Therefore, the court "left[ it] to future cases the elaboration of the precise contours of machine implementation, as well as the answers to particular questions, such as whether or when recitation of a computer suffices to tie a process claim to a particular machine."101

The Bilski court provided more definitive guidance, however, regarding the "transformation" branch. The transformation of an "article" into a different state or thing "must be central to the purpose of the claimed process" in order to impart patent-eligibility.102

95. See id. at 954. The court further noted that "mere field-of-use limitations are generally insufficient to render an otherwise ineligible process claim patent-eligible." Id. at 957 (citing Diehr, 450 U.S. at 191-92 (1981)). The court further noted that, "[p]re-emption of all uses of a fundamental principle in all fields and pre-emption of all uses of the principle in only one field both indicate that the claim is not limited to a particular application of the principle," and that "insignificant post-solution activity will not transform an unpatentable principle into a patentable process." Id. For example, "the Pythagorean theorem would not have been patentable, or partially patentable, because a patent application containing a final step indicating that the formula, when solved, could be usefully applied to existing surveying techniques." Id. (quoting Parker v. Flook, 437 U.S. 584, 594 (1978)).

96. Id. at 961-63.

97. Id. at 961 (emphasis added).

98. Id. at 961-62.

99. Id. at 957 (citing Diehr, 450 U.S. at 191-92 (1981)).

100. Id. at 962.

101. Id.; see also In re Ferguson, 558 F.3d 1359 (Fed. Cir. 2009) (discussing machine prong of test). In re Ferguson is discussed below.

102. Bilski, 545 F.3d at 962.
court also expounded on the meaning of “article” in applying this test. A process involving “chemical or physical transformation of *physical objects or substances*” involved the transformation of “articles” and, therefore, constitutes patent-eligible subject matter.” However, the court took a more measured approach to the patent-eligibility of “the raw materials of . . . information-age processes” such as “electronic signals and electronically-manipulated data,” as well as “so-called business methods . . . [that] involve the manipulation of even more abstract constructs such as legal obligations, organizational relationships, and business risks.”

Thus, for example, a claim “reciting a process of graphically displaying variances of data from average values” was unpatentable where the claim “did not specify any particular type or nature of data, nor . . . how or from where the data was obtained or what the data represented.” On the other hand, a claim was patentable where the claim specified, for example, “that ‘said data is X-ray attenuation data produced in a two dimensional field by a computed tomography scanner.’” The court explained that the second claim was “drawn to patent-eligible subject matter” because the “data clearly represented *physical and tangible objects*, namely the structure of bones, organs, and other body tissues” and thus “the transformation of that raw data into a particular visual depiction of a physical object on a display was sufficient to render that more narrowly-claimed process patent-eligible.” The court noted that “[t]he electronic transformation of the data itself into a visual depiction . . . was sufficient; the claim was not required to involve any transformation of the underlying physical object that the data presented.” The court further explained that “[s]o long as the claimed process is limited to a practical application of a fundamental principle to transform specific data, and the claim is limited to a visual depiction that represents specific physical objects or substances, there is no danger that the scope of the claim would wholly pre-empt all uses of the principle.”

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103. *See id.* (emphasis in original).
104. *Id.* (emphasis added).
105. *Id.* (citing *In re Abele*, 684 F.2d 902, 909 (C.C.P.A. 1982)).
106. *Id.*
107. *Id.* at 962-63 (citing *Abele*, 684 F.2d at 908-09 (emphasis added).
108. *Id.* at 963.
109. *Id.* The court cautioned, however, that merely “[a]dding a data-gathering step to an algorithm is insufficient to convert that algorithm into a patent-eligible process,” because “[a]t least in most cases, gathering data would not constitute a transformation of any article . . .,” and “[a] requirement simply that data inputs be gathered -- without specifying how -- is a meaningless limit on a claim to an algorithm because every algorithm inherently requires the
2. The Federal Circuit Rejected Many of the Prior Tests Used to Define Patent-Eligible Subject Matter as well as the Business Method Exception

In addition to approving the "machine-or-transformation" test, the Federal Circuit explicitly rejected a number of prior tests used to determine whether claims were directed to unpatentable abstract ideas. First, the court followed *State Street* and definitively rejected the Freeman-Walter-Abele test. Second, the court rejected that portion of *State Street* that adopted the "useful, concrete, and tangible result" test:

while looking for 'a useful, concrete and tangible' result may in many instances provide useful indications of whether a claim is drawn to a fundamental principle or a practical application of such a principle, that inquiry is insufficient to determine whether a claim is patent-eligible under Section 101. And it was certainly never intended to supplant the Supreme Court's test.

The court further stated that the portions of its opinions in prior cases "relying solely" on either the Freeman-Walter-Abele test or the "useful, concrete, and tangible result" test "should no longer be relied on." Third, the court rejected the "technological arts" test, stating "[w]e perceive that the contours of such a test . . . would be unclear because the meanings of the terms 'technological arts' and 'technology' are both ambiguous and ever-changing." Fourth, the court rejected the "physical steps" test, stating that proponents of this test misunderstood the court's decision in *In re Comiskey*.

Regarding the "physical steps" test, the court stated that:

[E]ven a claim that recites "physical steps" but neither recites a particular machine or apparatus, nor transforms any article into a different state or thing, is not drawn to patent-eligible subject matter. Conversely, a claim that purportedly lacks any "physical steps" but is still tied to a machine or achieves an eligible gathering of data inputs." *Id.* The court also characterized the "inherent step of gathering data" as an "insignificant extra-solution activity" that is incapable of imparting patent-eligibility on a claim. *Id.*

10. *Id.* at 958-59 (stating that the Freeman-Walker-Abele test "appears to conflict with the Supreme Court's proscription against dissecting a claim and evaluating patent-eligibility on the bases of individual limitations").

11. *Id.* at 959.

12. *Id.* 959 n.17, 960 n.19.

13. *Id.* at 960. The court also noted that the "technological arts" test had never "been explicitly adopted by the Supreme Court, this court, or our predecessor court . . ." *Id.*

14. *Id.* at 960-61.
transformation passes muster under Section 101.1

Finally, the Federal Circuit rejected a categorical “business-method” exclusion, reaffirming that portion of its decision in State Street, and reiterating that such an exception was “unlawful” because all process claims, including business method claims, are “subject to the same legal requirements for patentability as applied to any other process or method.”

3. The Federal Circuit Found the Claims at Issue in Bilski Were Not Patentable

Applying these principles, the Federal Circuit held that the claims at issue in In re Bilski did not satisfy the machine-or-transformation test and, therefore, were not directed to patent-eligible subject matter. The “[p]urported transformations or manipulations simply of public or private legal obligations or relationships, business risks, or other such abstractions cannot meet the machine-or-transformation test because they are not physical objects or substances, and they are not representative of physical objects or substances.” The court concluded that such processes “at most incorporate[] only ineligible transformations,” even if the claim “can only be practiced by a series of physical acts.” Simply put, claims drawn to the mere “application of... human intelligence to the solution of practical problems,” such as the mental and mathematical process of identifying transactions to hedge risk, improperly attempted to claim an unpatentable fundamental principle.


The Federal Circuit majority acknowledged several potential difficulties with respect to its endorsement of the machine-or-

115. Id. at 961. The court further stated that it actually applied the machine-or-transformation test in In re Comiskey, that it did not adopt a “physical steps” test in that decision, and that in prior cases it had actually criticized such an approach to the patent-eligibility analysis. See AT&T Corp. v. Excel Commc’ns, Inc., 172 F.3d 1352, 1359 (1999).

116. Bilski, 545 F.3d at 961. The court also acknowledged the argument made by some amici that extending patent protection to pure methods of doing business is unconstitutional. However, by refusing to adopt a business method exception, the court implicitly rejected this constitutional argument. Id. at 960 n.22.

