

# The COMPUTER & INTERNET *Lawyer*

Volume 26 ▲ Number 2 ▲ FEBRUARY 2009

Ronald L. Johnston, Arnold & Porter, LLP Editor-in-Chief\*

## *In re Bilski*: The Case of a Strange Statute or How the Federal Circuit Learned to Stop Worrying and Love the Supreme Court

By **Scott M. Alter**

In an apparent effort to head off another potential reversal by the US Supreme Court, the US Court of Appeals for the Federal Circuit in its October 30, 2008, *en banc* decision in *In re Bilski* sought to limit the patent eligibility of certain types of processes, especially those relating to certain types of software and so-called business methods.<sup>1</sup> The court accomplished this by asserting that the sole test for determining whether a process claim is directed to patent-eligible subject matter was whether the process (1) is tied to a

particular machine or apparatus or (2) transforms a particular article into a different state or thing. In making this the sole test, the court stated that its useful-concrete-and-tangible results test made famous by *State Street Bank v. Signature Financial Group*<sup>2</sup> is “insufficient” for determining patent-eligible subject matter and should no longer be solely relied upon. The court also explicitly reaffirmed, however, that there is no categorical exclusion for the patentability of “business methods.” While this decision may well affect certain existing patents and require the rethinking of claim strategies for many inventions, *Bilski* by no means marks the end of software or even business method patents, generally. What also seems apparent is that the Federal Circuit sought to ensure that it put forth a single, unifying test for establishing patent-eligible subject matter, though it is questionable whether precedent truly dictated that such a test was mandated or even warranted.

---

**Scott M. Alter** is a partner in Faegre & Benson’s Denver and Boulder offices. He focuses on intellectual property matters concerning software, electronics, telecommunications, electronic commerce, and semiconductor technologies. He is a frequent speaker and author on subjects including rendering opinions of counsel and the patentability and strategic use of software and business method patents. The opinions expressed herein are those of the author and are not necessarily those of Faegre & Benson. The author would like to express his appreciation to Soum Panda and Robert Bailey for their invaluable assistance.

### Current Perspective

The three most recent Supreme Court decisions to squarely address statutory subject matter relating



to mathematical algorithms are, from earliest to most recent, *Gottschalk v. Benson*,<sup>3</sup> *Parker v. Flook*,<sup>4</sup> and *Diamond v. Diehr*.<sup>5</sup> It had become trite, and perhaps an understatement, to say that the post-*Benson* case law in this area is difficult to reconcile.<sup>6</sup> The origin of this tangled web of decisions is often attributed to statements made in *Benson*, though aspects of those statements predate *Benson* by a considerable period.<sup>7</sup>

In particular, two related statements in *Benson* can be credited with causing much of the confusion, in view of their interpretation in subsequent Supreme Court decisions and by lower courts. The first of these stated that since “[t]he mathematical formula involved [had] no substantial practical application except in connection with a digital computer, . . . the patent would *wholly preempt* the mathematical formula and in practical effect would be a patent on the algorithm itself.”<sup>8</sup> The second stated 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.”<sup>9</sup>

Until relatively recently, the Federal Circuit had moved toward an interpretation of the two aforementioned statements that more freely permitted algorithm-related subject matter to be considered patent eligible. What the Federal Circuit has now done in *Bilski* is, to a significant degree, brought us full circle in an attempt to more “strictly” adhere to the language of the Supreme Court decisions, or at least to end up where the Federal Circuit believes the current Supreme Court wants it to be. The Federal Circuit in *Bilski* also appeared to be seeking the clarity of utilizing a *single* test for patent-eligible subject matter. It is not at all clear, however, that we have ended up where precedent truly dictates we should be or, for that matter, where the current Supreme Court would put us were it to opine on a case relating to patent-eligible subject matter. In addition, many questions have been left unanswered by *Bilski*, and some of the precepts that led to the decades-old confusion may well return. Also, it should be noted that *Bilski*, as well as many prior decisions discussed herein, focused on the definition of “process” under the patent statute,<sup>10</sup> since the patent statute indicates that “processes” are patent-eligible subject matter (and thus, that which is a “process” is patent eligible).

## Background of Pertinent US Supreme Court Decisions

For our purposes, discussion of the recent Supreme Court decisions is best served by considering them from the perspective of *Diehr*,<sup>11</sup> and then proceeding somewhat recursively.

In *Diehr*, the applicants (respondents) characterized their “contribution to the art”<sup>12</sup> as a process for constantly measuring the temperature inside a rubber mold, where the temperature reading is fed into a computer that repeatedly recalculates the cure time for the rubber using the Arrhenius equation and opens the mold when the recalculated cure time has elapsed.<sup>13</sup> The patent application had started its journey to the Supreme Court from the US Patent and Trademark Office (PTO),<sup>14</sup> where the patent examiner rejected the claims at issue under 35 U.S.C. § 101 (the section of the patent statute that sets forth the bounds of patent-eligible subject matter, and generally indicates that processes, machines, manufactures, and compositions of matter are patent-eligible categories of subject matter).<sup>15</sup> Specifically, the examiner asserted that the steps carried out by the computer constituted unpatentable subject matter and that the remaining steps were “conventional and necessary to the process and cannot be the basis for patentability.”<sup>16</sup> Consequently, the examiner did not consider those portions of the claim that were deemed old or non-novel in determining the patent-eligibility of the claim and thus did not consider the claim as a whole in making the analysis under § 101. Perhaps not surprisingly, this type of analysis was what the Supreme Court set forth in its prior *Flook* decision.

---

**Many questions have been left unanswered by *Bilski*, and some of the precepts that led to the decades-old confusion may well return.**

---

Taking a step back to *Flook*, which was written by Justice Stevens, that Court discussed how it believed the term “process” should be interpreted in view of § 101. Specifically, the Court noted that in its prior *Benson* decision “an algorithm, or mathematical formula, is like a law of nature” and is not patentable subject matter, and therefore the holding that the algorithm-related “method [in *Benson*] could not be patented as a ‘process’ forecloses a purely literal reading of § 101.”<sup>17</sup> In other words, “process,” for purposes of § 101, means something narrower than as defined in conventional dictionaries, and would not, *e.g.*, encompass pure mathematical formulas.

In addition to establishing that “process” in a patent-eligibility context means something narrower than the typical dictionary definition, *Benson* also had indicated that when a claim, as a practical matter, “preempts” algorithm-related subject matter,<sup>18</sup> the claim will be considered as directed to patent-ineligible subject matter.<sup>19</sup> In considering this, the respondent/applicant

in *Flook* asserted that, unlike *Benson*, respondent's claim language would not wholly preempt the algorithm/formula being used, since the claim was directed to use in the petrochemical industry, and "there are uses of his formula outside the petrochemical and oil refining industries . . ." <sup>20</sup> The *Flook* Court agreed with respondent's statement, but as discussed further below, "preemption" was not to be the entirety of the *Flook* Court's test for determining patent-eligible subject matter.

In continuing its analysis of the claims, the *Flook* Court commented that the specific activity of "adjusting an alarm limit," as recited in the claims, was insufficient to make the process patentable, since this activity was deemed "insignificant."<sup>21</sup> In general, the Court pointed out that such insignificant post-solution activity associated with a claim would not render patentable an otherwise patent-ineligible claim.<sup>22</sup> The desirability to readily recognize (and discount) such insignificant post-solution activity, as well as the Court's general dissatisfaction with considering *only* preemption in evaluating whether subject matter is patent-eligible, appeared to prompt the *Flook* Court to then assert a new test favoring a patent-eligible "inventive concept" in the claim.

Regarding this new test, the *Flook* Court asserted that a phenomenon such as a mathematical algorithm "cannot support a patent unless there is some *other inventive concept* in its application,"<sup>23</sup> the implication being that, minus the algorithm, the rest of the claim must itself be directed to novel and non-obvious subject matter for it to pass muster under § 101.<sup>24</sup> Unlike *Benson*, no focus or discussion was given in *Flook* to transformation of an article to a different state or thing as an affirmative reason for finding the existence of patent-eligible-subject matter in the claims at issue. Like *Benson*, however, the *Flook* Court did clearly assert that the existence of such transformation is not the sole test for determining statutory subject matter. Specifically, in the context of discussing the definition of "process" under § 101, the Court stated that:

[a]n argument can be made that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a "different state or thing." *As in Benson*, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents.<sup>25</sup>

In the end, the *Flook* Court found that the claims at issue were not directed to patent-eligible subject matter, since the non-formula aspects of the claims were deemed well known and since the Court automatically

treated the formula itself as well known for purposes of the § 101 analysis,<sup>26</sup> per its interpretation of precedent.

The dissenting opinion by Justices Stewart, Rehnquist, and Burger asserted that the claims at issue should be directed to patent-eligible subject matter, since "[t]he present claims do not preempt the formula or algorithm contained therein, because solution of the algorithm, per se, would not infringe the claims."<sup>27</sup> Thus, it appeared that the dissent advocated more of a focus on the *Benson* preemption model. Notably, the dissent did not advocate the use of a transformation test as *the* only way to determine whether a claim preempts a formula or an algorithm. The *Flook* dissent did, however, strongly disagree with the majority's "some other inventive concept" edict, stating that "it strikes what seems to me [a] damaging blow at basic principles of patent law by importing into its inquiry under 35 U.S.C. 101 the criteria of novelty and inventiveness."<sup>28</sup> The reason the dissent's views may be pertinent in that Justice Rehnquist wrote the subsequent *Diehr* decision, and thus the *Flook* dissent arguably gives insight into what the majority was thinking in *Diehr*, especially for those aspects that might not have been set forth explicitly in that later decision.

---

**The dissent's views may be pertinent in that Justice Rehnquist wrote the subsequent *Diehr* decision, and thus the *Flook* dissent arguably gives insight into what the majority was thinking in *Diehr*.**

---

Returning now to *Diehr*, the majority in that decision began its analysis by considering the meaning of "process," stating that, "[u]nless otherwise defined, 'words will be interpreted as taking their ordinary, contemporary, common meaning,' and, in dealing with the patent laws, we have more than once cautioned that 'courts should not read into the patent laws limitations and conditions which the legislature has not expressed.'"<sup>29</sup> Then, the Court emphasized that "it is [the word 'process'] that we confront today, and in order to determine its meaning we may not be unmindful of the Committee Reports accompanying the 1952 Act which inform us that Congress intended statutory subject matter to 'include anything under the sun that is made by man.'"<sup>30</sup> At least in tone, this part of the opinion does not sound like a court wishing to impose significant restrictions (or at least additional restrictions) on the scope of the term "process" for purposes of determining patent-eligible subject matter.

The majority in *Diehr* then looked to previous Supreme Court decisions purportedly “defining the nature of a patentable process.”<sup>31</sup> In particular, the 1877 decision *Cochrane v. Deener*<sup>32</sup> stated:

[t]hat a process may be patentable, irrespective of the particular form of the instrumentalities used, cannot be disputed. . . . A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be *transformed and reduced to a different state or thing*. The machinery pointed out as suitable to perform the process *may or may not be new or patentable*.[.] The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence.<sup>33</sup>

The *Diehr* Court also noted that *Benson* had repeated this definition of process, adding 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.”<sup>34</sup> Extrapolating from these passages (hereafter “machine-or-transformation test”), the *Diehr* Court asserted that, by “[a]nalyzing respondents’ claims according to the above statements from our cases, we think [the claimed invention] falls within the 101 categories of possibly patentable subject matter,”<sup>35</sup> thus finding the claimed subject matter is patent-eligible.

