Analysis of the Five Issues Raised for Review in *In re Bilski*

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On February 5, 2008, the Court of Appeals for the Federal Circuit issued an Order for an *en banc* hearing in the case *In re Bernard L. Bilski and Rand A. Warsaw.*[1] The Order requested supplemental briefs to address the following five questions:

1. Whether claim 1 of the 08/833,892 patent application claims patent-eligible subject matter under 35 U.S.C. § 101?

2. What standard should govern in determining whether a process is patent-eligible subject matter under section 101?

3. Whether the claimed subject matter is not patent-eligible because it constitutes an abstract idea or mental process; when does a claim that contains both mental and physical steps create patent-eligible subject matter?

4. Whether a method or process must result in a physical transformation of an article or be tied to a machine to be patent-eligible subject matter under section 101?

5. Whether it is appropriate to reconsider *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*,[2] and *AT&T Corp. v. Excel Communications, Inc.*,[3] in this case and if so, whether those cases should be overruled in any respect?

The *Bilski* court's opinion was handed down on October 30, 2008. This paper addresses how the *Bilski* court answered each of the five questions posed in the Order.

The '892 Application was directed to a method of hedging risk in the field of commodities trading. The application had eleven pending claims, all of which were argued together on appeal. Claim 1 reads:

> 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 at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;
> (b) identifying market participants for said commodity having a counter-risk position to said consumers; and
> (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.

In its Opinion, the *Bilski* court provided an example of the type of commodities trading risk that could be hedged under the claimed method. In the example provided, coal power plants (the consumers), who purchase coal to produce electricity, are averse to the risk of a spike in demand for coal since a spike would increase the price for coal and their operating costs. Coal mining companies (the market participants), who sell coal to the consumers, are averse to the risk of a sudden drop in demand for coal since the drop would reduce their sales of coal and depress the price of coal. The commodity provider of the claimed invention sells coal to the power plants at a fixed price thus isolating the power plants from the possibility that a spike in demand will increase the price of coal above the fixed price. The same commodity provider buys coal from mining companies at a second fixed price, thereby isolating the mining companies from the possibility that a drop in demand will lower the price for coal below the fixed price.

Through this process, the commodity provider has hedged its risk. For example, if demand and prices skyrocket, the commodity provider has sold coal at a disadvantageous price, but it has purchased coal at an advantageous price. Conversely, if demand and prices plummet, the commodity provider has purchased coal at an disadvantageous

price, but it has sold coal at an advantageous price.[4]

During prosecution of the '892 Application, the Examiner rejected the eleven claims pending in the application as drawn to patent-ineligible subject matter under 35 U.S.C. § 101. Section 101, entitled "Inventions Patentable" reads:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title.

As the claims of the Bilski patent were clearly directed to a process, the patent eligibility of the subject matter was analyzed at the examination stage and beyond based upon whether or not the claims recite a patent-eligible process.

Bilski appealed the Examiner's rejection to the USPTO's Board of Patent Appeals and Interferences, who affirmed the Examiner's rejection. In its analysis, the Board provided three reasons for their position that the claims did not recite a patent-eligible process: (i) the claims do not involve a patent-eligible transformation; (ii) the application only claims an abstract idea; and (iii) further to *State Street Bank*, the process does not produce a "useful, concrete, and tangible result." Bilski appealed the Board's decision to the Federal Circuit.[5]

ISSUE 1: DOES CLAIM 1 OF THE '892 APPLICATION CLAIM A PATENT-ELIGIBLE PROCESS?

For the first issue, the *Bilski* court started its analysis by reviewing Supreme Court cases that addressed patent-eligible subject matter under Section 101. Citing *Funk Bros. Seed Co. v. Kalo Inoculant Co.*,[6] the *Bilski* court repeated the long-held principle that laws of nature, natural phenomenon, and abstract ideas are fundamental principles that are "part of the storehouse of knowledge of all men…free to all men and reserved exclusively to none."[7]

Against this backdrop, the *Bilski* court reviewed Supreme Court precedent to find guidance on how to determine if an applicant is seeking to claim a fundamental principle.[8] Referring to *Diamond v. Diehr*, the *Bilski* court explained that while a claim drawn to a fundamental principle is unpatentable, "an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection."[9] Based upon the principles set forth in *Diehr*, the *Bilski* court rephrased the question before them as follows: "Whether Applicants' claim recites a fundamental principle and, if so, whether it would pre-empt substantially all uses of that fundamental principle if allowed."[10] To answer the question, the *Bilski* court turned to *Gottschalk v. Benson*, which the *Bilski* court explained "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."[11] The test cited in *Benson* is the machine-or-transformation test, which provides that a claimed process is patent-eligible under Section 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.[12]

