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US process claims limited in closely-watched appeal decision



By **Brian D. Hickman** (top) and **Christopher J. Palermo***

In a closely-watched decision, the US Court of Appeals for the Federal Circuit, sitting *en banc*, affirmed a two-part test limiting the availability of process patent claims not tied to tangible apparatus or involved in transforming articles. *In re Bernard Bilski et al.*, No. 2007-1130, 30 October, 2008 (full copy at www.cafc.uscourts.gov/opinions/07-1130.pdf). This article explores the holding in depth and the meaning for practitioners of the two-part test set forth in the decision.

Prior to *Bilski*, some viewed US patent-eligibility law governing processes as in a state of utter chaos. The cases that addressed patent eligibility issues had introduced so many distinct 'factors', 'tests' and 'considerations' for deciding patent-eligibility that it was not clear to anyone, including the examiners tasked with applying those tests, which tests governed any given situation.

In an effort to assist examiners, the USPTO promulgated *Patent-Eligibility Guidelines* in 2005. However, rather than clarifying the issues, the *Guidelines* merely brought to light how truly chaotic the state of the law had become. For example, extrapolating from the relevant case law, the *Guidelines* contain express or implicit support for 35 USC §101 rejections based on any of the following:

- The invention recited in the claim does not fall into any of the four statutory categories.
- The invention recited in the claim does not satisfy a utility requirement of section 101, or does not have a specific utility, or does not have a substantial utility, or does not have a credible utility.
- The invention recited in the claim is no more than an abstract idea, a law of nature, a natural phenomenon, or a mathematical algorithm, or a signal.
- The result produced by the claimed invention is not useful, not tangible, is abstract, is not concrete, is not substantially repeatable, is not 'real-world,' or is not a practical application of an abstract idea, law of nature, or natural phenomenon; patenting the claimed invention would preempt an abstract idea, law of nature, or natural phenomenon.
- The claim does not specifically recite a practical application of the claimed invention; the invention recited in the claim is not directed to the technological arts; or

the invention recited in the claim solves a purely mathematical problem.

Further, the *Guidelines* did not provide any clear guidance as to how these tests related to each other. Did a claimed invention have to pass all of them, or was passing any one of them sufficient? What should be done about a claimed invention that passes some, but fails others? In the midst of this confusion, examiners tended to exercise their own judgement as to how the tests should be applied to any given claimed invention. Frequently, examiners would give rejections that stitched together multiple grounds, of which the original *Bilski* rejection is a prime example, involving at least five tests:

The invention is not implemented on a specific apparatus and merely manipulates [an] abstract idea and solves a purely mathematical problem without any limitation to a practical application, therefore, the invention is not directed to the technological arts. (Emphasis added.)

Recognizing the chaos, the *Bilski* court assumed the task of formulating a single test to govern all patent-eligibility determinations for process claims. The court exerted great effort to make the test consistent with the outcome and reasoning of all previous Supreme Court patent-eligibility cases involving process inventions, consistent with the outcome (though not necessarily the reasoning) of all previous Federal Circuit patent-eligibility cases involving process inventions, and as simple and objective as possible. The result is what the Court refers to as the 'machine-or-transformation' test:

A claimed process is surely patent-eligible under §101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.

Having announced the test, the court proceeds to:

- explain how the test is supported by Supreme Court case law.

- explain how the test is consistent with the outcome of prior cases¹,
- repudiate competing patent-eligibility tests², and
- establish the machine-or-transformation test as the exclusive test for determining the patent-eligibility for claimed processes³.

The dispute in *Bilski* involved far more than one patent applicant and the government. The appeal attracted wide attention in the Bar and among advocacy groups. For example, some of the dozens of groups that submitted 'friend-of-the-court' or *amicus* briefs urging various outcomes included the American Civil Liberties Union, the American Institute of Certified Public Accountants, the Consumers Union, 'End Software Patents,' and a group of law school professors. Several of these groups urged the court to adopt 'a broad exclusion over software or any other such category of subject-matter,' but the court expressly declined to do so.