117. Id. at 963-64.

118. Id. at 963.

119. Id. at 963-964.

120. Id. at 964-65.
transformation test. First, the court recognized that the Supreme Court did not initially intend for the machine-or-transformation test to be the sole test for determining patent-eligibility. Furthermore, the Federal Circuit acknowledged that the machine-or-transformation test has faced difficult challenges in the past decade due to “the widespread use of computers and the advent of the Internet,” and, further, that the test may be ill-suited to address advancing technologies.

[W]e agree that future developments in technology and the sciences may present difficult challenges to the machine-or-transformation test, just as the widespread use of computers and the advent of the Internet has begun to challenge it in the past decade. Thus, we recognize that the Supreme Court may ultimately decide to alter or perhaps even set aside this test to accommodate emerging technologies. And we certainly do not rule out the possibility that this court may in the future refine or augment the test or how it is applied.

Despite such potential shortcomings, the majority clearly adopted this measure of patentability for process claims.

C. The Concurring Opinion by Judges Dyk and Linn Reinforced the Court’s Ability to Limit Patent-Eligible Subject Matter

In a concurring opinion, Judge Dyk, joined by Judge Linn, wrote to specifically address two dissenting opinions that argued the majority had usurped the legislative role. Judge Dyk wrote that the Patent Act of 1793, the predecessor to 35 U.S.C. Section 101, borrowed heavily from English patent law and practice, and “explicitly recognized a limit on patentable subject matter.” Based on their analysis of the English Statute of Monopolies and the other English precedent at the time the U.S. Patent Statutes were first enacted, Judges Dyk and Linn concluded that the method claims at issue in In re Bilski would not have been considered patentable subject matter in England at the time of the 1793 Act. Moreover,

121. See id. at 956. (citing Gottschalk v. Benson, 409 U.S. 63, 771 (1972) and Parker v. Flook, 437 U.S. 584, 589 n.9 (1978)).
122. Id. Indeed, the majority even contemplated that its decision might be reversed. See id.
123. Id.
124. Id. at 966 (Dyk, J., concurring).
125. Id. at 967-68.
126. Id. at 970-72. Under the Eighteenth Century English law, “[t]here is no suggestion ... that processes for organizing human activity were or ever had been patentable. Rather, the uniform assumption was that the only processes that were patentable were processes for using or creating manufactures, machines, and other composition of matter.” Id. at 972.
between 1793 and 1952, when the patent statutes were reenacted, neither the U.S. Patent and Trademark Office nor the federal courts departed from English practice to allow patents such as those at issue in *In re Bilski*.127 For these reasons, the concurring opinion determined the majority’s holding “does not reflect ‘legislative’ work, but rather careful and respectful adherence to the Congressional purpose.”128

D. Judge Newman’s Dissenting Opinion Directly Criticized the Majority’s Machine-Or-Transformation Test

Judge Newman wrote a lengthy dissent attacking the majority opinion on the grounds that it “impose[s] a new and far-reaching restriction on the kinds of inventions that are eligible to participate in the patent system . . . ,” and that the majority “achieves this result by redefining the word ‘process’ in the patent statute to exclude all processes that do not transform physical matter or that are not performed by machines.”129 Judge Newman expressed concerns that the machine-or-transformation test would “exclude[] many of the kinds of inventions that apply today’s electronic and photonic technologies, as well as other processes that handle data and information in novel ways,”130 and that the majority’s definition of “process” contradicted the Patent Act of 1952 and controlling Supreme Court precedent.131 Finally, Judge Newman stated that the majority opinion rejected the Federal Circuit’s own precedent, put into doubt the validity of patents issued to those who relied on the prior rulings of the Federal Circuit and the Supreme Court, and introduced uncertainty into the issue of patent-eligibility.132

127. Id. at 974-76.
128. Id. at 976.
129. Id. at 976 (Newman, J., dissenting).
131. *Bilski*, 545 F.3d at 977-80 (Newman, J., dissenting). These precedents have rejected per se exclusions of subject matter from 35 U.S.C. Section 101, and provided that processes implemented on a computer are patent-eligible. Id. at 980-82.
132. Id. at 990-95. Judge Newman has continued to forcefully voice these concerns. See, e.g., *In re Comiskey*, No. 2006-1268, 2009 U.S. App. LEXIS 400, at *40-41 (Fed. Cir. Jan. 13,
Judge Newman voiced particular concern that the new "machine-or-transformation" test would have grave consequences to innovation, thereby undermining the constitutional purpose of the patent law.

Inventiveness in the computer and information services fields has placed the United States in a position of technological and commercial preeminence. The information technology industry is reported to be "the key factor responsible for reversing the 20 year productivity slow down from the mid-1970's to the mid-1990s and in driving today's robust productivity growth."... This powerful economic move toward "intangibles" is a challenge to the backward looking change of this court's ruling today. Until the shift represented by today's decision, statute and precedent have provided stability in the rapidly moving and commercially vibrant fields of the Information Age. Despite the economic importance of these interests, the consequences of our decision have not been considered. 133

In the end, Judge Newman would have retained the "useful, concrete and tangible result" test enunciated in State Street Bank. 134 She found this test had been "proved to be of ready and comprehensible applicability in a large variety of processes of the information and digital ages," and was faithful to the Supreme Court's controlling precedent that distinguished between abstract ideas and their application to "a particular process for a specified purpose." 135 Lastly, Judge Newman believed that the majority's newly enunciated test violated well-settled principles of stare decisis, which she found

2009) (Newman, J., dissenting from denial of petition for rehearing en banc). In discussing what she viewed as the court's new jurisprudence under 35 U.S.C. § 101, Judge Newman commented:

The court continues to present a broad and ill-defined exclusion of “business methods” from access to the patent system, an exclusion that is poorly adapted to today's new and creative modalities of data handling and knowledge utilization. I must protest this further contribution to the uncertainty that this court's decisions are producing. This is not a simple case-specific adjudication between adverse interests. It can affect many thousands of vested property rights and the businesses that rely on such property. If these forms of property rights of the modern age are to be further withdrawn from access to the patent system, it should not be done in ignorance of the commercial effect. It should not be done in disregard of the effect on future innovation or on the public and national interest in new methods and conveniences. The uncertainty that is being engendered is tantamount to invalidation, for the cost of litigation can deter all but the deepest pockets. The losers include the public, as the benefits of the "knowledge economy" are slowed, along with the nation's leadership in commercial advance based on "knowledge" products. Id.

133. Bilski, 545 F.3d at 992-93.
134. Id. at 991-92.
135. Id.
particularly disturbing because Congress had not acted to modify the statute in response to the prior decisions and because the change in law would impact settled expectation property rights.\textsuperscript{136}

\textbf{E. Judge Rader's Dissenting Opinion Argued the Court Should Have Relied on the Principle that Abstract Ideas Are Not Patentable}

In a separate dissenting opinion, Judge Rader concluded that the case could have been decided on the much simpler principle that abstract ideas are not patentable, and criticized the majority opinion as unnecessarily departing from the broad language of the Patent Act, which “contains no hint of an exclusion for certain types of methods” from the meaning of the term “process.”\textsuperscript{137} Judge Rader disagreed with the majority’s adoption of the machine-or-transformation test and questioned why the expansive language of 35 U.S.C. Section 101 would exclude subject matter “simply because it is not transformational or properly linked to a machine.”\textsuperscript{138} Judge Rader further argued the Supreme Court has repeatedly stated that the machine-or-transformation test is merely a restatement of the principle that abstract ideas are not patentable,\textsuperscript{139} and that non-patentability of abstractions and natural laws is true to the expansive language of 35 U.S.C. Section 101.\textsuperscript{140} Judge Rader suggested that the machine-or-transformation test will raise more questions than it answers, whereas the simple rule that abstract ideas are unpatentable would have provided more definite guidance.\textsuperscript{141}