Arguably, one interpretation of the aforementioned passages is that this machine-or-transformation test is the *sole* test for determining whether subject matter is patent-eligible and thus is the definition of “process” under § 101. This would, however, require interpreting the phrase “the clue” to mean “the sole test,” notwithstanding the aforementioned equivocal language in *Benson* and *Flook*. It would also mean discounting the language in *Diehr* that proscribed reading limitations into the statute. Moreover, if the Supreme Court in *Diehr* truly had wished this machine-or-transformation test to be the sole test, it certainly would have been easy enough for the court to explicitly state that.

Another possible interpretation of the *Diehr* Court’s use of the *Deener/Benson*-based passages is that the subject matter in the claims in *Diehr* “happens” to be patent-eligible in view of the “test,” but that the Court was not attempting to establish a *sole* test for determining patent-eligible subject matter. This latter interpretation would seem consistent with language in *Benson* and *Flook*, indicating that a claim may be statutory even if it does not comport with the machine-or-transformation test set forth in *Benson*.<sup>36</sup> In any event, nowhere did

*Diehr* explicitly say (or arguably even imply) that this machine-or-transformation test should be the *sole* test.<sup>37</sup> *Diehr* also did not at all elaborate on the type of subject matter permitted whose “transformation” would evidence the existence of “patent eligible” subject matter under § 101.<sup>38</sup>

---

**If the Supreme Court in *Diehr* truly had wished this machine-or-transformation test to be the sole test, it certainly would have been easy enough for the court to explicitly state that.**

---

Having asserted that the claims at issue were patent-eligible subject matter under § 101 and did not preempt an algorithm,<sup>39</sup> the *Diehr* Court went on to point out that its conclusion was not affected by the fact that “in several steps of the [claimed] process a mathematical equation and a programmed digital computer are used.”<sup>40</sup> At the same time, the Court also pointed out that its precedent nonetheless did place some limits on the scope of § 101, notwithstanding the breadth of the statute’s language. Specifically, the Court stated that “[e]xcluded from patent protection are laws of nature, natural phenomena, and abstract ideas”<sup>41</sup> and that its “recent holdings in *Gottschalk v. Benson*, *supra*, and *Parker v. Flook*, *supra*, both of which are computer-related, stand for *no more* than these long-established principles.”<sup>42</sup> It then discussed those two decisions in greater detail.

First, regarding *Benson*, the *Diehr* Court noted that the claims were directed to “an algorithm used to convert binary code decimal numbers to equivalent pure binary numbers”<sup>43</sup> and that an algorithm<sup>44</sup> or mathematical formula of the type in the claims “is *like a law of nature*, which cannot be the subject of a patent.”<sup>45</sup> The Court further pointed out that reciting computer hardware to execute the algorithm did not make the claim statutory in this case, since “[t]he *sole practical application* of the algorithm was in connection with the programming of a general purpose digital computer,”<sup>46</sup> that is, despite the recited hardware, the claim preempted the algorithm.<sup>47</sup>

With regard to the invention in *Flook*, the *Diehr* Court asserted that “[t]he claims were drawn to a method for computing an ‘alarm limit.’ An ‘alarm limit’ is simply a number and the Court concluded that the application sought to *protect a formula* for computing this number.”<sup>48</sup> The Court also pointed out that the patent application in *Flook* did not explain how to determine the

variables that were needed for the formula or provide any disclosure regarding the chemical processes at work, for example.<sup>49</sup> Arguably, this indicates that, as far as the *Diehr* majority was concerned, an application like *Flook's* that otherwise provided such explanation and disclosure regarding variables and processes might be found not to preempt an algorithm and instead might be directed to patent-eligible subject matter.

The *Diehr* Court then repudiated *Flook's* "some other inventive concept" requirement for subject matter eligibility under § 101 by asserting that the claims must be considered "as a whole,"<sup>50</sup> stating that "we did not hold in *Flook* that the mathematical algorithm could not be considered at all when making the § 101 determination."<sup>51</sup> The Court also mentioned that the older decision *Mackay Radio & Telegraph Co. v. Radio Corp. of America*<sup>52</sup> "takes us a long way toward the correct answer in this case."<sup>53</sup> Citing this decision may well have been a slap at Justice Stevens' majority opinion in *Flook*, since Stevens had also favorably cited *Mackay* in his *Flook* opinion.<sup>54</sup>

The *Diehr* Court further pointed out that what it referred to as "insignificant post-solution activity" would not, if part of a claim limitation, "transform an unpatentable principle into a patentable process."<sup>55</sup> More broadly, the Court indicated that, for example, limiting the patent to a particular technological use, adding token post-solution activity of the type in *Flook* (such as adjusting an alarm limit), or explaining how variables used in a formula are selected would not make statutory that which is otherwise patent-ineligible subject matter.<sup>56</sup> The Court did not elaborate on the extent that a variable selection or other process would need to be explained to raise a claim to the level of patent-eligible subject matter. Regarding insignificant post-solution activity and the invention in *Diehr*, the Court simply asserted that, "when a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (*e.g.*, transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of 101."<sup>57</sup> That is, when such transformation is found to exist, there must also be sufficient substance in the claim to render it patent-eligible, despite the additional existence of what might be deemed "insignificant post-solution activity." In addition, by "*e.g.*," it at least appears that the *Diehr* Court asserted that such transformation is but an example indicative of patent-eligible subject matter.

Justice Stevens, the author of *Flook*, wrote a lengthy dissent in *Diehr* stating, among other things, that the correct procedure "for analyzing a patent claim employing a

mathematical algorithm [is that] the algorithm is treated for 101 purposes as though it were a familiar part of the prior art; the claim is then examined to determine whether it discloses 'some other inventive concept.'"<sup>58</sup> The *Diehr* majority clearly rebuffed this aspect of *Flook*. In general, the dissent would have followed that direction of analysis and believed that *Diehr's* "method of updating the curing time calculation is strikingly reminiscent of the method of updating alarm limits that [*Flook*] sought to patent."<sup>59</sup> Thus, the dissent would have found *Diehr's* claims unpatentable for lack of statutory subject matter under § 101.

### The Road to State Street

In attempting to follow the guidance of the Supreme Court to determine patent-eligible subject matter under 35 U.S.C. § 101, the Court of Customs and Patent Appeals (a predecessor court of the Federal Circuit) formulated a test from a progression of cases that came to be known as the *Freeman-Walter-Abele* (F-W-A) test.<sup>60</sup> According to the test, if a mathematical algorithm is recited in a claim and the algorithm is not applied to physical elements or process steps, the claim is not statutory.<sup>61</sup>

For many years, the Federal Circuit and predecessor courts applied this test and variants of it to algorithm-related inventions. As the years went on, the test was questioned and, even when cited, was applied increasingly loosely. In a concurring opinion in the 1992 decision *Arrhythmia Research Technology, Inc. v. Corazonix Corp.*,<sup>62</sup> Judge Rader commented on the F-W-A test by stating that "the two-part test was cast in the crucible of confusion created by *Benson*."<sup>63</sup> After expressing disapproval for what he referred to as the "*Benson* algorithm rule,"<sup>64</sup> Judge Rader concluded that, "as *Diehr* commands, this court should refrain from employing judicially-created tests to limit section 101"<sup>65</sup> and focused on the statement from *Diehr* that, "[I]n dealing with the patent laws, we have more than once cautioned that 'courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed.'"<sup>66</sup> He also asserted that, "after *Diehr*, only a mathematical procedure for solution of a *specified* mathematical problem is suspect subject matter."<sup>67</sup> He did, though, acknowledge that the Supreme Court had placed some limits on the scope of patent-eligible subject matter.<sup>68</sup>

Several years later in the *en banc* decision *In re Alappat*,<sup>69</sup> the Federal Circuit continued broadening its approach to patent-eligible subject matter by generally indicating, based upon Supreme Court precedent, that a "practical application" of mathematical subject matter would be entitled to patent protection.<sup>70</sup> In characterizing the invention at issue, the court subsequently stated

that “[t]his is not a disembodied mathematical concept which may be characterized as an [unpatentable] ‘abstract idea,’ but rather a specific machine to produce a *useful, concrete, and tangible result*.”<sup>71</sup> The emphasized language would become a cornerstone of the *State Street* decision, discussed below. While the *Alappat* court did mention the machine-or-transformation test,<sup>72</sup> it did not appear to be the focal point of its analysis.

## State Street and AT&T

The Federal Circuit’s decision in *State Street* related to Signature’s patent for a financial “hub and spoke” system.<sup>73</sup> In that decision, State Street brought a declaratory judgment action asserting, among other things, invalidity of Signature’s patent. State Street’s subsequent motion for partial summary judgment of patent invalidity for failure to claim statutory subject matter under § 101 was granted by the district court, and Signature appealed to the Federal Circuit.

In its analysis, the Federal Circuit first pointed out that the district court had erred in classifying claim 1 as a process rather than as a machine, stating that “‘machine’ claims having ‘means’ clauses may only be reasonably viewed as process claims if there is no supporting structure in the written description that corresponds to the claimed ‘means’ elements. This is not the case now before us.”<sup>74</sup> The Federal Circuit then asserted that “[a] ‘machine’ is proper statutory subject matter under § 101”<sup>75</sup> and that, “for the purposes of a § 101 analysis, it is of little relevance whether claim 1 is directed to a ‘machine’ or a ‘process,’ as long as it falls within at least one of the four enumerated categories of patentable subject matter, ‘machine’ and ‘process’ being such categories.”<sup>76</sup>

---

**While the *Alappat* court did mention the machine-or-transformation test, it did not appear to be the focal point of its analysis.**

---

After finding that the claim was directed to the statutory (that is, patent-eligible) category of “machine,” the Federal Circuit continued its discussion, believing it necessary to address the district court’s conclusion “that the claimed subject matter fell into one of two alternative judicially-created exceptions to statutory subject matter,”—the mathematical algorithm exception and the business method exception.<sup>77</sup> In general, the court believed that the primary Supreme Court “exceptions, *i.e.*, abstract ideas, laws of nature, etc., should be applicable to all categories of statutory subject matter,”<sup>78</sup>

rather than create *additional* exceptions, such as a mathematical algorithm exception or a business method exception.

With that backdrop and first discussing the so-called mathematical algorithm exception, the Federal Circuit indicated that the real focus should be on whether the claim was actually directed to an unpatentable “abstract idea.” Attributing certain concepts in *Alappat* directly to *Diehr*, the court stated, “[i]n *Diehr*, the [Supreme] Court explained 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.’”<sup>79</sup> The court then cited the *Alappat* and *Arrhythmia* decisions as examples in which data, mathematically transformed by a machine to produce something,<sup>80</sup> constituted a practical application *because* it produced or corresponded to a useful, concrete, and tangible result.<sup>81</sup> Thus, the court was asserting that the subject matter in those two prior decisions was statutory under § 101 not *because* some transformation to a different state or thing had occurred but *because* a useful, concrete, and tangible result had been produced. This appeared to remove the transformation aspect as the focal point for determining whether something should be patent-eligible subject matter for any of the four statutory categories of subject matter (since the court said that the specific category was not relevant for the analysis). At the very least, the equivocal language in the Supreme Court decisions regarding use of the machine-or-transformation test arguably permitted use of such an analysis.

Turning to the claims at issue in the Signature patent, the court then asserted its often-quoted statement:

[t]oday, we hold 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.<sup>82</sup>

In contrast to this holding, previous decisions of the Federal Circuit and the CCPA that gave some attention to transformation of data as a primary factor to show a claim was statutory<sup>83</sup> had emphasized that the data or signals tended to be representative of something physical, such as heart activity<sup>84</sup> or seismic activity.<sup>85</sup> In those decisions, however, it was not entirely clear

why the transformation of data representing something physical constituted “converting one physical thing into another physical thing,”<sup>86</sup> much less why the so-called physical aspect of the transformed data even needed to be a requirement for showing the existence of patent-eligible subject matter. In any event, *State Street* determined that the calculation of numbers representing dollar amounts (that is, converting one set of specified data into another set of data) was transformation enough and that the claim was directed to patent-eligible subject matter. Moreover, as mentioned above, the Federal Circuit’s focus had really turned to whether a “useful, concrete and tangible result” was produced.