In setting forth the machine-or-transformation test as the operative test to determine patent eligibility of a process claim, the *Bilski* court enumerated the following two limitations, which apply to both prongs of the test: (a) the use of a specific machine or transformation of an article must impose meaningful limits to the claim's scope to impart patent-eligibility;[13] and (b) the involvement of the machine or transformation in the claimed process must not be insignificant extra-solution activity.[14]

In its discussion of the limitations, the *Bilski* court refused to comment further on the machine prong of the machine-or-transformation test since the Bilski claims were not directed to a process that required a specific machine or apparatus.[15]

With respect to the limitations as they apply to the transformation prong of the machine-or-transformation test, the *Bilski* court clarified the scope of the first limitation by emphasizing that for patent-eligibility, the transformation of the particular article to a different state or thing must be central to the purpose of the claimed process. In making this statement, the *Bilski* court acknowledged that to properly apply the test, clarification as to what type of things constitute "articles" is necessary. Dismissing the transformation of physical articles, such as chemicals or industrial raw materials, as posing no obstacles to the application of the test, the *Bilski* court turned to the more difficult task of determining transformation of non-physical articles, such as electronic signals, electronically manipulated data, and business method articles, such as legal obligations, organizational relationships, and business risks.[16]

To illustrate how a non-physical article, such as an electronic signal, can undergo a patent-eligible transformation, the *Bilski* court referred to the facts and holding in *In re Abele*.[17] In *Abele*, two claims were at issue: (1) a broad claim directed to a process of graphically displaying variances of data from average results; and (2) a dependent claim drawn to x-ray attenuation data produced in a two dimensional

field by a computed tomography scanner.[18] The Court of Customs and Patent Appeals, who decided the case, held that the broad claim was not directed to patent-eligible subject matter because it did not specify any of the following: the type or nature of the data; from where the data was obtained; or what the data represented.[19] By contrast, the dependent claim was held to represent patent-eligible subject matter because the electronic data was clearly transformed into the visual depiction of physical objects, namely, bones, organs, and other body tissues.[20] In analyzing *Abele*, the current court emphasized that the transformation of the electronic data to a visual depiction of a physical object on a display was sufficient for patent-eligibility and that the claim did not require a transformation of the underlying physical object that the data represented.[21]

With respect to the second limitation as it applies to the transformation prong of the machine-or-transformation test, the *Bilski* court cautioned that adding a data-gathering step to an algorithm will not serve to convert the algorithm into a patent-eligible process.[22] To illustrate such a patent-ineligible process, the *Bilski* court referenced *In re Grams*,[23] and *In re Schrader*,[24] both of which recited process/method claims not attached to any machine or apparatus.

In *Grams,* the claims at issue were directed to a process of performing a clinical test and based on the data from the test, determining if an abnormality exists and possible causes of the abnormality. The claims were held to be patent-ineligible because their scope was limited to that of an algorithm with a data-gathering step.[25] In coming to its conclusion, the *Grams* court explained that a data-gathering requirement without specifying how the data is gathered is a meaningless limit on a claim to an algorithm because every algorithm inherently requires the gathering of data inputs.[26] In addition to the holding of the *Grams* court, the *Bilski* court added that the gathering data step of *Grams* could also be characterized as the type of insignificant extra-solution activity prohibited by *Flook*.[27]

In *Schrader*, the claims at issue were directed to a method of conducting an auction of multiple items in which the winning bids were selected in a manner that maximized the total price of all the items. The claims were held patent-ineligible because their scope was limited to a mathematical optimization algorithm.[28] In coming to its conclusion, the *Schrader* court explained that although the claimed method required a step of recording the bids on each item, the recording step was representative of insignificant extra-solution activity.[29]

Turning to *Bilski*, the *Bilski* court proceeded to apply the machine-or-transformation test to claim 1 of the '892 Application. Noting first that only the transformation prong is at issue,[30] the *Bilski* court went on to hold that the Bilski process is not drawn to patent-eligible subject matter because it does not transform any article to a different state or thing.[31] The *Bilski* court rationalized its holding by explaining that the process of claim 1 of the '892 Application "encompasses only the exchange of options, which are simple legal rights to purchase some commodity at a given price in a given time period."[32] Along this line of reasoning, the *Bilski* court added that "claim 1 would effectively pre-empt any application of the fundamental concept of hedging and mathematical calculations inherent in hedging (not even limited to any particular mathematical formula)."[33]

ISSUE 2: WHAT STANDARD SHOULD GOVERN IN DETERMINING WHETHER A PROCESS IS PATENT-ELIGIBLE SUBJECT MATTER UNDER SECTION 101?