Judge Rader concluded his dissent with a simple and instructive example based on the fact pattern of \textit{Lab. Corp. of Am. Holdings v. Metabolite, Inc.},\textsuperscript{142} demonstrating the difference between a patent-eligible phenomena or relationship and a patent-eligible process for applying the relationship to obtain a useful, tangible, and concrete result. The subject matter at issue involved a method to diagnose whether a patient has high homocysteine levels and low folate, which can be symptomatic of a potentially fatal condition.\textsuperscript{143} Judge Rader

\begin{footnotes}
\item 136. \textit{Id.} at 993.
\item 137. \textit{Id.} at 1011-12 (Rader, J., dissenting).
\item 138. \textit{Id.} at 1012.
\item 139. \textit{Id.} at 1013.
\item 140. \textit{Id.}
\item 141. \textit{Id.} at 1015.
\item 143. \textit{Bilski}, 545 F.3d at 1014 (Rader, J., dissenting) (citing \textit{id.}).
\end{footnotes}
explained:

[a] patient may suffer from the unpatentable phenomenon of nature, namely high homocysteine levels and low folate. But the invention does not attempt to claim that natural phenomenon. Instead the patent claims a process for assaying a patient’s blood and then analyzing the results with a new process that detects the life-threatening condition. Moreover, the sick patient does not practice the patented invention. Instead the patent covers a process for testing blood that produces a useful, concrete, and tangible result: incontrovertible diagnostic evidence to save lives. The patent does not claim the patent ineligible relationship between folate and homocysteine, nor does it foreclose future inventors from using that relationship to devise better or different processes.\footnote{144}

Patent law should encourage researchers to “find simple blood tests or urine tests that predict and diagnose” harmful diseases and that, unless the standard for patentability is set appropriately, the court will “inadvertently advise[] investors that they should divert their unpredictable investments away from discovery of ‘scientific relationships’ within the body that diagnose breast cancer or Lou Gehrig’s disease or Parkinson’s or whatever.”\footnote{145}

\section*{F. Judge Mayer’s Dissenting Opinion Argued Business Methods Should Not Be Permitted and that State Street Should Be Overruled}

In a separate dissenting opinion, Judge Mayer expresses a very different conclusion. He argued that the Federal Circuit’s decision in \textit{State Street} should be overruled because “[a]ffording patent protection to business methods lacks constitutional and statutory support, serves to hinder rather than promote innovation, and usurps

\footnote{144. \textit{Id.}  \\
145. \textit{Id. Medistem, Inc.} amplified this concern in its brief requesting Supreme Court review.}

\begin{flushleft}
\begin{itemize}
\item The Federal Circuit’s limiting the scope of patentable subject matter for “process” inventions in \textit{Bilski} casts a cloud of uncertainty as to whether Medistem and other biotech companies can continue to protect with patents their inventions relating to methods of diagnosing causes of diseases and methods of selecting beneficial treatment protocols. Medistem fears that should biotech companies lose the ability to obtain enforceable patent protection on diagnostic and treatment methods, the ability to attract investment capital will sharply decline, and as a direct result the incentive to search for better ways to diagnose causes of diseases and find more effective treatments will decline.
\end{itemize}
\end{flushleft}

that which rightfully belongs in the public domain." Judge Mayer wrote that "[t]here is nothing in the early patent statutes to indicate that Congress intended business methods to constitute patentable subject matter." At the time Congress enacted the current Patent Act in 1952, it was "widely acknowledged that methods of doing business were ineligible for patent protection." Moreover, the Patent Act of 1952 incorporated prior statutory language, "thus signaling [Congress'] intent to carry forward the body of case law that had developed under prior versions of the statute." Judge Mayer concluded that "[b]ecause there is nothing in the language of the 1952 Act, or its legislative history, to indicate that Congress intended to modify the rule against patenting business methods, we must presume that no change in the rule was intended." Judge Mayer also voiced concern that business method patents may impede, rather than promote, the progress of science and the useful arts, and that business method patents are plagued with poor overall quality.

146. *Bilski*, 545 F.3d at 998 (Mayer, J., dissenting).
147. *Id.* at 999.
148. *Id.*
149. *Id.*
150. *Id.* Not all Federal Circuit judges agree on the historical treatment of business method patents. Compare *Id.* at 989 (Newman, J., dissenting (listing numerous "business method" patents issued in the 1700's)) and *Id.* at 999 (Mayer, J., dissenting ("Before the State Street Bank and Trust case ... it was universally thought that methods of doing or conducting business were not patentable items" (citation omitted))).
152. *Id.* at 1006-07 (citing eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, 397 (2006) (Kennedy, J. joined by Stevens, Souter, and Breyer, J.J., concurring)). Judge Mayer highlighted
Finally, Judge Mayer criticized the machine-or-transformation test adopted by the majority, stating that it “will do little to stem the growth of patents on non-technological methods and ideas.”

Judge Mayer believed that the proper standard for patentability rested in a “technological arts” test. In Judge Mayer’s view, the Constitution did not grant Congress “unfettered authority to issue patents,” but granted a more limited power based on promoting advances in the “useful arts.” “What the framers described as ‘useful arts,’ we in modern times call ‘technology.’” Consequently, “the Constitution explicitly limited patentability to... the process today called technological innovation,” which can be understood as “the application of the law[s] of nature to a new and useful end.” Simply put, “advance[s] over prior art... in a field of endeavor such as law..., business... or other liberal—as opposed to technological—art... falls outside the patentable subject matter,” and State Street, in his view, should be repudiated.

V. EARLY DECISIONS INTERPRETING IN RE BILSKI REFLECT THE NARROWER DEFINITION OF PATENTABLE SUBJECT MATTER

Despite the concerns of the dissenters, In re Bilski is being applied to significant effect in its first few months following its issuance, and is largely viewed as narrowing the scope of this lack of quality with a list of patents issued after State Street for such things as methods for training janitors to dust and vacuum using video displays, a method for enticing customers to order additional fast food, and a method of using color-coded bracelets to designate dating status in order to limit “the embarrassment of rejection.” Id. at 1004. Judge Mayer found such patents ranged “from the somewhat ridiculous to the truly absurd. Id. Moreover, many of these patents are “facially (even farcically) obvious to persons outside the USPTO.” Id. at 1007 (quoting Malla Pollack, The Multiple Unconstitutionality of Business Method Patents, 28 Rutgers Computer & Tech. L.J. 61, 106 (2002)).

153. Id. at 1002 (quoting In re Musgrave, 431 F.2d 882, 893 (CCPA 1970)).


155. Id. (citing Pavlik v. Rizkalla, 760 F.2d 1270, 1276 (Fed. Cir. 1985) (en banc)).

156. Id. (citing In re Comiskey, 499 F.3d at 1375).

157. Id. at 1002 (quoting Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127, 130 (1948)).

158. Id. at 1011.

patentable subject matter.\textsuperscript{160} This section summarizes some of the significant federal court cases to apply \textit{Bilski} and explains several decisions from the Board of Patent Appeals and Interferences that demonstrate the substantial impact the machine-or-transformation test is having on questions of patentability.