---

**The contrast between the district court’s analysis and that of the Federal Circuit serves as an excellent example of the change in direction that the Federal Circuit had taken in this area of the law over the prior decade.**

---

In the context of its mathematical-algorithm-exception discussion, the *State Street* court also indicated that the district court had erred by applying the *Freeman-Walter-Abele* test, asserting that this test had “been the source of much confusion” and that “[a]fter *Diehr* and *Chakrabarty*, the *Freeman-Walter-Abele* test has little, if any, applicability to determining the presence of statutory subject matter.”<sup>87</sup> From this and other aspects of the opinion, the contrast between the district court’s analysis and that of the Federal Circuit serves as an excellent example of the change in direction that the Federal Circuit had taken in this area of the law over the prior decade.

With regard to the business method exception, the *State Street* court rebuked the notion of such an exception, stating that, “[s]ince the 1952 Patent Act,<sup>88</sup> business methods have been, and should have been, subject to the same legal requirements for patentability as applied to *any other process or method*.”<sup>89</sup> In fact, the court even asserted that “[t]he business method exception has never been invoked by this court, or the C.C.P.A., to deem an invention unpatentable.”<sup>90</sup> Through the years, however, various CCPA and Federal Circuit decisions had, in fact, clearly made the statement that methods of doing business were *not* patentable.<sup>91</sup> There were, however, some relatively recent hints that methods of doing business *might be* patentable,<sup>92</sup> as well as occasional anomalous holdings that inventions relating to “doing business” were patentable.<sup>93</sup>

As mentioned previously, *State Street* found the invention at issue was a type of “machine.” Despite the court’s statements that the category of subject matter should not affect the analysis of whether the subject matter is patent-eligible, some apprehension nonetheless existed for whether the Federal Circuit would, in fact, apply this useful-concrete-and-tangible-result test to “process” claims. After all, the aforementioned Supreme Court decisions were actually directed to process/method claims.

This question was answered by the Federal Circuit about one year after *State Street* in *AT&T v. Excel Communications*,<sup>94</sup> involving 10 method claims of AT&T’s patent 5,333,184. The patented technology in this decision generally concerned a telecommunications switch generating a message record (for billing purposes) indicative of the primary long distance carrier being used in a particular call.<sup>95</sup> “[T]he trial court, on summary judgment, held all of the method claims at issue invalid for failure to qualify as statutory subject matter.”<sup>96</sup>

---

**At least in recent years, the Supreme Court seems unlikely to agree with the Federal Circuit on virtually any issue regarding patent law.**

---

The Federal Circuit began its analysis by noting the breadth of § 101 in view of its language and legislative history,<sup>97</sup> but also noting that, “[d]espite this seemingly limitless expanse, the [Supreme] Court has specifically identified three categories of unpatentable subject matter: ‘laws of nature, natural phenomena, and abstract ideas.’”<sup>98</sup> The court then considered the ambiguity of the term “algorithm” as used to describe types of nonstatutory mathematical subject matter in prior decisions<sup>99</sup> and concluded that, “[b]ecause § 101 includes processes as a category of patentable subject matter, the judicially-defined proscription against patenting of a ‘mathematical algorithm,’ *to the extent such a proscription still exists*, is narrowly limited to mathematical algorithms *in the abstract*.”<sup>100</sup> This appears to suggest that even something like insignificant post-solution activity could render a claim patentable if the net result is more than a mere abstract mathematical algorithm. Moreover, the court also implied that even the prohibition on patenting pure mathematical algorithms may no longer exist.

Having considered the general breadth of patent-eligible subject matter, the court then indicated that the focus here should be whether the algorithm-related invention, be it machine or process, is applied in some “useful” manner.<sup>101</sup> Applying this principle to the facts

of the case, the court noted that *AT&T* was not claiming the Boolean principle behind its invention, but rather was “only claiming a process that *uses* the Boolean principle in order to determine the value of the [primary long distance carrier] indicator. . . . Because the claimed process applies the Boolean principle to produce a *useful, concrete, tangible result* without pre-empting other uses of the mathematical principle, on its face the claimed process comfortably falls within the scope of § 101.”<sup>102</sup> In then addressing what it referred to as the “notion” of “physical transformation,” the court asserted that such transformation:

is not an invariable requirement, but merely *one example* of how a mathematical algorithm may bring about a useful application. As the Supreme Court itself noted, “when [a claimed invention] is performing a function which the patent laws were designed to protect (*e.g.*, transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101.” *Diehr*, 450 U.S. at 192 (emphasis added). The “*e.g.*” signal denotes an *example*, not an exclusive requirement.<sup>103</sup>

For several years thereafter, the *State Street* and *AT&T* decisions were the last word in the courts regarding patent-eligible subject matter, though the PTO continued to struggle with how to fully apply those decisions to algorithm-related patent applications.<sup>104</sup> Certainly, some commentators argued that not all aspects of the *State Street* and *AT&T* decisions were consistent with aspects of the earlier Supreme Court decisions.<sup>105</sup> Others suggested that, to the extent that there were inconsistencies, the Supreme Court should consider expressly adopting the Federal Circuit’s analysis, since the latter court has spent considerable time and effort focusing on this issue. At least in recent years, however, the Supreme Court seems unlikely to agree with the Federal Circuit on virtually any issue regarding patent law, as discussed below.

## The Winds of Change

As indicated previously, the *State Street* and *AT&T* decisions were about far more than just “business methods” (whatever those really are, anyway),<sup>106</sup> although initially the public seemed to focus on that aspect of the decisions. It is fair to say that, in the aftermath of *State Street* and *AT&T*, the press was especially unkind to algorithm-related inventions, especially those in the form of alleged business methods.<sup>107</sup> The resulting public sentiment was largely responsible for a March 2000 initiative mandating that extra scrutiny be given to the examination of patent applications in so-called business

method class 705 of the PTO.<sup>108</sup> Public sentiment was also responsible for legislation introduced into Congress several years ago entitled the Business Method Patent Improvement Act of 2000.<sup>109</sup> This legislation, which was supposedly introduced with the intent to “stimulate dialogue,”<sup>110</sup> proposed treating patents and patent applications directed to “business methods”<sup>111</sup> in a substantively different way from those relating to other areas of technology.<sup>112</sup>

Somewhat more recently, an extensive Federal Trade Commission report considered various aspects of software and business method patents and obtained feedback from a number of persons in business and academia with respect to, *e.g.*, the competitive effects of these patents.<sup>113</sup> While some abuses of these types of patents were noted, the chapter relating to “competition perspectives on substantive standards of patentability” ultimately stated in its “recommendation” that, “[g]iven the complexity of the issues and the diversity of views reflected in the Hearing record, the Commission makes no recommendation for judicial or legislative action to reconsider or restrict the patentability of business methods.”<sup>114</sup> Despite the lack of agreement on the effects of so-called business method patents, the Supreme Court appeared to be listening to voices that asserted business method patents (however defined) were bad and that the Federal Circuit’s analysis of business method and software/algorithm-related inventions was flawed.

---

**The court in *Comiskey* had clearly turned away from using the useful-concrete-and-tangible-result test in analyzing these claims for patent-eligible subject matter under § 101.**

---

While no Supreme Court decisions since *Diehr* directly addressed patent-eligible subject matter under § 101, two decisions in 2006 at least strongly touched on the issue. In *eBay v. MercExchange*,<sup>115</sup> which primarily related to the test for granting injunctive relief, Justice Kennedy stated in a concurring opinion that “injunctive relief may have different consequences for the burgeoning number of patents over business methods, which were not of much economic and legal significance in earlier times. The potential vagueness and suspect validity of some of these patents may affect the calculus under the four-factor test.”<sup>116</sup> While singling out business method patents as those for which monetary damages are more likely sufficient in lieu of injunctive relief, this statement also implies that such patents are less likely to be valid, presumably under one or more of 35 U.S.C.

§§ 101, 102, and 103. Not surprisingly, no hint of what is meant by “business method patent” was mentioned.

In *LabCorp v. Metabolite*,<sup>117</sup> the Supreme Court granted *certiorari* to review a decision by the Federal Circuit on the issue of patent-eligible subject matter under § 101. Interestingly, the issue of invalidity under § 101 was not raised below by the Federal Circuit or district court, and for this reason even the Solicitor General had suggested that the Court not grant *certiorari*.<sup>118</sup> Thus, it appeared that the Supreme Court was digging for a § 101 decision on which to opine. After oral argument, however, the Court dismissed the *writ of certiorari* as improvidently granted. Nonetheless, Justice Breyer wrote a dissenting opinion that addressed the Federal Circuit’s “useful-concrete-and-tangible-result” test. Specifically, the dissent asserted that “this Court has never made such a statement and, if taken literally, the statement would cover instances where this Court has held to the contrary.”<sup>119</sup> In addition, the dissent noted that the Court had invalidated claims in the earlier cases *O’Reilly v. Morse*, *Parker v. Flook*, and *Gottschalk v. Benson*, all of which were allegedly directed to inventions producing a useful, concrete, and tangible result.<sup>120</sup> As a result, the Federal Circuit began to see what it believed was the writing on the wall, especially in view of the recent spate of Supreme Court decisions reversing patent-related Federal Circuit decisions.<sup>121</sup>

Following these two Supreme Court rulings, the winds of change for § 101 at the Federal Circuit became apparent with the 2007 decision *In re Comiskey*.<sup>122</sup> The method claims in that decision were directed to mandatory arbitration resolution and did not require a computer or other machine.<sup>123</sup> The Board of Patent Appeals and Interferences had affirmed the examiner’s rejection for obviousness under 35 U.S.C. § 103, but after initial oral argument at the Federal Circuit, the court requested supplemental briefing directed to the patentability of the application’s subject matter under § 101.<sup>124</sup> Like the Supreme Court in *LabCorp*, it appeared that the Federal Circuit was digging for its own § 101 decision on which to opine.