The machine-or-transformation test

As initially set forth in *Bilski*, the machine-or-transformation test is:

A claimed process is surely patent-eligible under §101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing. [Emphasis in original.]

Later in the opinion, the court states that nothing will save a process claim that fails the machine-or-transformation test.⁴ Therefore, the test is perhaps better stated as: 'A claimed process is patent-eligible under §101 if and only if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.'

However, *Bilski* does not and cannot resolve what subject-matter is and is not covered under each of the two parts of the machine-or-transformation test. Practitioners will have to consider that issue carefully in preparing any newly filed process claim patent application in the US. Further, UK practitioners preparing new applications for filing in Europe or the UK-IPO, when filing later in the US is a possibility, will need carefully to consider the *Bilski* test in drafting not just the claims, but also the description, to ensure adequate support of a particular machine or apparatus, or transformation and adequate description that shows process steps tied to the machine or apparatus or that shows process steps performing transformation.

The 'machine' part of the *Bilski* test

While the 'machine' part is probably the part that will prove most relevant to computer-implemented inventions, the *Bilski* court intentionally avoided elaborating on this part. For example, the court said:

We leave to future cases the elaboration of the precise contours of machine implementations, as well as the

answers to particular questions, such as whether or when recitation of a computer suffices to tie a process claim to a particular machine... We also note that the process claim at issue in this appeal is not, in any event, a software claim. Thus, the facts here would be largely unhelpful in illuminating the distinctions between those software claims that are patent-eligible and those that are not.

To justify its failure to elaborate on this part of the test, the court pointed out that *Bilski* effectively conceded that this part was not satisfied.⁵ However, even though the court intentionally avoided discussing this part, one can extrapolate on how this part may be applied based on *Bilski's* discussion of prior cases.

Specifically, to justify its adoption of the machine-or-transformation test as the exclusive patent-eligibility test for processes, the *Bilski* court was obliged to show how the machine-or-transformation test would lead to correct outcomes if retroactively applied to prior cases involving process claims. In performing its retroactive application of the machine-or-transformation test, the court could not avoid saying something about how the 'machine' part would play out against the facts of those prior cases.

Unfortunately, *Bilski's* retroactive application of the machine-or-transformation test to prior cases involving processes will be a source of continuing controversy for reasons not entirely the fault of the *Bilski* court. For example, prior US Supreme Court decisions have numerous internal inconsistencies that led to the very confusion that the *Bilski* court attempted to resolve, and because of its status as subordinate to the Supreme Court, the *Bilski* court was not in a position to question the outcome of the Supreme Court cases, and therefore must provide some explanation, however flimsy, of how the outcome of those cases is consistent with the machine-or-transformation test.⁶

The court specifically addressed the prior Supreme Court cases of *Diamond v Diehr*, *Gottschalk v Benson*, and *Parker v Flook*. The court's application of the 'tied to a specific machine' test to *Diehr* is not particularly helpful, because the court rightfully concludes, with minimal elaboration, that *Diehr's* computerized rubber curing apparatus satisfied the machine part. Turning to *Benson* and *Flook*, the court noted that:

- the use of the specific machine 'must impose meaningful limits on the claim's scope';
- the involvement of the machine 'must not merely be insignificant extra-solution activity'; and
- a field-of-use limitation does not necessarily tie a method to a machine.

With respect to *Flook*, the court noted that *Flook's* claim 'did not include any limitations specifying... the mechanisms for monitoring of process variables, or the means of setting off an alarm or adjusting an alarm system.'

However, the *Benson* case presented serious problems. In every patent-eligibility case after *Benson*, the courts

have had to find a way to deal with the fact that the *Benson* court erred in the application of the very test that it established. The *Bilski* court recognized this problem, but was not in a position to question the outcome of the higher court. Instead, the *Bilski* court said:

Interestingly, *Benson* presents a difficult case under its own test in that the claimed process operated on a machine, a digital computer, but was still held to be ineligible subject-matter.