\textbf{A. Federal Circuit Cases Since In re Bilski Have Started to Clarify the Machine-or-Transformation Standard}

The Federal Circuit returned to the issue of patentable subject matter in \textit{In re Comiskey}, a case involving method and apparatus claims relating to a system imposing mandatory arbitration to resolve disputes pertaining to unilateral documents (e.g., wills or contracts).\textsuperscript{161} The method claims at issue included steps of: (1) enrolling the unilateral document and its owner; (2) incorporating arbitration language “in the unilateral document requiring that any contested issue related to the document be presented to the pre-chosen arbitration program for binding arbitration;” (3) requiring “a complainant to submit a request for arbitration resolution;” (4) conducting arbitration resolution; and (5) determining “an award or decision . . . [t]hat is final and binding.”\textsuperscript{162} A second set of claims was directed to a “system for mandatory arbitration resolution” that involved a number of “modules” and “means” that perform the steps set forth in the method claims.\textsuperscript{163} The Federal Circuit characterized the patent-at-issue in \textit{In re Comiskey} as a business method patent and

\textsuperscript{160} See, e.g., Fusco, supra note 130, at ¶¶1, 7, available at http://stlr.stanford.edu/pdf/fusco-bilski-deja-vu.pdf (Noting that \textit{In re Bilski} “has potentially significant implications for innovation in many fields, but particularly in the online commerce and the software industry,” and that the requirement that a patentable transformation involve “something having a close enough relationship with a physical object or substance ... has the potential to become a serious obstacle to the patentability of innovations in the newest technologies, for which it is not always simple to determine the real nature (physical/non-physical) of a new invention.”); see also Woessner & Shapiro-Barr, supra note 130 (Discussing the non-precedential decision in Classen Immunotherapies, Inc. v. Biogen IDEC, 304 Fed.Appx. 866 (Fed. Cir. 2008) and concluding that “the Bilski standard, now being applied in the area of biomedical technology, poses a significant threat to the viability of patents claiming diagnostic methods”).

\textsuperscript{161} \textit{In re Comiskey}, 554 F.3d 967, 970 (Fed. Cir. 2009). \textit{In re Comiskey} was the subject of a previously reported decision, \textit{In re Comiskey}, 499 F.3d 1365 (Fed. Cir. 2007), which was subsequently vacated. See \textit{In re Comiskey}, 2009 U.S. App. LEXIS 400 (Fed. Cir. Jan. 13, 2009) (granting rehearing en banc for the limited purpose of vacating the decision reported at 499 F.3d 1365 (Fed. Cir. 2007) and returning the case to the panel so that it could issue the revised opinion reported at 554 F.3d 967 (Fed. Cir. 2009).

\textsuperscript{162} \textit{Id.} at 970.

\textsuperscript{163} \textit{Id.} at 971.
reiterated that business methods may be patented if they satisfy the same legal requirements applicable to any other method.\textsuperscript{164}

In holding that the method claims at issue were not patentable, the Federal Circuit demonstrated that many of the basic principles guiding the analysis of patentability may still be applied after Bilski. The court once again confirmed that patentable subject matter is "extremely broad" under the 1952 Patent Act, but that "a principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right."\textsuperscript{165} The court expounded that "[t]he prohibition against the patenting of abstract ideas has two distinct (though related) aspects. First, when an abstract concept has no claimed practical application, it is not patentable."\textsuperscript{166} "Second, the abstract concept may have practical application."\textsuperscript{167} For example, a claim reciting an algorithm or abstract concept directed to an industrial process "can state statutory subject matter only if, as employed in the process, it is embodied in, operates on, transforms, or otherwise involves another class of statutory subject matter, i.e., a machine, manufacture, or composition or matter."\textsuperscript{168} However, "mental processes – or processes of human thinking – standing alone are not patentable even if they have practical application."\textsuperscript{169} The court concluded in rejecting these claims

It is... clear that the present statute does not allow patents to be issued on particular business systems—such as a particular type of arbitration—that depend entirely on the use of mental processes. In other words, the patent statute does not allow patents on particular systems that depend for their operation on human intelligence alone, a field of endeavor that both the framers and Congress intended to be beyond the reach of patentable subject matter. Thus, it is established that the application of human intelligence to the

\textsuperscript{164} Id. at 975-76 ("In State Street Bank, we addressed the 'business method' exception to statutory subject matter, and stated that '[w]e take this opportunity to lay this ill-conceived exception to rest'" (quoting State St. Bank & Trust Co. v. Signature Fin. Group, Inc., 149 F.3d 1368, 1375 (Fed. Cir. 1998))).

\textsuperscript{165} Id. at 977-78 (quoting Le Roy v. Tatham, 55 U.S. 156, 175 (1852)).

\textsuperscript{166} Id. at 978 (citing Rubber-Tip Pencil Co. v. Howard, 87 U.S. 498, 507 (1874)("[a]n idea of itself is not patentable") (emphasis added).

\textsuperscript{167} Id.

\textsuperscript{168} Id. (citing 35 U.S.C. §101).

\textsuperscript{169} Id. at 979 ("The Supreme Court has stated that '[p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.'" (quoting Gottschalk v. Benson, 409 U.S. 63, 67 (1972)) (emphasis added).
solution of practical problems is not in and of itself patentable. 170

Applying these concepts, the court found that the method claims at issue sought "to patent the use of human intelligence in and of itself," and were, therefore, unpatentable. 171

The Federal Circuit had the opportunity to further interpret Bilski's machine-or-transformation test in In re Ferguson, and gave important guidance regarding application of the "machine" branch. 172

The patent-at-issue was directed to a joint marketing scheme. The patent included a set of claims directed to a "method of marketing a product," that recited individual steps of "developing a shared marketing force," using that "shared marketing force to market a plurality" of products made by a plurality of companies, obtaining a share of those companies' profits, and obtaining exclusive marketing rights for the products. 173 The patent also attempted to claim a "paradigm for marketing" software products that comprised, generally, a marketing company that works for a plurality of companies and shares in the profits of those companies, but that allows those companies "to retain their autonomy." 174 The court found that the method claims were not patentable under Bilski because they did not satisfy the machine-or-transformation test, finding that they "are not tied to any particular machine or apparatus" and do not "transform any article into a different state or thing." 175 In explaining this conclusion, the Federal Circuit provided more detailed guidance regarding the "machine" branch than it had in Bilski, and explained that "a machine is a 'concrete thing, consisting of parts, or of certain devices and combination of devices' including 'every mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result.'" 176

With regard to the "transformation" branch of the test, the court stated that the applicants' methods are "directed to organizing business or legal relationships in the structuring of a sales force (or

170. Id. at 980.
171. However, since the second set of claims reciting "modules" could require the use of a machine under their broadest reasonable interpretation, the court remanded to the PTO so that it could review their patentability in the first instance. Id. at 981.
172. In re Ferguson, 558 F.3d 1359, 1364-65 (Fed. Cir. 2009)
173. Id. at 1361.
174. Id.
175. Id. at 1363-64. It seems doubtful that these claims would have fared any better under the State Street test, since one would be hard-pressed to identify a "useful, concrete and tangible result" in this abstract method.
176. Id. at 558 F.3d 1364 (quoting In re Nuijten, 500 F.3d 1346, 1355 (Fed. Cir. 2007)).
marketing company) . . ." and held that such transformations are not patent-eligible because "they are not physical objects or substances, and they are not representative of physical objects or substances."177 The court summarily rejected the "paradigm" claims without even reaching the machine-or-transformation test, because they did not "fall within any of the four enumerated categories of statutory subject matter."178

In its discussion of the patentability of the claims at issue in *In re Ferguson*, the court also strongly suggested that the claims in the *State Street* case would have been patent-eligible under the machine-or-transformation test.179 In particular, the court pointed out that the claims in *State Street* were drawn to a machine, not to a process.180 Therefore, according to the panel, the claims in *State Street* were "drawn to a patent-eligible machine implementation of what may have otherwise been a non-patent-eligible abstract idea."181

**B. District Court Cases Since In re Bilski Have Applied the Machine-Or-Transformation Test to Invalidate Previously-Allowed Patents**

In *Fort Properties, Inc. v. American Master Lease, LLC*, the District Court for the Central District of California applied Bilski's machine-or-transformation test in a straight-forward manner to a patent claiming "a business method for creating an investment instrument out of real property."182 Three of the claims at issue were directed to "a series of transactions involving acquiring real estate property, aggregating the property, selling the property to more than one entity such that ownership is by tenancy-in-common, and including in the ownership agreement governing the sale a provision

177. *Id.* at 1364 (quoting *In re Bilski*, 545 F.3d 943, 963 (Fed. Cir. 2008)).

178. *Id.* at 1362, 1366 (Noting that the applicants' paradigm claims "do no more than provide an abstract idea – a business model for an intangible marketing company").