The discussion of Issue 1 clearly establishes that the machine-or-transformation test is the standard that should govern whether a process is patent-eligible subject matter under Section 101; however, because prior Federal Circuit precedent had established at least two other tests for determining the eligibility of process claims, the *Bilski* court reviewed prior precedent to determine if the tests enumerated therein remain good law.

The first test reviewed was the *Freeman-Walter-Abele* test, which has two steps: first, determining whether the claim recites an "algorithm" within the meaning of *Benson*; then second, determining whether the algorithm is applied in any manner to physical elements or process steps.[34] Noting limitations with the test, namely, that claims that failed the test were previously found to be patent-eligible,[35] the *Bilski* court held that the *Freeman-Walter-Abele* test is inadequate.[36]

The second test reviewed was the "useful, concrete, and tangible result" inquiry first articulated in *In re Allapat*,[37] and affirmed in *State Street Bank*. Under this inquiry, if a process is tied to a particular machine, or transforms or reduces a particular article into a different state or thing, then it will generally produce a concrete and tangible result.[38] Finding the inquiry to be inadequate, the *Bilski* court explained that "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 principle, that inquiry is insufficient to determine whether a claim is patent-eligible under § 101."[39]

ISSUE 3: WHETHER THE CLAIMED SUBJECT MATTER IS NOT PATENT-ELIGIBLE BECAUSE IT CONSTITUTES AN ABSTRACT IDEA OR MENTAL PROCESS; WHEN DOES A CLAIM THAT CONTAINS BOTH MENTAL AND PHYSICAL STEPS CREATE PATENT-ELIGIBLE SUBJECT MATTER?

As noted above under the discussion of Issue 1, the *Bilski* court found that claim 1 of the '892 Application was not directed to a patent-eligible process because it failed the machine-or-transformation test. In elaborating on the ineligibility of the claim, the *Bilski* court identified the mental process that Bilski attempted to claim with the following language:

> Applicants here seek to claim a non-transformative process that encompasses a purely mental process of performing requisite mathematical calculations without the aid of a computer or any other device, mentally identifying those transactions that the calculations have revealed would hedge each other's risks, and performing the post-solution step of consummating those transactions.[40]

In response to Bilski's arguments that the claimed process included physical steps, the *Bilski* court explained that the physical steps of "initiating" and "identifying" recited in the claim failed to transform any article into a different state or thing.[41]

With respect to the question posed in Issue 3, the *Bilski* court was clear that the machine-or-transformation test allows for claims that contain both mental and physical steps where the claimed process requires a machine to carry out the process or when the process transforms an abstract idea or a mental process into different state or thing. With respect to the physical steps, the *Bilski* court was clear that the physical steps cannot be directed to data gathering, which is nothing more than insignificant extra-solution activity.[42] On this matter, the *Bilski* court explained that in most cases, gathering data does not constitute a transformation of any article; however, the *Bilski* court did suggest in *dicta* that recitations specifying how data gathering is carried out may be directed to patent-eligible subject matter.[43]

ISSUE 4: WHETHER A METHOD OR PROCESS MUST RESULT IN A PHYSICAL TRANSFORMATION OF AN ARTICLE OR BE TIED TO A MACHINE TO BE PATENT-ELIGIBLE SUBJECT MATTER UNDER SECTION 101?

The *Bilski* court's adoption of the machine-or-transformation test as the test to determine patent eligibility under Section 101 answers this question in the affirmative.

ISSUE 5: WHETHER IT IS APPROPRIATE TO RECONSIDER *STATE STREET BANK* AND *AT&T V. EXCEL* IN THIS CASE AND, IF SO, WHETHER THOSE CASES SHOULD BE OVERRULED IN ANY RESPECT?

The *Bilski* court answered the question posed in Issue 5 in two footnotes. In footnote 18, as part of the discussion of the merits of the "useful, concrete, and tangible result" inquiry, the *Bilski* court reminded its readers that "[i]n *State Street*, as is often forgotten, we addressed a claim drawn not to a process, but to a machine." [44] With this statement, the *Bilski* court made it clear that it was not reconsidering the merits of *State Street Bank* in the current opinion.

In setting forth its holding overruling the "useful, concrete, and tangible result" inquiry, the *Bilski* court added in footnote 19 that the portions of *State Street* and *AT&T* that relied on the inquiry should no longer be relied upon. The *Bilski* court did not proffer any additional insight on the remaining merits of those cases.