The court began its substantive analysis by stating that Comiskey’s application “may be viewed as falling within the general category of ‘business method’ patents”<sup>125</sup> and also commented that “*State Street Bank* explicitly held that business methods are ‘subject to the same legal requirements for patentability as applied to any other process or method.’”<sup>126</sup> In applying those legal requirements, the court indicated that the process claims of the application did not involve a machine (or any of the other statutory categories of § 101 aside from “process”) and claimed just a “mental process.”<sup>127</sup> While seemingly indicating that “mental process” was akin to

an “abstract concept or algorithm,”<sup>128</sup> and then focusing much of its subsequent discussion on abstract ideas and algorithms, the court also quoted *Benson* for the proposition 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.”<sup>129</sup>

The Federal Circuit then noted the Supreme Court had rejected a purely literal reading of the term “process” from the statute,<sup>130</sup> pointing out that the main “question is whether the method described and claimed is a ‘process’ within the meaning of the Patent Act.”<sup>131</sup> In defining that term, the court then stated that “a claim reciting an algorithm or abstract idea can state statutory subject matter only if, as employed in [a] process, it involves another class of statutory subject matter, *i.e.*, a machine, manufacture, or composition of matter.”<sup>132</sup> This apparently was another way of stating, as the court subsequently noted, that “[t]he Supreme Court has recognized *only two* instances in which such a method may qualify as a section 101 process: when the process ‘either [1] was tied to a particular apparatus’ or [2] operated to change materials to a ‘different state or thing.’”<sup>133</sup> (Thus, the Federal Circuit was already starting to contemplate a single test for finding statutory subject matter based upon Supreme Court law.) The Federal Circuit further pointed out that, in decisions past (and following the Supreme Court’s lead), it had “refused to find processes patentable when they merely claimed a *mental process* standing alone and *untied to another category* of statutory subject matter even when a practical application was claimed.”<sup>134</sup>

Consequently, finding the process claims of the application directed to a “mental” process that did not involve another statutory category, the court found the claims to be unpatentable. From its analysis, the court in *Comiskey* had clearly turned away from using the useful-concrete-and-tangible-result test in analyzing these claims for patent-eligible subject matter under § 101 and headed back toward the rationales used in older decisions. In distinguishing *AT&T*, *State Street*, *Alappat*, and *Arrhythmia*, however, the court asserted that “we have found processes involving mathematical algorithms used in computer technology patentable because they claimed practical applications and were tied to *specific machines*,”<sup>135</sup> and emphasized that the holdings in those decisions were based upon the existence of a machine rather than the existence of a “useful, concrete and tangible result.”<sup>136</sup>

The court then considered the independent *system* claims in Comiskey’s application, noting first that those claims recited the use of software modules, and that one of the claims recited “a means for selecting

an arbitrator from an arbitrator *database*.”<sup>137</sup> From this, the court stated that “[t]hese claims, under the broadest reasonable interpretation, could require the use of a computer as part of *Comiskey’s* arbitration system,”<sup>138</sup> and that, “[w]hen an unpatentable mental process is combined with a machine [e.g., a computer], the combination may produce patentable subject matter, . . .”<sup>139</sup> While seemingly warning that insignificant post-/pre-resolution activity will not bring about patentable subject matter,<sup>140</sup> the court indicated that such activity was not present here and that “these claims in combining the use of machines with a mental process, claim patentable subject matter.”<sup>141</sup>

Having found the system claims to be directed to patent-eligible subject matter, however, the court then asserted that the independent system claims “at most merely add a modern general purpose computer to an otherwise unpatentable mental process”<sup>142</sup> and that “[t]he routine addition of modern electronics to an otherwise unpatentable invention typically creates a prima facie case of obviousness.”<sup>143</sup> What the court appeared to be saying is that a portion of a claim otherwise unpatentable under § 101 for lack of patent-eligible subject matter should typically not be considered part of the claim in a § 103 obviousness analysis of that claim, and thus for that purpose, the claim “as a whole” should not be analyzed. This is quite different from situations in which a portion of a claim is, for example, prior art, and generic hardware is all that has been added to that claim in an attempt to make the claim novel/non-obvious. In the current decision, even though the algorithm, for example, may be highly novel and non-obvious, *Comiskey* appears to say that, in effect, the algorithm should be ignored for purposes of the § 103 analysis. This seems contrary to the general determination in *Diehr* that claims should be analyzed “as a whole.” In any event, the court remanded the obviousness issue to the PTO for further consideration.

Having decided *Comiskey*, it appeared that the Federal Circuit’s next step was to make sure its new/old machine-transformation test for evaluating patent-eligible subject matter was emphasized to the public and, perhaps especially, to the Supreme Court.

## ***In re Bilski***

### **Background and Introduction**

The *Bilski* patent application contained 11 claims relating to a process of hedging risk in commodities trading.<sup>144</sup> During prosecution, the examiner rejected the claims under 35 U.S.C. § 101, asserting that “the invention is not directed to the technological arts.”<sup>145</sup> On appeal, the Board of Patent Appeals and Interferences

held that the examiner had erred to the extent he had relied upon the “technological arts” test, but the Board upheld the § 101 rejection on several other grounds, including the machine-or-transformation test<sup>146</sup> and the useful-concrete-and-tangible-result test.<sup>147</sup> While generally focusing on Supreme Court case law, by rejecting the claim under multiple potential tests the Board was clearly hedging its bets regarding which test would ultimately be deemed the proper test.

*Bilski’s* appeal to the Federal Circuit<sup>148</sup> was initially heard by a three-judge panel. A subsequent order was issued by the Federal Circuit on February 15, 2008, however, granting a hearing *en banc*.<sup>149</sup> In particular, the court invited the parties to file supplemental briefs addressing the following questions:

1. Whether claim 1 of the [*Bilski*] 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.*, and *AT&T Corp. v. Excel Communications, Inc.* in this case and, if so, whether those cases should be overruled in any respect?<sup>150</sup>

Clearly, the court desired to take a serious look at its own precedent, as evidenced by its fifth question concerning *State Street* and *AT&T*. Not surprisingly, the case drew considerable attention from a variety of parties in industry and academia who filed a total of 38 *amici* briefs. At oral argument, the court also took the unusual position of allowing two of the *amici* to present their positions.<sup>151</sup>

According to the court, applicants had admitted during prosecution that their claims “were not limited to operation on a computer.”<sup>152</sup> It was also undisputed that the claims were “not directed to a machine, manufacture or composition of matter”<sup>153</sup> and that they were just

directed to a “process.” Consequently, the court asserted that “the issue before us involves what the term ‘process’ in § 101 means, and how to determine whether a given claim—and applicants’ claim 1 in particular—is a ‘new and useful process.’”<sup>154</sup> As a result, the court focused on the definition of “process” and, more specifically, whether the process of claim 1 was directed to patent-eligible subject matter.<sup>155</sup>

### The Meaning of “Process” for Determining Patent-Eligible Subject Matter

In defining the term “process,” the Federal Circuit began by citing Supreme Court decisions in which the term “process” was defined more narrowly than its ordinary meaning to exclude “laws of nature, natural phenomena, [or] abstract ideas.”<sup>156</sup> The court further stated that such “fundamental principles” (i.e., laws of nature, natural phenomena, and abstract ideas)<sup>157</sup> are “free to all men and reserved exclusively to none,”<sup>158</sup> and also cited *Benson* for the proposition that “mental processes [ ] are not patentable, . . .”<sup>159</sup> The court then stated that “[t]he true issue before us then is whether Applicants are seeking to claim a fundamental principle (such as an abstract idea) or a mental process,”<sup>160</sup> either of which would seem to indicate the claim was unpatentable.

It would appear from the quotes in the aforementioned paragraph (including the “or” in the most recent quote) that the Federal Circuit wishes to distinguish “mental processes” from “fundamental principles.” Subsequent passages indicate that the two are indistinguishable, however, at least for purposes of a patent-eligibility analysis. For example, though eventually finding that the claims were directed to a mental process, to determine the correct patent-eligibility test the court focused on whether the claim was “drawn to unpatentable subject matter because it claims only a *fundamental principle*.”<sup>161</sup> In addition, while later discussing *Comiskey*, the court appeared to specifically equate “mental processes” with “fundamental principles.”<sup>162</sup> Regardless of the nuances of definition that may actually exist between these two terms, at least for purposes of the court’s patent-eligible subject matter analysis, one can surmise that whatever goes for “fundamental principles” also goes for “mental processes.”

Recognizing that the Supreme Court had indicated that allowing a claim to preempt all uses of a fundamental principle was impermissible,<sup>163</sup> the *Bilski* court stated: “[t]he question before us then is whether Applicants’ claim recites a fundamental principle and, if so, whether it would pre-empt substantially all uses of that fundamental principle if allowed.”<sup>164</sup> While acknowledging that this inquiry is not straightforward, the court concluded that the sole test under Supreme Court

precedent to determine whether a process claim is directed to patent-eligible subject matter rather than an unpatentable fundamental principle is to analyze the subject matter and determine whether “(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.”<sup>165</sup> Subject matter that is limited in one of those two ways, the court explained, would not impermissibly preempt substantially all uses of the underlying fundamental principle.<sup>166</sup> In this way, the court appeared to neatly wrap up the preemption aspect of the Supreme Court decisions and its transformation language into a single test.

Consequently, a “process” as defined under § 101, according to the *Bilski* court, would generally be commonly defined processes that also comply with the aforementioned machine-or-transformation test. Notably, the court played down language in the recent Supreme Court decisions that indicated this machine-or-transformation test might not be the sole test for evaluating patent eligibility of process claims. For example, while admitting that *Benson* was initially equivocal in putting forth the machine-or-transformation test,<sup>167</sup> the Federal Circuit made much of the fact that the caveat in *Benson* was not repeated in *Diehr*, though, as discussed previously, *Diehr* certainly did nothing to retract the caveat. In general, it appeared that the court was bent on coming up with a single, unified test (presumably for purposes of clarity) that it believed would not readily raise the ire of the current Supreme Court.

### Disposition of Previous Tests Relating to Statutory Subject Matter

In view of the single machine-or-transformation test announced for evaluating process claims, the *Bilski* court then ruled on the disposition of previous tests relating to statutory subject matter. First, it confirmed that the previous *Freeman-Walter-Abele* test is “inadequate.”<sup>168</sup> Then it asserted that *State Street*’s useful-concrete-and-tangible-result test is also inadequate and that those portions of *State Street* and *AT&T* “relying solely on a ‘useful, concrete and tangible result’ analysis should no longer be relied on.”<sup>169</sup> While the court mentioned very generally that this prior *State Street* test was “insufficient” to determine patent-eligibility of a claim, the bottom-line reasoning for its demise appears simply that it was “never intended to supplant the Supreme Court’s test.”<sup>170</sup> (Thus, its “sufficiency” was arguably not the real issue.)

The Federal Circuit also maintained its refusal to categorically exclude business methods from patent-eligible subject matter, reaffirming that business methods, and all process claims, are “subject to the same legal requirements for patentability as applied to any other process

or method.”<sup>171</sup> In addition, the court declined an invitation by several *amici* to “adopt a broad exclusion over software”<sup>172</sup> and also rejected the adoption of a technological arts test suggested by other *amici*.<sup>173</sup>

The court also addressed a “possible misunderstanding” that it had suggested a new test in *Comiskey* that “bars any claim reciting a mental process that lacks significant ‘physical steps.’”<sup>174</sup> The court denied that *Comiskey* created such a test and instead insisted that *Comiskey* had “actually applied the machine-or-transformation test to determine whether various claims at issue were drawn to patent-eligible subject matter.”<sup>175</sup> As an aside, since the *Bilski* court (1) acknowledged it had applied the same test/analysis in *Comiskey* as in the current (*Bilski*) decision and (2) by using that test *Comiskey* distinguished the patents in *State Street* and *AT&T* by asserting that the subject matter in those other decisions was tied to specific machines, it seems plausible to argue that subject matter of the *State Street* and *AT&T* variety would survive *Bilski*. As discussed later, however, the court’s recent language regarding “meaningful” limitations could at least conceivably cause a change in the parameters for making this determination.

## General Application of the Machine-or-Transformation Test

Since the parties conceded that the claimed subject matter was not limited to any specific machine or apparatus, the *Bilski* court declined to address whether the claimed process was “tied to a particular machine or apparatus,” stating that it would leave analysis of this prong of the machine-or-transformation test to future cases, including “whether or when recitation of a computer suffices to tie a process claim to a particular machine.”<sup>176</sup> However, the court nonetheless saw fit to assert that such a machine or apparatus must impose “meaningful” limits on the claim scope to impart patent eligibility,<sup>177</sup> and that the involvement of the machine “in the claimed process must not merely be insignificant extra-solution activity.”<sup>178</sup> Similarly, for the transformation prong, the court indicated that the transformation must also impose “meaningful” limits and not amount to insignificant extra-solution activity. In addition, the “transformation must be central to the purpose of the claimed process.”<sup>179</sup> What would constitute a “meaningful limit” or be “central” to the purpose of the claimed process was not specifically addressed by the court (with regard to either prong of the test).