179. *Id.* at 1365.

180. *Id.*

181. *Id.* Since the claims in *State Street* were written in means-plus-function format, and the structure identified by the court as corresponding to the claimed process steps included nothing more than generic computer components, this dicta in *In re Ferguson* arguably indicates that merely reciting generic computer components is enough to impart patentability on an otherwise unpatentable process. As is explained below, however, it appears that the PTO does not share this view regarding the patentability of computer-implemented processes under the machine-or-transformation test. This issue will surely be addressed in future Federal Circuit cases.

that the property may be sold at a specific time." 183 A fourth claim covered “a method of performing a tax-deferred exchange of investment real estate and details the exchange of ownership interests among various parties.” 184

Applying Bilski, the district court held that the claims did not satisfy the machine branch of the test because they are not “tied to a particular machine or apparatus.” 185 Furthermore, the District Court held that the patent failed the “transformation” branch, since none of the claims “transform any article to a different state or thing.” 186

Like the claims at issue in Bilski, the claims of the [patent-in-suit] involve only the transformation or manipulation of legal obligations and relationships. Specifically, the claims of the [patent-in-suit] only transform or manipulate legal ownership interests in real estate. Under Bilski, the Court cannot find that those claims transform an article or thing. 187

Thus, the district court held that all of the claims of the patent at issue were invalid because they were not drawn to patent-eligible subject matter. 188

In King Pharmaceuticals, Inc. v. Eon Labs, Inc., the District Court for the Eastern District of New York similarly applied Bilski to invalidate claims directed to “methods of informing patients about and administering the muscle relaxant metaxalone.” 189 The district court held claims requiring the step of informing the patient about a property of the drug were invalid because they failed the machine-or-transformation test. 190 “The act of informing another person of the... does not transform the metaxalone into a different state

183. Id. at 1053.
184. Id. at 1053-54. Numerous dependent claims generally included “certain provisions to be included in the ownership agreements.” For example, one dependent claim recited “identifying a combination of deedshares having different predetermined denominations that sum to the second value.” Id. (quoting Mot. Ex. 1 14:4-6).
185. Id. at 1055 (quoting In re Bilski, 545 F.3d 943, 954 (Fed. Cir. 2008)). Indeed, the Defendant “explicitly acknowledged . . . that the recited methods ‘need not be performed on a computer’” and believed that patentability arose not from the “machine” branch of the test, but rather from the “transformation” branch. Id. (quoting Ex. 2:199).
186. Id. at 1056 (quoting Bilski, 545 F.3d at 963).
187. Id. The district court specifically rejected the patentee’s argument that the creation of deedshares constitutes a patent-eligible transformation, stating that “the deedshares themselves are not physical objects or substances . . . ” and do not “represent physical object or substances.” Id. (citing Bilski, 545 F.3d at 963).
188. Id. at *12.
190. Id. at 512-3 (quoting Bilski, 545 F.3d at 957).
or thing," nor is it tied to any particular machine.191 As such, the claims failed both branches of the machine-or-transformation test and were invalid.192

In *Cybersource Corp. v. Retail Decisions, Inc.*,193 the District Court for the Northern District of California applied *In re Bilski* to invalidate claims directed to detecting fraudulent credit card transactions over the Internet. One claim covered a method for validating an online transaction at a particular Internet address using a particular credit card by creating and utilizing a geographical map showing the location of other credit card numbers that have conducted transactions at that same Internet address.194 The other claim, written in Beauregard form,195 covered a "computer readable medium containing program instructions . . . wherein execution of the program instructions by one or more processors of a computer system causes the one or more processors to carry out the steps" for detecting fraudulent credit card transactions.196

The court granted summary judgment of invalidity as to the method claim and the Beauregard claim because they failed the machine-or-transformation test for patentability.197 With regard to the transformation prong of the test, the court determined that, while the claimed inventions may have involved the "manipulation" of credit card numbers by using them to build a "map," they did not involve the "transformation" of those numbers.198 The court also determined that, even if the claimed inventions transformed credit card numbers, they nonetheless did not transform an "article," which the court defined as "any physical object or substance, or an electronic signal

191. *Id.* at 512-3. The court also rejected the claims with purportedly novel limitations of informing another person of the food effects of metaxalone under Federal Circuit precedent that "precluded a finding of infringement solely on dissemination of information." *Id.* at 513 (citing McElmurray v. Ark. Power & Light Co., 995 F.2d 1576, 1583 (Fed. Cir. 1993)). The court elaborated that "[s]uch a claim, which effectively allows a patentee to exclude others from informing people of (unpatentable) scientific discoveries is anathema to the aims of the patent statute, which favors disclosure." *Id.*

192. *Id.* at 512-5.


194. *Id.* at 1070-1.

195. A Beauregard claim is named for the case of *In re Beauregard*, 53 F.3d 1583 (Fed. Cir. 1995), a two-paragraph opinion that noted the PTO viewed computer programs that are embodied in a tangible medium, such as floppy diskettes, are patentable subject matter.


197. *Id.* at 1080.

198. *Id.* at 1073-4.
representative of any physical object or substance." The court reasoned that "a credit card number no more represents a physical credit card than a card represents a number. Both the number and the card represent a common underlying abstraction – a credit card account, which is a series of rights and obligations existing between an account holder ... and a card issuer." Similarly, the court determined that the claimed inventions did not transform, or even manipulate, Internet addresses, stating that it would not make sense to change the IP addresses, and that an IP address is not a visual depiction of a computer.

Next, the court determined that the claimed inventions are not tied to a particular machine, as required by the machine prong of the machine-or-transformation test. The court determined that recitation of the phrase "over the Internet" does not suffice to tie a process claim to a "particular machine" for three reasons. First, the court stated that "the internet is an abstraction." If every computer user in the world unplugged from the internet, the internet would cease to exist, although every molecule of every machine remained in place. If every computer user in the world unplugged from the internet, the internet would cease to exist, although every molecule of every machine remained in place. One can touch a computer or a network cable, but one cannot touch "the internet." Second, according to the court, the involvement of the internet merely constitutes insignificant extra-solution activity. Third, the court stated that "use of the internet does not impose meaningful limits on the scope of the claims," noting that "[t]he instant claims broadly preempt the fundamental mental process of fraud detection using associations between credit card numbers. A limitation to 'only' the vast area of online credit card transactions is not meaningful."

The court also commented on the validity of Beauregard claims in view of the Federal Circuit's opinion in In re Bilski, as well as the patentability of business methods under the machine-or-
transformation test. The court rejected the argument that Beauregard claims are exempt from the machine-or-transformation inquiry, noting that "the legal footing of the so-called Beauregard doctrine is anything but sure."

Finally, the court stated that "[a]lthough the majority declined to say so, Bilski's holding suggests a perilous future for most business method patents." The court poetically concluded that "[t]he closing bell may be ringing for business method patents, and their patentees may find they have become bagholders.

C. Board decisions since In re Bilski Illustrate How Patentable Subject Matter May Be Narrowed Following In re Bilski

The Board of Patent Appeals and Interferences has invalidated a number of claims directed to computer-related inventions under the new Bilski standard. As discussed below, the Board has found claims directed to a "computer-readable medium" that performs a series of process steps to be invalid when the underlying process does not meet the test for patentability, and that the recitation in a claim of components of a general purpose computer such as a processor and memory is insufficient on its own to render a claim patent-eligible.

While the following discussion of these representative cases is not intended to be exhaustive, it illustrates how In re Bilski is being applied to limit the patentability of some forms of claims.

1. Ex Parte Mitchell Illustrates How Bilski May Be Applied to Reject Certain Memory and Data Processing Claims

The Board applied the machine-or-transformation test to three representative claims in Ex Parte Mitchell, providing valuable guidance on how Bilski will be interpreted. The invention at issue related to diagnosing "memory leaks," which occur "when a program inadvertently maintains references to objects that are no longer needed, preventing memory space from being reclaimed for other uses." The claimed invention operated by identifying sets of data structures that are likely to evolve in a coherent manner, an indication that a memory leak has occurred.