CONCLUSION

While *Bilski* was directed to a business method patent application, it is important to understand that the *Bilski* holding is directed to the patent-eligibility of all process claims under Section 101; thus, the principles set forth in *Bilski* apply with equal strength to any technological area. In this respect, all patent practitioners, regardless of the art in which they practice, must consider the machine-or-transformation test when preparing and/or analyzing process and/or method claims in order to ensure that the process/method claims recite patent-eligible subject matter under Section 101.

When applying the machine-or-transformation test, practitioners must not forget the limitations of the two prongs of the test. As originally articulated by the *Benson* court, the machine or transformation test provides that a claimed process is patent-eligible under Section 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. With respect to the limitations, the *Bilski* court explains that the machine or transformation recited in the process claim must impose meaningful limits to the claim's scope to impart patent-eligibility and that the involvement of the machine or transformation in the claimed process must be more than insignificant extra-solution activity. While clarification of the limitations as they apply to the machine prong must wait for future cases, *Bilski* provides some clarification of the limitations as they apply to the transfor-

mation prong. Specifically, for claims reciting non-physical articles, transformation of a non-physical article into a visual depiction of a physical object is sufficient to impart patent eligibility and for claims reciting algorithms, the recitation of a data-gathering step does not impart patent eligibility, because the data gathering step is tantamount to insignificant extra-solution activity.

Lastly, with respect to the machine-or-transformation test itself, it should be kept in mind that the test is not designed to prohibit process claims directed to fundamental principles; rather, the test is designed to prevent process claims from pre-empting all applications of a fundamental principle. As explained in *Benson*, the machine-or-transformation test provides a way to determine if a claim is tailored narrowly enough to encompass only a particular application of a fundamental principle, rather than the principle itself. In view of the foregoing, proper application of the machine-or-transformation test should reveal whether a particular process claim is directed to a patent-ineligible or a patent-eligible fundamental principle. ▪

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Endnotes

1. *In re Bernard L. Bilski and Rand A. Warsaw*, No. 2007-1120 (Serial No. 08/833,892).
2. *State Street Bank & Trust Co. v. Signature Financial Group, Inc.,* 149 F.3d 1368 (Fed. Cir. 1998).
3. *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999).
4. *Id.* at pp. 2–3.
5. *Id.* at pp. 3–4.
6. *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948).
7. *Bilski* at pp. 6–7.
8. *Id.* at p. 7.
9. *Id.* at p. 10 citing *Diamond v. Diehr*, 450 U.S. 175, 187 (1981) (emphasis added by the *Diehr* court).
10. *Id.* at p. 10.
11. *Id.* at 10 citing *Gottschalk v. Benson*, 209 U.S. 63, 70 (1972).
12. *Id.*
13. *Id.* at p. 24 citing *Benson*, 409 U.S. at 71–72.
14. *Id.* at p. 24 citing *Parker v. Flook*, 427 U.S. 584, 590 (1978).
15. *Id.* at p. 24.
16. *Id.* at p. 25.
17. *In re Abele*, 684 F.2d 902 (CCPA 1982).
18. *Bilski* at pp. 25–26 citing *Abele*, 684 F.2d at 908–909.
19. *Id.* at p. 25 citing *Abele*, 684 F.2d at 909.
20. *Id.* at p. 26 citing *Abele*, 684 F.2d at 908–909.
21. *Id.* at p. 26.
22. *Id.* at p. 26.
23. *In re Grams,* 888 F.2d 835 (Fed. Cir. 1989).
24. *In re Schrader,* 22 F.3d 290 (Fed. Cir. 1994).
25. *Bilski* at p. 27, citing *Grams*, 888 F.2d at 840.
26. *Id.* at p. 27 citing *Grams*, 888 F.2d at 839–840.
27. *Id.* at p. 27 citing *Flook*, 437 U.S. at 590.
28. *Id.* at p. 27 citing *Schrader*, 22 F.3d at 293–294.
29. *Id.* at p. 27 citing *Shrader*, 22 F.3d at 294.
30. *Id.* at pp. 24 and 27.
31. *Id.* at pp. 27–28.
32. *Id.* at p. 28.
33. *Id.* at 32.
34. *Id.* at 19 citing *Abele*, 684 F.2d at 905–907 (CCPA 1982).
35. *See, e.g., Grams*, 888 F.2d at 838–829.
36. *Bilski* at p. 19.
37. *In re Allapat,* 33 F.3d 1526 (Fed. Cir. 1994).
38. *Bilski* at p. 20.
39. *Id.*
40. *Id.* at p. 31.
41. *Id.* at p. 32.
42. *Id.* at p. 27, citing *Flook*.
43. *Id.* at p. 27.
44. *Id.* at p. pp. 19–20.