Since the transformation prong was the one relevant to the claims at issue, the court turned its attention to it and looked to its own precedent to “gain insight” into how to implement this prong. In particular, the court focused on “what sort of things constitute ‘articles’ such

that their transformation is sufficient to impart patent-eligibility under” the patent statute.<sup>180</sup> Thus, the court indicated that the transformation of only certain types of articles could serve as indicia of patent-eligible subject matter.

In conducting its inquiry regarding the type of articles that could permissibly be transformed, for this part of the analysis the court ventured beyond strictly looking to Supreme Court decisions, which related more to Industrial Age chemical or physical technologies. Instead, the court asserted that “the raw materials of many information-age processes are electronic signals and electronically-manipulated data.”<sup>181</sup> Then, turning to its own precedent, the court noted that data-related process claims that “did not specify any particular type or nature of data [or] specify how or from where the data was obtained, or what the data represented” were found unpatentable,<sup>182</sup> whereas patent-eligible subject matter was found when “data clearly represented physical and tangible objects.”<sup>183</sup> Also, “electronic transformation of the data itself [representing physical objects or substances] into a visual depiction” was also sufficient to find patent-eligible subject matter,<sup>184</sup> and claims directed thereto did not preempt any fundamental principles.

In considering this precedent, the Federal Circuit did not elaborate on *why* a claim that recites data representing physical objects would be directed to patent-eligible subject matter while claims reciting other types of data would not,<sup>185</sup> nor did the court consider whether an “unpatentable” claim from one of the cases it contemplated above *might* be directed to patent-eligible subject matter had the claim specified the “particular type or nature of [the] data.” Instead, all the court seemed to say was that “[o]ur case law has taken a measured approach to this question, and we see no reason here to expand the boundaries of what constitutes patent-eligible transformations of articles.”<sup>186</sup>

## Application of the Transformation Test to the *Bilski* Claims

Upon concluding its general analysis, the court held that *Bilski*’s claims did not “transform any article into a different state or thing”<sup>187</sup> and therefore were not directed to patent-eligible subject matter. Specifically, the court stated that “[p]urported transformations or manipulations simply of public or private legal obligations or relationships, business risks, or other such abstractions *cannot* meet the test *because* they are not physical objects or substances, *and* they are not *representative* of physical objects or substances. Applicants’ process at most incorporates only such *ineligible* transformations.”<sup>188</sup> Thus, the court actually found the subject matter of *Bilski*’s claims to be patent-ineligible not

because there was no transformation but because the “articles” (such as public or private legal obligations) did not “qualify” to be transformed. In particular, the “articles” did not qualify because they were not (nor did they represent) physical objects or substances.

Comparing *Bilski*’s claims with those in *Comiskey*, the Federal Circuit indicated that “in neither case do the claims require the use of any particular machine or achieve any *eligible* transformation.”<sup>189</sup> Bringing the concept of “mental process” back into its discussion, the court also asserted that, “[j]ust as the *Comiskey* claims as a whole were directed to the mental process of arbitrating a dispute to decide its resolution, the claimed process here as a whole is directed to the *mental* and mathematical process of identifying transactions that would hedge risk.”<sup>190</sup> The court then discussed *In re Meyer*<sup>191</sup> to exemplify its track record of rejecting claims like *Bilski*’s. *Meyer* related to diagnosing the location of a malfunction in a general multi-component system, and since “[t]he diagnostic tests were not identified, and the ‘factors’ were not tied to any particular measurement, [the court had held that] the claim was effectively drawn only to ‘a mathematical algorithm representing a mental process, . . .’”<sup>192</sup>

In conclusion, the *Bilski* court stated that “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.”<sup>193</sup> “Moreover, while the claimed process contains physical steps (initiating, identifying), it does not involve transforming an article into a different state or thing. Therefore, Applicants’ claim is not drawn to patent-eligible subject matter under § 101.”<sup>194</sup>

In its claim analysis, the court appeared to emphasize the importance of the data representing “physical objects or substances” for the data to be eligible for transformation and thus potentially indicate the existence of patent-eligible subject matter. The court also emphasized that the patent-ineligibility of subject matter in some previous decisions was because the type of data or what the data represented *was not specified*, rather than that the data did not “represent” something physical.<sup>195</sup> Perhaps this indicates that the Federal Circuit may be open to finding that patent-eligible subject matter can exist somewhere between these two situations. For example, when a type of data and what it represents are plainly set forth, the court may find patent-eligible subject matter in a particular situation, even if the data are not clearly representative of a tangible and physical

object. The fact that the court offered no substantial reason why inventions that incorporate data representing physical objects would be patentable while other inventions lacking such data would not be supports this possibility.

### Other Notable Assertions and Reaffirmations

The Federal Circuit also took the opportunity in *Bilski* to assert or reaffirm several precepts concerning patent-eligible subject matter. For example, the court asserted that “mere field-of-use limitations are generally insufficient to render an otherwise ineligible process claim patent-eligible.”<sup>196</sup> Rebuffing *Flook* in favor of *Diehr*, other assertions included that “whether a claimed process is novel or non-obvious is irrelevant to the § 101 analysis”<sup>197</sup> and that “it is inappropriate to determine the patent-eligibility of a claim as a whole based on whether selected limitations constitute patent-eligible subject matter.”<sup>198</sup>

### Dissenting and Concurring Opinions

There were three notable dissenting opinions and one concurring opinion in the Federal Circuit’s *Bilski* decision. In her dissenting opinion, Judge Newman asserted that the US Supreme Court had never proposed the machine-or-transformation test “as a specified limit to” patent-eligible subject matter,<sup>199</sup> and thus the majority had misinterpreted the high court’s precedent. She also noted that, when property rights are concerned, adherence to settled law is of particular importance and that it was rather extreme of the majority to so radically change its interpretation of decades-old Supreme Court case law and ignore its own precedent established over time (and upon which businesses had come to rely).<sup>200</sup> Likely referring to *LabCorp*, she stated that “[t]he only announced support for today’s change appears to be the strained new reading of Supreme Court quotations. But this court [the Federal Circuit] has previously read these decades-old opinions differently, without objection by either Congress or the [Supreme] Court.”<sup>201</sup>

Judge Rader accused the majority of inventing “several circuitous and unnecessary tests [and propagating] unanswerable questions,”<sup>202</sup> pointing out that the majority had read too much into the broad terms of § 101. Asserting that the Supreme Court had placed only nominal limits on patent-eligible subject matter,<sup>203</sup> he said that, to strike down *Bilski*’s claims, all the majority really needed to say was “[b]ecause *Bilski* claims merely an *abstract idea*, this court affirms the Board’s rejection.”<sup>204</sup> Judge Rader also chided the majority for not addressing the fundamental question of why, exactly, some categories of invention deserve patent protection

while others do not, in view of the majority's asserted machine-or-transformation test.<sup>205</sup>

Judge Mayer, on the other hand, believed that the majority did not go far enough and that the majority's test still allowed a clever draftsman to draft claims to include physical transformations to procure patents on technology that he believed should not be patent-eligible.<sup>206</sup> In particular, he believed that business methods should be removed from the realm of patent-eligible subject matter and that *State Street* and *AT&T* should be expressly overruled.<sup>207</sup> For patent-eligibility, he advocated use of a technological arts test, in which the subject matter must be "directed to an advance in science or technology."<sup>208</sup>

In a concurring opinion, Judges Dyk and Linn addressed the assertion of Judges Newman and Rader that "the majority's opinion is not grounded in the statute," but rather "usurps the legislative role."<sup>209</sup>

## **Ex Parte Halligan**

At the time of this writing, interpretations of *Bilski* from the PTO are already beginning to emerge. In *Ex Parte Halligan*,<sup>210</sup> the invention related to accounting "for trade secret intellectual property assets."<sup>211</sup> The examiner rejected various claims of the application under a number of sections of the patent statute, including § 101. At the outset of its analysis, the Board of Patent Appeals and Interferences indicated it would "apply the machine-or-transformation test, as described in *Bilski* . . ."<sup>212</sup>

Regarding certain process claims in Halligan's application that "recite a series of process steps that are not tied in any manner to a machine,"<sup>213</sup> the Board found that those claims "fail[ed]" the second prong of the machine-or-transformation test because the data represented "intangible" data about a trade secret rather than "physical and tangible objects."<sup>214</sup> In a footnote, the Board also commented that, "[b]ecause the data does not represent physical and tangible objects, we need not reach the issue of whether mere calculation of a number based on inputs of other numbers is a sufficient 'transformation' of data to render a process patent-eligible under § 101."<sup>215</sup> However, this is precisely the type of transformation that the Federal Circuit and CCPA indicated had occurred in previous decisions where the courts found patent-eligible subject matter due to transformation of "physical data." In fact, when data and a computer are concerned, it is hard to imagine what other types of transformation the Federal Circuit and CCPA may have had in mind. Thus, the Board's comment in this footnote seems somewhat overreaching.

Other process claims in Halligan's application recited a "'programmed computer method' in which each

of the steps is performed by the programmed computer."<sup>216</sup> For those, the Board generally acknowledged that this type of claim falls under the purview of the first prong. Focusing on *Bilski*'s very general language that the use of a machine or apparatus must impose "meaningful" limits on the claim scope, the Board found that the recitation of the programmed computer "fails to impose any meaningful limits on the claim's scope as it adds nothing more than a general purpose computer that has been programmed in an unspecified manner to implement the functional steps recited in the claims."<sup>217</sup> (Since the Federal Circuit had not specified what was meant by "meaningful limit," the Board's conclusion was thus a result of its own interpretation.) The Board also then referred to the programmed computer aspect as a "field of use limitation." Since "each of the steps is performed by the programmed computer," however, it seemed that the computer would instead be an integral, physical part of the invention rather than a "field of use." In any event, it is not clear what level of specific hardware (or software) would be necessary for this particular Board to have found the software to be "meaningfully tied" to the hardware. It may be useful to note that the description of the computer in the application at issue was very general, as was the algorithm that implemented the function.

If this type of analysis is adopted by the PTO generally, it certainly has the potential to affect many existing software-related patents and applications. Other opinions from the Board and the courts are yet to come,<sup>218</sup> the latter of which especially will be determinative.

## **Conclusion (What Now?)**

The swift, recent shift from the broad *State Street/AT&T* paradigm for determining patent-eligible subject matter to that of *Bilski* evidences a Federal Circuit determined to (1) seek a single test for patent-eligible subject matter and (2) avoid being again overruled by the US Supreme Court. While the goal of seeking the single test may have been to gain clarity and predictability, the end result may well be at the expense of both, given the numerous questions left unanswered. Also, given little more than the dissent's general disapproval of the useful-concrete-and-tangible-result test in *LabCorp*, it is not at all clear that *Bilski* is, as a whole, what the current Supreme Court really had in mind, and thus the Federal Circuit may well have swung too far. While some in the industry may currently approve of a raised bar for patentability in view of so-called patent trolls, query whether there are (especially long term) better ways to address that issue.

Consider where *Bilski* leaves us. When it can be shown that process claims involve data representing something

physical and tangible, these claims will likely be considered patent-eligible subject matter. Certainly, this would encompass many types of software-related patents, such as those in which the data could represent, for example, X-ray information of various bones. Consequently, *Bilski* did not make the entire gamut of software inventions patent-ineligible. Of course, the bounds of when data will be deemed to represent something physical has yet to be determined and is not likely to ever be especially clear. No doubt, practitioners will now attempt to draft/amend claims to incorporate physical aspects into data related to their patent applications. *Why* it should really matter that the data represent something “physical” is still an open question.