209. Id. at 1080.
210. Id. at 1081.
211. Id.
213. Id. at *2.
214. Id. at *2-3
The first claim at issue recited:

A method for identifying co-evolving regions in the memory of a target application, comprising: receiving information identifying a set of data structures that are evolving; and classifying the constituents of the data structures based on their likelihood to evolve in a single coherent manner.\(^{215}\)

The Board held this claim failed the machine branch, because it did not require the two steps of “receiving information” and “classifying information” be performed on a particular, or in fact any, machine or apparatus and would require no more than the mental steps of receiving information and classifying “constituents.”\(^{216}\) The preamble specifying that the intended purpose of the claim related to a memory device likewise did not save the claim, because it did not serve to limit the claim scope, but merely “state[d] a purpose or intended use of the invention.”\(^{217}\) Finally, the applicant could not save the claim by arguing that it was broad enough to cover at least some machine implementations.\(^{218}\) The Board similarly found the claim failed the transformation branch because it did not “require any kind of electronic transformation of data into a different state or thing.”\(^{219}\)

The second claim the Board analyzed recited a “computer readable medium” comprising the instructions to carry out the method specified in the prior claim:

A computer readable medium for identifying co-evolving regions in the memory of a target application, comprising instructions for: receiving information identifying a set of data structures that are evolving; and classifying the constituents of the data structures based on their likelihood to evolve in a single coherent manner.\(^{220}\)

The Board did not view the introduction of the computer readable medium as patentably significant:

We see no reason why a ‘computer readable medium’ containing ‘instructions’ for the otherwise ineligible method should be treated any differently from the non-statutory method recited in instant claim 1. Although a ‘computer readable medium’ may nominally

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\(^{215}\) Id. at *2.

\(^{216}\) Id. at *5-6. Indeed, the claim as written would cover human thought and paper work, further illustrating that it is not tied to a particular machine or apparatus. Id.

\(^{217}\) Id. at *6 (citing In re Paulsen, 30 F.3d 1475, 1479 (Fed. Cir. 1994)).

\(^{218}\) Id. at *6-7 (noting that if the claim covers some embodiments outside the statutory scope, it is not patentable (citing In re Nuijten, 500 F.3d 1346, 1354 (Fed. Cir. 2007), cert. denied, 129 S.Ct. 70 (2008))).

\(^{219}\) Id. at *4.

\(^{220}\) Id. at *1.
fall within the statutory class of 'manufacture,' [this claim] would effectively pre-empt the abstract idea represented by [the first claim].

[Additionally, p]lacing the method of claim 1, which pre-empt s substantially all uses of the abstract idea of 'receiving information' and 'classifying' constituents as claimed, on a computer readable medium in the form of 'instructions' does not render the claimed subject matter statutory. Moreover, [this claim] does not require that a 'computer' do anything. [This claim] is drawn to a 'computer readable medium' that contains 'instructions.'

Thus, the Board rejected the claim.221

The third claim at issue was drawn to a system comprising a processor performing instructions corresponding to the steps of the claimed method:

An information processing system comprising: a processor comprising logic for performing instructions of: identifying a set of data structures that are evolving; and classifying the constituents of the data structures based on their likelihood to evolve in a single coherent manner; and a memory for storing the instructions.

The Board also found the language further limiting the claim scope to a "processor" was insufficient to achieve patentability:

The use of a 'processor' and 'memory' for storing and performing the broadly recited 'instructions' . . . would be, in practical effect, a patent on abstract idea of 'identifying' and 'classifying constituents' of data structures as recited. Limiting the claim to part of a system comprising a 'processor' and 'memory' does not add any practical limitation to the scope of the claim. Similar to a

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221. The Board reached the same conclusion regarding the recitation of a "computer readable medium" in Ex Parte Cornea-Hasegan, 2009 WL 86725 (B.P.A.I. 2009). The application in Cornea-Hasegan sought to patent "A computer readable media including program instructions which when executed by a processor cause the processor to perform" the specified steps necessary to conduct calculations using a mathematical algorithm. Id. at *1. Again, the Board found this addition insufficient to render the claim patentable. See id. at *6. ("Here, Appellant's claim recites computer readable media, but Appellant's claim is still directed to determining a result from a mathematical algorithm. Additional recitations of computer readable media, a hardware prediction unit, steps manipulating other data . . . are still insignificant extra-solution activities that fail to "transform an unpatentable principle into a patentable process. Limiting the claim to computer readable media does not add any practical limitation to the scope of the claim. Such a field-of-use limitation is insufficient to render an otherwise ineligible claim patent eligible. To permit such a practice would exalt form over substance and permit Appellant to circumvent the limitations contemplated by § 101." (citations omitted).

222. Ex Parte Mitchell at *1.
field-of-use limitation in a process claim, the use of a general ‘processor’ and ‘memory’ is insufficient to render an otherwise ineligible claim patent eligible. 223

2. Ex Parte Scholl Rejected a “Computer-Based” Method as Failing the Machine-or-Transformation Test

Ex Parte Scholl held that preamble language stating the recited method claim was “computer-based” did not to establish the claim was directed to a machine as required under the first prong of the machine-or-transformation test. 224 The claim at issue recited:

A computer-based method for production, the method comprising:
receiving a hierarchical process flow description that describes a process flow using classes of process elements arranged in a hierarchy to describe the process flow at increasing levels of detail;
associating a first item description comprising first safety information regarding safety of a first item with a first process element in the hierarchical process flow description as an input into the process flow;
associating a second item description comprising second safety information regarding safety of a second item with a second process element in the hierarchical process flow description as an output from the process flow. 225

223. Id. at *6. (citing In re Bilski, 545 F.3d 943, 954 (Fed. Cir. 2008) (en banc) (‘ineligibility under § 101 cannot be circumvented by attempting to limit the use of the formula to a particular technological environment’)). The Board once again reached the same conclusion in Ex Parte Comea-Hasegan, 2009 WL 86725 (B.P.A.I. 2009). In rejecting a claim that recited the steps necessary to carry out calculations using a mathematical algorithm, and specifically required that the steps be performed on an unspecified processor, the Board held that:

The recitation of a ‘processor’ performing various functions fails to impose any meaningful limits on the claim’s scope. The recitation of a ‘processor’ performing various functions is nothing more than a general purpose computer that has been programmed in an unspecified manner to implement the functional steps recited in the claims. The recitation of a processor in combination with purely functional recitations of method steps, where the functions are implemented using an unspecified algorithm, is insufficient to transform otherwise unpatentable method steps into a patent eligible process. Holding otherwise would exalt form over substance and would allow pre-emption of the fundamental principle present in the non-machine implemented method by the addition of the mere recitation of a ‘processor.’ Such a field-of-use limitation is insufficient to render an otherwise ineligible process claim patent eligible.

See Bilski, 545 F.3d at 957 (citing Diamond v. Diehr, 450 U.S. 175, 191-92 (1981) (noting that eligibility under § 101 ‘cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.’)).


225. Id. at *1.
The Board also found that this method claim failed *Bilski*'s transformation branch because the steps do not "result in the transformation of an article to a different state or thing."226

The Board found that the claim, when given its broadest reasonable interpretation, did not satisfy *Bilski*'s machine branch because it did not "recite any steps that *necessarily* involve machine implementation."227 Thus, the preamble reference to a "computer-based" method that was not referenced in the limitations did not bring the otherwise unpatentable claims over the threshold set by *Bilski*.


*Ex Parte Barnes*228 gave the Board an opportunity to apply *Bilski* to a series of broad claims directed to methods for identifying faults in seismic data. The two independent claims at issue recited:

A fault identification method that comprises: obtaining seismic data; and for each of multiple positions of an analysis window in the seismic data, [and] determining a planarity value for discontinuities in the analysis window.