Also, when a machine is associated with the subject matter in some *meaningful* way, the claim likely will be considered patent-eligible subject matter under the second prong of the test. Again, the bounds of “meaningful” are not clear. *In re Comiskey* may possibly provide guidance for successfully doing this, since the *Bilski* majority asserted that they used what amounted to the same test as in *Comiskey*, and certain types of processes (such as those in the *AT&T* decision) were distinguished as examples of machine-related patent-eligible subject matter. After *Halligan*, practitioners may also want to contemplate how, in greater detail, they could “tie” a software invention to a particular machine.

---

**No doubt, practitioners will now attempt to draft/amend claims to incorporate physical aspects into data related to their patent applications. Why it should really matter that the data represent something “physical” is still an open question.**

---

One thing that is reasonably clear from *Bilski* is that subject matter relating to non-physical business constructs that are not limited to use with a computer are no longer considered patent-eligible subject matter. But what of “machine” or “system” claims that relate to or in some way use a process (such as the machine claim of *State Street*)? While it may seem at first that their patent-eligible status should remain unaffected by *Bilski* since *Bilski* did not address these types of claims, might a court try to interpret such claims as a “process” for purposes of a § 101 analysis?<sup>219</sup> Again, *Comiskey* may be helpful, since the system claims in that decision were found to be directed to patent-eligible subject matter.<sup>220</sup>

Thus, while *Bilski* by no means marks the end of software or even so-called business method patents, it

is unquestionable that the Federal Circuit has modified some of the rules, requiring attorneys to thoughtfully navigate new waters to obtain patents directed to process claims for certain technologies. As mentioned in this article, various issues remain unclear, such as what it means for a transformation to be “central” to the purpose of a claimed process. Thus, the manner in which *Bilski* will be interpreted in the coming months by lower courts, the PTO, and subsequent Federal Circuit panels will be crucial for how practitioners will seek to write, interpret, and litigate process claims, especially those in software, business method, and related technologies. In any event, it is clear that Judge Mayer is convinced that significant room exists to continue drafting claims directed to software and business method patents. We will soon find out the extent to which he may be right.

## Notes

1. *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (*en banc*).
2. *State Street Bank v. Signature Financial Group*, 149 F.3d 1368 (Fed. Cir. 1998).
3. *Gottschalk v. Benson*, 409 U.S. 63 (1972).
4. *Parker v. Flook*, 437 U.S. 584 (1978).
5. *Diamond v. Diehr*, 450 U.S. 175 (1981).
6. *See, e.g.*, Swanson, “The Patentability of Business Methods, Mathematical Algorithms and Computer-Related Inventions after the Decisions by the Court of Appeals for the Federal Circuit in *State Street*,” 8 FEDCIBJ 153, 162-163 (“A trilogy of Supreme Court decisions caused confusion and slowed the development of subject matter patentability in this area,” referring to *Benson*, *Flook* and *Diehr*). Note that the US Patent and Trademark Office had made a valiant effort to reconcile much of the case law in its 1996 Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. 7478 (1996).
7. *See, e.g.*, the nineteenth century Supreme Court decision of *Cochrane v. Deener*, stating that a process is “an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing.” 94 U.S. 780, 788 (1876). Ironically, it is some of these very statements that the Federal Circuit now reinvigorates in its most recent decisions, discussed *infra*. In fairness, perhaps the courts will ensure that the results going forward will at least be clearer and more consistent than had previously been the case.
8. 409 U.S. at 71-72 (emphasis added).
9. 409 U.S. at 70 (quoting *Cochrane*, 94 U.S. at 788).
10. In general, the patent statute is at Title 35 of the U.S. Code.
11. *Diehr* is the most recent of these decisions to squarely address the issue of patent-eligible subject matter.
12. *See generally* 450 U.S. at 178-179.
13. Respondents’ application contained 11 different claims. Claim 1 provides:

1. A method of operating a rubber-molding press for precision molded compounds with the aid of a digital computer, comprising:
  - providing said computer with a data base for said press including at least,
  - natural logarithm conversion data ( $\ln$ ),
  - the activation energy constant ( $C$ ) unique to each batch of said compound being molded, and a constant ( $x$ ) dependent upon the geometry of the particular mold of the press,
  - initiating an interval timer in said computer upon the closure of the press for monitoring the elapsed time of said closure,
  - constantly determining the temperature ( $Z$ ) of the mold at a location closely adjacent to the mold cavity in the press during molding,
  - constantly providing the computer with the temperature ( $Z$ ),
  - repetitively calculating in the computer, at frequent intervals during each cure, the Arrhenius equation for reaction time during the cure, which is  $\ln v=CZ+x$   
where  $v$  is the total required cure time, repetitively comparing in the computer at said frequent intervals during the cure each said calculation of the total required cure time calculated with the Arrhenius equation and said elapsed time, and
  - opening the press automatically when a said comparison indicates equivalence.
14. When a patent application is rejected by an examiner, the application can first be appealed to the Board of Patent Appeals and Interferences, which is an internal administrative court within the PTO. If the applicant is not satisfied with the decision of the Board, the decision can then be appealed directly to the Federal Circuit.
15. 35 U.S.C. § 101 states: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."
16. 450 U.S. at 181.
17. 437 U.S. at 589.
18. *E.g.*, when the mathematical algorithm in a claim consisting of a mathematical algorithm and a digital computer has no other practical application other than with the digital computer.
19. For the invention in *Benson*, the Court had stated that "[i]t is conceded that one may not patent an idea. But in practical effect that would be the result if the formula [in the patent application claim at issue] were patented in this case. The mathematical formula involved here has no substantial practical application except in connection with a digital computer, which means that if the judgment below is affirmed, the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself." 409 U.S. at 71-72.
20. 437 U.S. at 589-590.
21. 437 U.S. at 590.
22. *See* 437 U.S. at 594 ("The notion that post-solution activity, no matter how conventional or obvious in itself, can transform an unpatentable principle into a patentable process exalts form over substance.")
23. 437 U.S. at 594 (emphasis added).
24. To many, this seemed like an incongruous mixture of subject matter and novelty/nonobvious concepts. In general, the *Flook* court indicated that "Mackay Radio and Funk Bros. point to the proper analysis for this case." Ironically, the majority in its discussion in *Diehr, supra*, disputed this aspect of the *Flook* opinion, citing *Mackay* to dispute it. (*See* 450 U.S. 188).
25. 437 U.S. at 588, n.9. (emphasis added) Benson itself had stated "[i]t is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing.' We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents." 409 U.S. at 71.
26. *See* 437 U.S. at 591 ("Whether the algorithm was in fact known or unknown at the time of the claimed invention, as one of the 'basic tools of scientific and technological work,' . . . it is treated as though it were a familiar part of the prior art.")
27. 437 U.S. at 599.
28. 437 U.S. at 600.
29. 450 U.S. at 182, quoting *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980) citations omitted.
30. 450 U.S. at 182, quoting S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952). Part of the context of this aspect of the Court's discussion related to its recognition that the recodification of the patent laws of 1952 replaced the term "art" with "process." The full quote from this Committee Report states "Section 101 sets forth the subject matter that can be patented, 'subject to the conditions and requirements of this title.' The conditions under which a patent may be obtained follow, and section 102 covers the conditions relating to the novelty. A person may have 'invented' a machine or a manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under section 101 unless the conditions of the title are fulfilled." "The title" in the last sentence would seem to refer to 35 U.S.C., and thus that sentence just seems to be saying that an invention needs to also fulfill requirements such as those of 35 U.S.C. §§ 102 and 103 to be patentable.
31. 450 U.S. at 182.
32. *Cochrane v. Deener*, 94 U.S. 780 (1877).
33. 450 U.S. at 182-183, quoting *Cochrane v. Deener*, 94 U.S. 780, 787-788 (1877) (Emphases added).
34. 450 U.S. at 184, citing 409 U.S., at 70 (emphasis added).
35. 450 U.S. at 184.
36. Again, *Benson* had stated "[i]t is argued that a process patent must either be tied to a particular machine or apparatus or

- must operate to change articles or materials to a 'different state or thing.' We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents." 409 U.S. at 71.
37. If one assumes that the machine-or-transformation test was not considered the "sole" test for determining patent-eligible subject matter prior to the 1952 Patent Act, then the court's statement "[a]nalysis of the eligibility of a claim of patent protection for a 'process' did not change with the addition of that term to § 101" [450 U.S. at 184] did not *add it* as such (in other words, the statement merely serves to keep the status quo).
  38. While not conclusive, such elaboration would have indicated an importance being placed on a "sole" test.
  39. Specifically, the court stated that the *Diehr* applicants "do not seek to patent a mathematical formula," but rather "they seek patent protection for a process of curing synthetic rubber." 450 U.S. at 187.
  40. 450 U.S. at 185.
  41. 450 U.S. at 185.
  42. 450 U.S. at 185 (emphasis added).
  43. 450 U.S. at 185.
  44. The Court did recognize that "[T]he term algorithm is subject to a variety of definitions" and that the definition set forth by the government/petitioner is broader than that used by the court in *Benson* or *Flook*, stating that "[o]ur previous decisions regarding the patentability of 'algorithms' are necessarily limited to the more narrow definition employed by the Court, . . ." [450 at 186, Fn 9] Amongst other things, these various definitions of "algorithm" have contributed to the lack of consistent subsequent interpretation of the Supreme Court decisions regarding patent-eligible subject matter.
  45. 450 U.S. at 186 (emphasis added).
  46. 450 U.S. at 185-186 (emphasis added).
  47. In the full words of *Benson*, "[t]he mathematical formula involved here has no substantial practical application except in connection with a digital computer, which means that if the judgment below is affirmed, the patent would wholly preempt the mathematical formula and in practical effect would be a patent on the algorithm itself." 409 U.S. at 71-72.
  48. 450 U.S. at 186 (emphasis added).
  49. *See* 450 U.S. at 186-187.
  50. Specifically, the court stated that "[i]n determining the eligibility of respondents' claimed process for patent protection under § 101, their claims must be considered *as a whole*. It is inappropriate to dissect the claims into old and new elements and then to ignore the presence of the old elements in the analysis." 450 U.S. at 188 (emphasis added). They further stated that "The 'novelty' of any element or steps in a process, or even of the process itself, is of *no relevance* in determining whether the subject matter of a claim falls within the 101 categories of possibly patentable subject matter." 450 U.S. at 188-189 (emphasis added).
  51. 450 U.S. at 189, n.12.
  52. *Mackay Radio & Telegraph Co. v. Radio Corp. of America*, 306 U.S. 86 (1939).
  53. 450 U.S. 188.
  54. Specifically, Stevens had cited *Mackay* and stated that "Mackay Radio [points] to the proper analysis for this case . . ." 437 U.S. at 591.
  55. 450 U.S. at 191-192.
  56. *See* 450 U.S. at 192, n.14.
  57. 450 U.S. at 192 (emphasis added).
  58. 450 U.S. at 204.
  59. 450 U.S. at 209.
  60. This test was so named because it evolved from the CCPA decisions of *In re Freeman*, 573 F.2d 1237 (CCPA 1978), *In re Walter*, 618 F.2d 758 (CCPA 1980) and *In re Abele*, 684 F.2d 902 (CCPA 1982).
  61. The Federal Circuit more fully expressed the test in *Arrhythmia Research Technology, Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1058 (Fed. Cir. 1992), stating "[i]t is first determined whether a mathematical algorithm is recited directly or indirectly in the claim. If so, it is next determined whether the claimed invention as a whole is no more than the algorithm itself; that is, whether the claim is directed to a mathematical algorithm that is not applied to or limited by physical elements or process steps. Such claims are nonstatutory. However, when the mathematical algorithm is applied in one or more steps of an otherwise statutory process claim, or one or more elements of an otherwise statutory apparatus claim, the requirements of section 101 are met."
  62. *Arrhythmia Research Technology, Inc. v. Corazonix Corp.*, 958 F.2d 1053 (Fed. Cir. 1992).
  63. 958 F.2d at 1064. The Federal Circuit in *State Street, infra*, later would say "[t]he [F-W-A] test has been the source of much confusion." 149 F.3d at 1374, n.5
  64. *See* 958 F.2d at 1061.
  65. 958 F.2d at 1064.
  66. 985 F.2d at 1064, citing 450 U.S. at 182.
  67. 958 F.2d at 1065 (emphasis added).
  68. Specifically, Judge Rader acknowledged that "*Diehr* limited *Benson* and its progeny to three classes of unpatentable subject matter—laws of nature, natural phenomena, and abstract ideas." 958 F.2d at 1065.
  69. *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994).
  70. Specifically, the court stated that "at the core of the [Supreme] Court's analysis in each of [*Diehr*, *Flook*, and *Benson*] lies an attempt by the Court to explain a rather straightforward concept, namely, that 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." 33 F.3d at 1543 (emphasis added).
  71. 33 F.3d at 1544 (emphasis added).