A fault identification method that comprises: determining discontinuity values from seismic data; and applying principal component analysis to the discontinuity values to identify faults.229

Further dependent claims included limitations to analyze and display the data.230

The Board summarily rejected all claims under *Bilski*. First, the claims were "directed to non-statutory subject matter," because they were not tied to a particular machine nor did they transform any article to a different state or thing.231 Moreover, the claims reveal nothing more than "gathering, analyzing, and displaying" data without providing "any details as to how the data is gathered,

226. *Id.* at *7.

227. *Id.* (emphasis added) ("While the preamble of claim 1 recites a 'computer-based' method, the 'computer-based' of claim 1 is not recited in terms of hardware or tangible structural elements. Rather, the 'computer-based' method could be implemented on a software system, where the elements of claim 1 are implemented solely in software or algorithms. Thus, the nominal recitation of a 'computer-based' in the preamble does not is not directed to a particular processor under the machine-or-transformation test.


229. *Id.* at *1 (claims 1 and 30).

230. *Id.* at *7.

231. *Id.*
analyzed or displayed.”232 Such claims are defective under Bilski because: 1) they “neither specifically call for a machine nor reference a machine;” 2) “the adding of a data gathering step to a process claim . . . is insufficient to convert a [non-statutory] process into a patent-eligible process;” 3) “a claim that is drawn only to analyzing of data is a claim that seeks to pre-empt the use of a fundamental principle;” and 4) “the displaying of data without more (e.g. a reference to how and why it is displayed) is determined to be ‘insignificant post solution activity’ and as such will not transform the claimed method into a patentable method.”233 In short, these claims suffered from a full catalogue of defects under Bilski, and were rejected.

4. Ex Parte Gutta Addressed Questions Bilski Left Open Regarding the Machine Branch

Ex Parte Gutta required the Board to determine whether a claim purporting to cover a “computerized method” providing automated recommendations was patentable under the machine-or-transformation test.234 As set forth in the preamble, the claim was directed to “a computerized method performed by a data processor for recommending one or more available items to a target user,” that included the specific steps of:

obtaining a history of selecting one or more available items by at least one third party;

partitioning a third party selection history into a plurality of clusters, wherein each cluster contains items that are closer to the mean of the cluster than any other cluster from among the plurality of clusters,

modifying a target user’s history of selecting said one or more available items with one or more third party clusters to produce a modified target user’s history;

processing the modified target user’s history to generate a target user profile, wherein the modified target user’s history characterizes preferences of the target user as modified to reflect preferences of the third party;

generating a recommendation score for at least one of said available items based on said target user’s profile; and

232. Id.
233. Id. (internal citations to In re Bilski, 545 F.3d 943 (Fed. Cir. 2008) (en banc) omitted).
displaying the recommendation score to the target user.235

The Board concluded that these steps failed Bilski’s transformation branch because the data did not represent physical or tangible objects, but, rather, intangible information about user selection histories.236

In analyzing the machine branch, the Board found that the only limitations that “could arguably be construed to tie the claimed process to a particular machine under the first prong of [Bilski]” were the preamble language reciting “[a] computerized method performed by a data processor,” and the step of “displaying the [calculated result] to [a] target user.”237 Even though satisfaction of this branch was “the exact issue that the court in Bilski declined to decide,” the Board found sufficient guidance in the Bilski court’s explanation that “the use of a specific machine must impose meaningful limits on the claim’s scope to impart patent-eligibility.”238 The Board found that field of use restriction imposed by the preamble recitation of a “computerized method performed by a data processor,” which added “nothing more than a general purpose computer . . . associated with the steps of the process in an unspecified manner, was not sufficient to render the invention patentable.”239 The limitation requiring “displaying” was also insufficient because the step “need not be performed by any particular structure,” and could “be accomplished simply by writing the resulting score on a piece of paper.”240 Indeed, concluding that “such post-solution activity” imparted patentability to a mathematical algorithm claim “would exalt form over substance.”241 Thus, the claim at issue failed both branches of the machine-or-transformation test, and the claim was deemed unpatentable.

VI. THE SUPREME COURT SHOULD OVERTURN IN RE BILSKI

A. Bilski’s Restrictive Test Violates Long-Established Policies Central to the U.S. Patent System

As discussed in detail above, Supreme Court precedent and the U.S. Patent Act interpret the scope of patentability broadly. Unless an inventor seeks to claim a law of nature, a basic mathematical

235. Id.
236. Id. at *3.
237. Id.
238. Id. (citing Bilski, 545 F.3d at 961-62).
239. Id. (citing Bilski, 545 F.3d at 957).
240. Id.
241. Id.
algorithm, an abstract idea or the like, "anything under this sun that is made by man" is potentially patentable.\textsuperscript{242} This open-ended approach has permitted the patent system to serve its Constitutional function of promoting the "useful" arts by granting inventors patent protection on many of the fundamental advances that have defined the rise of the United States economy. Ground-breaking inventions patented in the United States revolutionized the agrarian economy of the eighteenth and nineteenth centuries,\textsuperscript{243} transformed mobility and gave rise to modern transportation,\textsuperscript{244} developed the energy sources that enabled ever-advancing technology,\textsuperscript{245} created modern communications,\textsuperscript{246} opened the digital age with the basic components of the modern computer,\textsuperscript{247} transformed the computer age into the information age

\begin{itemize}
\item \textsuperscript{242} Diamond v. Diehr, 450 U.S. 175, 182 (1981); see also Diamond v. Chakrabarty, 447 U.S. 303, 309.
\item \textsuperscript{244} Indeed, the U.S. Patent system furthered successive generations of transportation from the age of steam (see, e.g., U.S. Patent No. 54 (issued Oct. 15, 1836), entitled "Art of Managing and Supplying Fire For Generating Steam In Locomotive Engines," issued to Matthias W. Baldwin), to the age of automobiles (see, e.g., U.S. Patent No. 1,005,186 (filed Aug. 12, 1909), entitled "Transmission Mechanism," issued to Henry Ford), airplanes (see, e.g., U.S. Patent No. 821,393 (filed Mar. 23, 1903), entitled "Flying Machine," issued to Orville Wright and Wilbur Wright), and even to the age of rocketry (see, e.g., U.S. Patent No. 2,397,657 (filed June 23, 1941), entitled "Control Mechanism For Rocket Apparatus," issued to Robert H. Goddard).
\item \textsuperscript{245} These energy sources range from simple alternating current (see, e.g., U.S. Patent No. 381,968 (issued May 1, 1888), entitled "Electro-Magnetic Motor," issued to Nikola Tesla), to nuclear fission (see, e.g., U.S. Patent No. 2,708,656 (issued May 17, 1955), entitled "Neutronic Reactor," issued to Enrico Fermi).
\item \textsuperscript{246} The patented communications systems include a wide range of seminal advances, including the telegraph (see, e.g., U.S. Patent No. 1,647 (issued June 20, 1840), entitled "Improvement In The Mode Of Communicating Information By Signals By the Application of Electro-Magnetism, issued to Samuel F. Morse), the telephone (see, e.g., U.S. Patent No. 174,465 (issued Mar. 7, 1876), entitled "Improvement In Telegraphy," issued to Alexander Graham Bell), radio (see, e.g., U.S. Patent No. 645,576 (issued March 20, 1900), entitled System of Transmission of Electrical Energy," issued to Nikola Tesla; U.S. Patent No. 649,621 (issued May 15, 1900), entitled "Apparatus For Transmission Of Electrical Energy," issued to Nikola Tesla; U.S. Patent No. 586,193 (issued July 13, 1897), entitled "Transmitting Electrical Signals," issued to Guglielmo Marconi), and television (see, e.g., U.S. Patent No. 1,773,980 (issued Aug. 30, 1930) entitled "Television System," issued to Philo T. Farnsworth).
by connecting multiple computers in individual locations with local area networks\textsuperscript{248} and linking the entire globe through the internet,\textsuperscript{249} and lengthened human lifespan through advances in medicine and, ultimately, by using and manipulating the basic DNA structure of life.\textsuperscript{250}

Notwithstanding the Supreme Court precedent interpreting patentability broadly, and its express caution not to "read into the patent laws limitations and conditions which the legislature has not expressed,"\textsuperscript{251} the Federal Circuit’s majority opinion in \textit{Bilski} created a restrictive patentability test, requiring that all patented processes be tied to a specific machine or apparatus or that they result in a "transformation."\textsuperscript{252} As set forth in sections III.D, III.E, and III.F, above, this new test was met with harsh criticism from the three dissenting Federal Circuit judges.

The majority’s new machine-or-transformation standard runs counter to the flexibility of the patent system under which more than two centuries of technological innovations have flourished. The American Intellectual Property Law Association ("AIPLA") forcefully argued in its brief supporting Supreme Court review of \textit{Bilski} that the Federal Circuit’s new test is, in fact, a \textit{hindrance} to the progress of science and the useful arts.\textsuperscript{253} The broad language of Section 101 specifying that "\textit{any} new and useful process, machine, manufacture or composition of matter\textsuperscript{254} falls with the ambit of the patent system represents a "dynamic provision designed to encompass


\textsuperscript{251}Diamond v. Chakrabarty, 447 U.S. 303, 308 (quoting United States v. Dubilier Condenser Corp., 289 U.S. 178, 199 (1933)).

\textsuperscript{252}In re Bilski, 545 F.3d 943, 954 (Fed. Cir. 2008) (\textit{en banc}).


new and unforeseen inventions.” However, the restrictive machine-or-transformation test imports limitations into Section 101 based on the 130-year old language of Cochrane v. Deener, 94 U.S. 780 (1877), and severely limits its ability to protect today’s inventors:

Computations formerly done by hand are now performed by integrated circuits smaller than a fingernail. Frequently, there is no longer a physical structure responsible for those operations. One might describe them as ethereal or transient, affected by software in networks, but this is the direction of today’s innovation.

In the future, society can look forward to innovations and advances in the emerging fields of nanotechnology, biotechnology, health sciences and personalized medicine. As technology thus ventures from the recognized into the unknown, innovation should be no less protectable than in previous eras of transition.

Indeed, the machine-or-transformation test may not even be well-suited for many of the seminal inventions of the past century, including foundational patents in radio, signal processing, wireless communications, and medical diagnostics and treatment.

In issuing its decision, the Bilski majority set a new, rigid test for patentability that elevated a single criteria set forth in Gottschalk v. Benson to be the sole test for the patentability of novel processes. That step is impermissible under recent Supreme Court cases.

B. The Supreme Court Has Recently Rejected Rigid, Judicially Imposed Tests on Patentability

The Supreme Court has reviewed Federal Circuit decisions in several cases in the past three years and has revolutionized the law on several issues in patent jurisprudence. One of these cases, KSR
International Co. v. TeleFlex, Inc., offers a useful roadmap to the Supreme Court’s likely approach in Bilski.

Pursuant to section 103, an invention is patentable only if it is “non-obvious” to one of ordinary skill in the art to which it pertains. Prior to KSR, an accused infringer could show a patent claim was obvious based on a combination of two or more prior art references only if it could establish that the prior art, the knowledge of a person having ordinary skill in the art, or the nature of the problem contained a teaching, suggestion or motivation to combine the references. Even though recognizing that the test was developed in order to “resolve the question of obviousness with more uniformity and consistency,” the Supreme Court summarily rejected this rigid rule as “contrary to §103 and [its] precedents.” Throughout this Court’s engagement with the question of obviousness, our cases have set forth an expansive and flexible approach inconsistent with the way the Court of Appeals applied its [teaching-suggestion-motivation] test here.

Helpful insights, however, need not become rigid and mandatory formulas; and when it is so applied, the [teaching-suggestion-motivation] test is incompatible with our precedents. The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation. The diversity of inventive pursuits and of modern technology


262. See Al-Site Corp. v. VSI Int’l, Inc., 174 F.3d 1308, 1323-24 (Fed. Cir. 1999); See also C.R. Bard Inc. v. M3Systems, Inc., 157 F.3d 1340, 1351-1352 (Fed. Cir. 1998) (reversing judgment of invalidity on the grounds of obviousness because the prior art lacked the “essential evidentiary component” of a “teaching or suggestion or motivation” to combine the asserted references); ACS Hosp. Systems, Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577 (Fed. Cir. 1984) (“Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination.”).

263. KSR, 550 U.S. at 407.
264. Id. at 415.
265. Id. at 418 (citing Application of Bergel, 292 F.2d 955, 956-57 (C.C.P.A. 1961)).
The Federal Circuit’s majority holding in Bilski repeats the same error that led to the Supreme Court’s decision in KSR, namely, ignoring the “expansive and flexible approach” toward patentability clearly mandated by the Supreme Court jurisprudence and elevating the “machine-or-transformation” test’s “helpful insight” to the one and only test for patentability. That result should not stand.

C. State Street’s Useful, Concrete and Tangible Result Test Accurately Represents Congressional Intent regarding the Proper Boundary for Patentability

The Federal Circuit’s restrictive test, which rules out patentability for many business methods, also contravenes Congressional intent. Congress has never changed, and has in fact approved, the useful, concrete and tangible result test first enunciated in State Street. Not long after the Federal Circuit issued its opinions in the State Street and AT&T cases, Congress passed the First Inventor Defense Act, which provided that:

It shall be a defense to an action for infringement under section 271 of this title with respect to any subject matter that would otherwise infringe one or more claims for a method in the patent being asserted against a person, if such person had, acting in good faith, actually reduced the subject matter to practice at least 1 year before the effective filing date of such patent, and commercially used the subject matter before the effective filing date of such patent.

For the purpose of the act, the term “method” is defined as “a method of doing or conducting business.” The First Inventor Defense Act, which was later codified as amended at 35 U.S.C. § 273(b), thereby provides an infringement defense to companies or individuals who invented, but did not patent or disclose, a business method which subsequently was patented by someone else. In passing this act, Congress expressly recognized and concurred that business methods should be patentable, and did not act to modify in any way the standard for patentability set forth in State Street. Moreover, Congress has repeatedly rejected attempts to deny patentability to business method patents.

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266. Id. at 419.
268. Id.
269. Shortly after the First Inventor Defense Act of 1999, Representatives Howard Berman
boundaries set in *State Street* and not to limit the patentability of business method patents, the courts should also refrain from excluding the entire field from the patent system.270

VII. CONCLUSION

The Federal Circuit majority opinion in *In re Bilski* represents a dramatic departure from well settled principles at the core of the U.S. Patent system. Long-standing Supreme Court authority and the statutes governing patentability require a more flexible approach to patentability than is afforded under the "machine-or-transformation" test. The Supreme Court set forth the appropriate analysis of patentability in its seminal cases *Gottshalk v. Benson*, *Diamond v. Chakrabarty*, and *Diamond v. Diehr*, and the Federal Circuit faithfully interpreted that standard in *State Street* and its subsequent decisions following that case. The Supreme Court has the opportunity to overrule *In re Bilski* and return to a flexible standard as has served the Constitutional purposes of the patent laws for more than 200 years.

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270. See *In re Bilski*, 545 F.3d 943, 993 (Fed. Cir. 2008) (en banc) (Newman, J. (dissenting)) ("Where, as here, Congress has not acted to modify the statute in the many years since Diehr, and the decision of this court, the force of stare decisis is even stronger." (citations omitted)). See also *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (quoting United States v. Dubilier Condenser Corp., 289 U.S. 178, 199 (1933) (cautioning court not to "read into the patent laws limitations and conditions which the legislature has not expressed").