72. See 33 F.3d at 1543 and 1544.
73. 149 F.3d 1368 (Fed. Cir. 1998). This decision was heard by a three judge panel consisting of Judges Rich, Plager and Bryson. (Bryson was among the majority in *Bilski*.) According to the court, the patented system “facilitates a structure whereby mutual funds (Spokes) pool their assets in an investment portfolio (Hub) organized as a partnership. This investment configuration provides the administrator of a mutual fund with the advantageous combination of economies of scale in administering investments coupled with the tax advantages of a partnership.” 149 F.3d at 1370. “In particular, this system provides means for a daily allocation of assets for two or more Spokes that are invested in the same Hub.” 149 F.3d at 1371.
74. 149 F.3d at 1371. Claim 1 is the only independent claim at issue.
75. 149 F.3d at 1372.
76. 149 F.3d at 1372.
77. 149 F.3d at 1372.
78. 149 F.3d at 1372, n.1.
79. 149 F.3d at 1373 (emphasis added), quoting *Alappat*, 33 F.3d at 1544. Note that while *Benson* did indicate that a mathematical algorithm (or at least the claim at issue) is an abstract idea (409 U.S. at 71–72), the *Flook* Court characterized *Benson* as having said that “an algorithm, or mathematical formula, is like a law of nature,” (437 U.S. at 589) as did *Diehr*, (450 U.S. at 186). At the same time (and on the same page), the *Flook* court also said that “[i]n *Benson* we concluded that the process application in fact sought to patent an *idea*.” (437 U.S. at 589). While perhaps an argument can be made that it can be both a law of nature and an abstract idea, the fact that “algorithm” is inconsistently categorized merely illustrates the confusion that surrounds the process of statutory subject matter analysis. In general, what, exactly, is meant by an “algorithm” for purposes of statutory subject matter analysis also adds significant confusion.
80. In *Alappat*, that “something” was a smooth waveform display on a rasterizer monitor, and in *Arrhythmia*, it was the condition of a patient’s heart.
81. See 149 F.3d at 1373.
82. 149 F.3d at 1373.
83. *Alappat* did discuss that a “transformation” had taken place with regard to the invention in that decision, though this was not as pivotal an issue as it had been in other decisions.
84. See *Arrhythmia Research Technology, Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1060 (Fed. Cir. 1992) (“[T]he number obtained is not a mathematical abstraction; it is a measure in microvolts of a specified heart activity, an indicator of the risk of ventricular tachycardia.”).
85. See *In re Taner*, 681 F.2d 787, 790 (CCPA 1982) (citing previous decisions to make the point that *Taner*’s invention, which related to the manipulation of seismic signals, was statutory, “this court found that, though appellants’ claims recited a mathematical algorithm for manipulating seismic data, the claims were, as a whole, drawn not to a method of solving that algorithm but to a process of converting one physical thing into another physical thing, and in [one decision] expressly recognized that ‘seismic traces are . . . physical apparitions.’”).
86. 681 F.2d at 790.
87. 149 F.3d at n.5 and at 1374.
88. The reason the 1952 Act was relevant was because of the court’s observation that “the ‘business method’ exception has merely represented the application of some general, but no longer applicable legal principle, perhaps arising out of the ‘requirement for invention’—which was eliminated by § 103.” 149 F.3d at 1375.
89. 149 F.3d at 1375 (emphasis added).
90. 149 F.3d at 1375.
91. See, e.g., *In re Grams*, 888 F.2d 835, 837 (Fed. Cir. 1989) (“[T]he list of nonpatentable subject matter not within the scope of section 101 [includes] methods of doing business, . . .”); *In re Chatfield*, 545 F.2d 152, 157 (CCPA 1976) (citation omitted) (“Some inventions, however meritorious, do not constitute patentable subject matter, e.g., . . . methods of doing business”).
92. E.g., the Federal Circuit has stated that “[e]fforts to explain nonstatutory subject matter in other terms has bred such phrases as ‘method of doing business’, . . .” *In re Warmerdam*, 33 F.3d 1354, 1359 n.2, (Fed. Cir. 1994) (emphasis added) (suggesting a return to the clearer language of § 101 of the patent statute and away from the arbitrary definitional terms of previous decisions).
93. See *In re Johnston*, 502 F.2d 765 (C.C.P.A. 1974), *rev’d on other grounds*, 425 U.S. 219 (1976) (holding that an invention relating “to an automatic financial record-keeping system which employs a digital computer” is statutory subject matter); although not a Federal Circuit or CCPA decision, a case that has nonetheless often been cited by commentators is *Paine, Webber, Jackson & Curtis, Inc. v. Merrill Lynch, Pierce, Fenner & Smith*, 564 F. Supp. 1358 (holding that Merrill Lynch’s patent directed to a securities brokerage-cash management system was statutory subject matter under § 101).
94. *AT&T v. Excel Communications*, 172 F.3d 1352 (Fed. Cir. 1999). This decision was heard by a three judge panel consisting of Judges Plager, Cleverger and Rader.
95. More specifically, “[w]hen a caller makes a direct-dialed long-distance telephone call, a switch (which may be a switch in the interexchange network) monitors and records data related to the call, generating [a] message record. . . . These message records are then transmitted from the switch to a message accumulation system for processing and billing. . . . The invention of the ‘184 patent calls for the addition of a data field into a standard message record to indicate whether a call involves a particular [primary long distance carrier] (the ‘PIC indicator’). . . . The PIC indicator enables [long distance carriers such as AT&T or Excel] to provide differential billing for calls on the basis of the identified PIC.” 172 F.3d at 1354.

96. 172 F.3d at 1355.
97. See generally 172 F.3d at 1355.
98. 172 F.3d at 1355, quoting *Diehr* at 450 U.S. at 185.
99. “Courts have used the terms ‘mathematical algorithm,’ ‘mathematical formula,’ and ‘mathematical equation,’ to describe types of nonstatutory mathematical subject matter without explaining whether the terms are interchangeable or different. Even assuming the words connote the same concept, there is considerable question as to exactly what the concept encompasses.” 172 F.3d at 1356.
100. 172 F.3d at 1356 (emphasis added).
101. Specifically, the court stated that “[t]he *State Street* formulation, that a mathematical algorithm may be an integral part of patentable subject matter such as a machine or process if the claimed invention as a whole is applied in a ‘useful’ manner, follows the approach taken by this court en banc in *In re Alappat*, . . .” 172 F.3d 1357 (emphasis added). The court further stated that “[w]hether stated implicitly or explicitly, we consider the scope of § 101 to be the same regardless of the form—machine or process—in which a particular claim is drafted.” 172 F.3d at 1357.
102. 172 F.3d at 1358 (emphasis added).
103. 172 F.3d at 1358–1359 (additional emphasis added).
104. *E.g.*, in the Board of Patent Appeals and Interferences opinion of *Ex Parte Bilski*, the Board appeared to struggle to determine the proper test for a § 101 analysis, and ended up covering its bases and asserting that the claims failed under multiple tests. While it did ultimately conclude in view of Supreme Court precedent that the proper “definition of a ‘process’ requires a transformation of physical subject matter from one state to another,” it also stated that “[i]t would be helpful if the Federal Circuit would address this question directly.” *Ex parte Bilski*, No. 2002–2257, 2006 WL 5738364 (BPAI Sept. 26, 2006) (“Board Decision”) at 64.
105. See, *e.g.*, Schallop, “Software Patent Applications Directed to Business and Mathematical Processing Applications Highlight the Tension Between *State Street* and *Benson*,” *Rutgers Computer and Technology Law Journal*, 26 RUCTLJ 89 (1999).
106. A good, widely workable definition of “business method” appears to be elusive, and indeed the Federal Circuit in *State Street* did not explicitly say that the patent at issue was even a “business method.” Even the “prior users rights” statute relating to business method patents (35 U.S.C. § 273) lacks a definition of the term.
107. See, *e.g.*, Gleick, “Patently Absurd,” *The New York Times Magazine*, March 12, 2000; “Leading Charities Take Stand Against Business Method Patents,” *Nonprofit Innovation Alliance*, March 21, 2005.
108. The PTO classifies each patent into one or more technology classes or subclasses. In particular, class 705 is entitled “Data Processing: Financial, Business Practice, Management, or Cost/Price Determination.” For a discussion on this initiative and other related matters, see the USPTO White Paper entitled “Automated Financial Or Management Data Processing Methods (Business Methods)” currently at URL <http://www.uspto.gov/web/menu/busmethp/index.html>.
109. H.R. 5364, 106th Congress, 2nd Session.
110. See Statement of the Introduction of the Business Method Improvement Act of 2000 by Representative Howard Berman, October 3, 2000.
111. The legislation proposes amending 35 U.S.C. Section 100 by adding at the end the following:  
“(f) The term ‘business method’ means—  
“(1) a method of—  
“(A) administering, managing, or otherwise operating an enterprise or organization, including a technique used in doing or conducting business; or  
“(B) processing financial data;  
“(2) any technique used in athletics, instruction, or personal skills; and  
“(3) any computer-assisted implementation of a method described in paragraph (1) or a technique described in paragraph (2).”
112. Some of these proposed changes included reducing the burden of proving invalidity of a patent in court to only a “preponderance of the evidence,” and presuming invalid those claims directed to “business methods” that differ from the prior art only by use of a computer.
113. The Report is entitled “To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy, which can currently be found at [www.ftc.gov/os/2003/10/innovationrpt.pdf](http://www.ftc.gov/os/2003/10/innovationrpt.pdf).
114. See “To Promote Innovation” at Chapter 4, page 43.
115. *eBay v. MercExchange*, 547 U.S. 388 (2006).
116. 547 U.S. at 397. Justices Stevens, Souter and Breyer also joined in this opinion.
117. *LabCorp v. Metabolite*, 548 U.S. 124 (2006).
118. See, Brief for the United States as Amicus Curiae, *LabCorp v. Metabolite*, August, 2005, p.5 (“Whether [the invention at issue] is patentable may depend in part on facts that are not well developed in the record, in large measure because the validity of [the claim at issue] under the natural phenomenon doctrine was neither pressed nor passed upon below. The petition should therefore be denied.”)
119. 548 U.S. at 136.
120. See 548 U.S. at 136–137.
121. See, *e.g.*, *Quanta Comp., Inc. v. LG Elecs., Inc.*, 128 S. Ct. 2109 (2008), *KSR Intl. Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), *Microsoft Corp. v. AT & T Corp.*, 550 U.S. 437 (2007), *Medimmune, Inc. v. Genentech, Inc.*, 549 U.S. 118 (2007), *Ebay, Inc. v. Mercexchange, L.L.C.*, 547 U.S. 388 (2006).
122. *In re Comiskey*, 499 F.3d 1365 (Fed. Cir. 2007).
123. Specifically, the court noted that method “claims 1 and 32 do not reference, and the parties agree that these claims do not require, the use of a mechanical device such as a computer.” 499 F.3d at 1369.

124. See 499 F.3d at 1371.
125. 499 F.3d at 1374. Given that the definition of “business method” has not been made clear, as indicated above (nor was it discussed in the opinion), it is not clear why the Federal Circuit would bother characterizing the claims as a “business method.” Perhaps the court hoped it would act as a signal to the Supreme Court (in view of the *eBay* decision) that the Federal Circuit was addressing the business method patent “issue.”
126. 499 F.3d at 1374.
127. See, 499 F.3d at 1379.
128. See, e.g., 499 F.3d at 1378, n.12.
129. 499 F.3d at 1377, citing *Benson*, 409 U.S. at 67 (emphasis in original).
130. Specifically, the court stated that “Supreme Court decisions after the 1952 Patent Act have rejected a ‘purely literal reading’ of the process provision and emphasized that not every ‘process’ is patentable.” 499 F.3d at 1375.
131. 499 F.3d at 1375, citing *Gottschalk v. Benson*, 409 U.S. 63, 64.
132. 499 F.3d at 1376 (emphasis added).
133. 499 F.3d at 1376 (emphasis added), citing PTO Supp. Br. 4 (quoting *Flook*, 437 U.S. at 588 n.9).
134. 449 F.3d at 1378 (emphasis added).
135. 449 F.3d 1377 (emphasis added). Indeed, as indicated above, the claim at issue in *State Street* was a machine claim.
136. See 449 F.3d 1377, n.14.
137. 449 F.3d at 1379 (emphasis added).
138. 449 F.3d at 1379. In particular, with regard to the term “module,” the court cited Alan Freedman, *The Computer Glossary* 268 (8th ed.1998), defining module as “[a] self-contained hardware or software component that interacts with a larger system.” That same reference defined “database” as “any electronically-stored collection of data.”
139. 499 F.3d at 1379.
140. Specifically, the court stated that “the mere use of the machine to collect data necessary for application of the mental process may not make the claim patentable subject matter, . . .” 499 F.3d at 1380.
141. 499 F.3d at 1380.
142. 499 F.3d at 1380.
143. 499 F.3d at 1380 (emphasis added).
144. See *Ex parte Bilski*, No. 2002-2257, 2006 WL 5738364 (BPAI Sept. 26, 2006) slip op. (“Board Decision”) at p.2, where claim 1 is reproduced: “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.”
145. 545 F.3d at 950, citing Board Decision, slip op. at 3.
146. The Board indicated that there can be patent-eligible subject matter “ ‘if there is a transformation of physical subject matter from one state to another.’ ” 545 F.3d at 950, citing Board Decision, slip op. at 4. The Board then stated that “Applicants’ claims do not involve any patent-eligible transformation, holding that transformation of ‘non-physical financial risks and legal liabilities of the commodity provider, the consumer, and the market participants’ is not patent-eligible subject matter.” 545 F.3d at 950, citing Board Decision, slip op. at 43.
147. “[T]he Board held that Applicants’ process as claimed did not produce a ‘useful, concrete and tangible result,’ and for this reason as well was not drawn to patent-eligible subject matter.” 545 F.3d at 950, citing Board Decision, slip op. at 49-50.
148. Unlike the case in *LabCorp* and *Comiskey*, *Bilski* is a case in which the decisive reviewing court actually received a lower court/Board ruling in which § 101 had been considered as an issue.
149. 264 Fed. Appx. 896 (C.A. Fed. 2008).
150. See 264 Fed. Appx. 896 (C.A. Fed. 2008).
151. The two *amici* that presented were Financial Services Industry (FSI) and Regulatory Data Corp (RDC).
152. 545 F.3d at 950. In fact, the examiner had indicated that Applicant had admitted that “the steps of the method need not be performed on a computer [and there was] no disclosure of a computer or any other means to carry out the invention, . . .” Board Decision, slip op. at 4.
153. 545 F.3d at 950.
154. 545 F.3d at 950 (emphasis added).
155. Clearly, given the type of claimed subject matter and lack of a computer, it is evident at this point that this situation is quite similar to *Comiskey*.
156. 545 F.3d at 952, citing *Diehr*, 450 U.S. at 185.
157. According to the court, “[a]s used in this opinion, ‘fundamental principles’ means ‘laws of nature, natural phenomena, and abstract ideas.’ 545 F.3d at 952, n.5.
158. 545 F.3d at 952, citing *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948)
159. 545 F.3d at 952 (emphasis added), citing *Benson*, 409 U.S. at 67.
160. 545 F.3d at 952 (emphasis added).
161. 545 F.3d at 952 (emphasis added).
162. See 545 F.3d at 965, stating that regarding *Comiskey*, “[w]e concluded that the claims were instead drawn to the ‘mental process’ of arbitrating disputes, and that claims to such an ‘application of [only] human intelligence to the solution of practical problems’ is no more than a claim to a fundamental

- principle.” *Comiskey* at 1377-79 (quoting *Benson*, 409 U.S. at 67 . . .)” (emphasis added).
163. Specifically, the court stated that “*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.” 545 F.3d at 953.
164. 545 F.3d at 954.
165. 545 F.3d at 954.
166. Specifically, the court stated that “[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.” 545 F.3d at 954.
167. Specifically, the court quoted *Benson* for the statement that “[i]t is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a ‘different state or thing.’ We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.” 545 F.3d at 956, citing *Benson*, 409 U.S. at 71.
168. *See* 545 F.3d at 959.
169. 545 F.3d at 959, n.19 (emphasis added).
170. 545 F.3d at 959.
171. 545 F.3d at 960, citing *State Street*, 149 F.3d 1375-1376.
172. *See* 545 F.3d at 960, n.23.
173. *See* 545 F.3d at 960.
174. 545 F.3d at 960.
175. 545 F.3d at 960-961.
176. 545 F.3d at 962.
177. While the scope of what constitutes a “meaningful limit” is far from clear, the court may have been contemplating the “difficult case” it had indicated *Benson* presents under its own test, where a process that operated on a machine/computer was still held to be ineligible subject matter, since the process had no utility other than operating on the computer. *See* 545 F.3d at 955. Thus, “meaningful” may end up meaning that despite the claim being tied to a particular machine, there must nonetheless be no preemption of the fundamental principle as a practical matter. Future interpretations of this is but one indication that the Federal Circuit’s incarnation of the machine-or-transformation “test” is far from air-tight, and leaves many issues unanswered.
178. 545 F.3d at 962. Regarding the term “extra-solution,” the court had noted that “[a]lthough the [Supreme] Court spoke of ‘postsolution’ activity, we have recognized that the Court’s reasoning is equally applicable to any insignificant extra-solution activity regardless of where and when it appears in the claimed process.” 545 F.3d at 957.
179. 545 F.3d at 962.
180. 545 F.3d at 962.
181. 545 F.3d at 962.
182. 545 F.3d at 962. Specifically, in *Abele*, a broad independent claim reciting a process of graphically displaying variances of data from average values was found unpatentable. *See Abele* 684 F.2d at 909.
183. 545 F.3d at 962. (emphasis added). Specifically, the court noted that “we held one of *Abele*’s dependent claims to be drawn to patent-eligible subject matter where it specified that ‘said data is X-ray attenuation data produced in a two dimensional field by a computed tomography scanner.’ *Abele*, 684 F.2d at 908-09. This data clearly represented physical and tangible objects, namely the structure of bones, organs, and other body tissues.” 545 F.3d at 962-963.
184. 545 F.3d at 963.
185. Just as for the previous decisions of *Taner* and *Arrhythmia*, which related to data representing something physical, it was not entirely clear why the transformation of data representing something physical constituted “converting one physical thing into another physical thing,” much less why the so-called physical aspect of the transformed data had to even be a requirement to show the existence of patent-eligible subject matter.
186. 545 F.3d at 962.
187. 545 F.3d at 963.
188. 545 F.3d at 963-964 (emphasis added).
189. 545 F.3d at 965 (emphasis added).
190. 545 F.3d at 965.
191. *In re Meyer*, 688 F.2d 789 (CCPA 1982).
192. 545 F.3d at 965, citing *Meyer* at 790 and 796.
193. 545 F.3d at 965 (emphasis added).
194. 545 F.3d at 966.
195. *See, e.g.*, the court’s discussion of the “broad independent claim” in *Abele* (*see* 545 F.3d at 962) and the general discussion in *Meyer* (*see* 545 F.3d at 965).
196. 545 F.3d 957.
197. 545 F.3d 958.
198. 545 F.3d 959.
199. Specifically, she believed that “the [Supreme] Court did not propose the ‘machine-or-transformation’ test that this court now insists was ‘enunciated’ in *Diehr* as a specific limit to Section 101.” 545 F.3d at 981.
200. *See, e.g.*, 545 F.3d at 993 and at 976-977.
201. 545 F.3d at 993.
202. 545 F.3d at 1015. Examples of the “unanswerable questions” provided by Judge Rader included: “What form or amount of ‘transformation’ suffices? When is a ‘representative’ of a physical object sufficiently linked to that object

to satisfy the transformation test? (e.g., Does only vital sign data taken directly from a patient qualify, or can population data derived in part from statistics and extrapolation be used?) What link to a machine is sufficient to invoke the 'or machine' prong?" *Id.*

203. Specifically, he stated that "[t]he Supreme Court has counseled that the only limits on eligibility are inventions that embrace natural laws, natural phenomena, and abstract ideas." 545 F.3d at 1012.
204. 545 F.3d at 1011 (emphasis added).
205. Specifically, Judge Rader asserted that "[w]ith all of its legal sophistry, the court's new test for eligibility today does not answer the most fundamental question of all: *why* would the expansive language of section 101 preclude protection of innovation simply because it is not transformational or properly linked to a machine (whatever that means)? Stated even more simply, why should some categories of invention deserve no protection?" 545 F.3d at 1012 (emphases in original).
206. *See* 545 F.3d at 1008-1009.
207. *See* 545 F.3d at 998.
208. 545 F.3d at 1009.
209. 545 F.3d at 966.
210. Ex Parte Halligan, No. 2008-1588 (BPAI Nov. 24, 2008).
211. *Halligan*, slip op. at 2.
212. *Halligan*, slip op. at 26.
213. *Halligan*, slip op. at 26.
214. *See Halligan*, slip op. at 26. The Board also found that the claims "fail" the first prong of the test, since no computer was involved.
215. *Halligan*, slip op. at 26, n.3.
216. *Halligan*, slip op. at 26.
217. *Halligan*, slip op. at 27.
218. There was also the Board opinion of Ex Parte Godwin, No. 2008-0130, (BPAI Nov. 13, 2008), in which no physical transformation of data was held to have occurred.
219. *See, e.g., In re Walter, supra*, in which the court affirmed that means-plus-function "apparatus" claims should be treated as method claims, which were then found patent-ineligible under § 101. Specifically, the court stated regarding those apparatus claims, "[i]n such cases the burden must be placed on the applicant to demonstrate that the claims are truly drawn to [a] specific apparatus distinct from [another] apparatus capable of performing the identical functions. If this burden has not been discharged, the apparatus claim will be treated as if it were drawn to the method or process which encompasses all of the claimed 'means.'" *Id.* at 768.
220. Of course, obviousness must still be avoided.

Reprinted from *The Computer & Internet Lawyer*, February 2009, Volume 26, Number 2, pages 1 to 21,  
with permission from Aspen Publishers, Inc., a Wolters Kluwer business, New York, NY,  
1-800-638-8437, [www.aspenpublishers.com](http://www.aspenpublishers.com).