While acknowledging some of the inconsistencies of *Benson* in a footnote, the *Bilski* court felt obliged to announce what amounts to an exception to the machine-or-transformation test:

However, in *Benson*, the limitations tying the process to a computer were not actually limiting because the fundamental principle at issue, a particular algorithm, had no utility other than operating on a digital computer. (*Benson*, 409 US at 71-72). Thus, the claim's tie to a digital computer did not reduce the pre-emptive footprint of the claim since all uses of the algorithm were still covered by the claim. [Emphasis added.]

What, if anything, later courts will do with this '*Benson* exception' to the machine part of the machine-or-transformation rule is difficult to predict. If taken at face value, this exception could swallow the 'machine' part of the test for a large category of computer-related inventions. For example, what use is a new communication protocol, a new type of B-tree index, or a new user interface widget, 'other than operating on a digital computer'?

We believe that the *Bilski* court created the *Benson* exception solely because it felt obliged to reconcile *Benson*'s holding with *Benson*'s reasoning.⁷ Having done so, the Federal Circuit will probably find a way to limit the *Benson* exception to the facts of *Benson*. Whether the USPTO will also do so, in day-to-day examining decisions, is a serious question that could prove costly and time-consuming to applicants.

In contrast to its deferential treatment of the Supreme Court cases, the *Bilski* court overrules all prior decisions of the Federal Circuit to the extent that those decisions are inconsistent with the *Bilski* decision.⁸ In its discussion of the *Comiskey* and *AT&T* cases, the court stated that:

Case references

Diamond v Diehr 450 U.S. 175 (1981)

Gottschalk v Benson 409 U.S. 63 (1972)

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

In re Stephen W. Comiskey, 499 F.3d 1365 (Fed. Cir. 2007)

AT&T v Microsoft Corp., 414 F.3d 1366 (Fed. Cir. 2005)

In re Schrader, 22 F.3d 290 (Fed. Cir. 1994)

In re Meyer, 688 F.2d 789 (CCPA 1982)

In re Abele, 684 F.2d 902 (CCPA 1982)

State Street Bank & Trust Co. v Signature Financial Group, Inc., 149 F.3d 1368 (Fed. Cir. 1998)

A claim that purportedly lacks any 'physical steps' but is still tied to a machine... passes muster under §101... A claimed process wherein all of the process steps may be⁹ performed entirely in the human mind is obviously not tied to any machine...

In its discussion of *Schrader* and *Meyer*, the court stated that the claims at issue recited 'no specific machine or apparatus'. The court did not elaborate.

In its discussion of *Comiskey*, the *Bilski* court noted that *Comiskey* had 'conceded that these claims do not require a machine'. Therefore, the court did not elaborate.

In the discussion of the seminal *State Street Bank* decision, the *Bilski* court noted that the claims were in 'means-plus-function' format, so they fell into a statutory category (machine, rather than process) to which the machine-or-transformation test does not even apply. The implication is that means-plus-function claims automatically qualify as patentable subject-matter. Of course, under US law a means-plus-function claim must find support in the description of structure corresponding to each means. However, if such structure is disclosed in the specification, then we suggest that means claims should be included in every post-*Bilski* case dealing with a process that is implemented using a machine, apparatus, or structure.

The transformation part

The transformation part of the *Bilski* eligibility test focuses on whether a claimed process 'transforms a particular article into a different state or thing'. With respect to the transformation question, the court gave the following general guidelines:

- The transformation of the article 'must impose meaningful limits on the claim's scope'.
- The involvement of the transformation in the claimed process 'must not merely be insignificant extra-resolution activity'.
- This transformation must be **central to the purpose of the claimed process**.

After these general comments, the court delved more specifically into the question of what 'transformations of articles' satisfy the transformation part of the test.¹⁰

The *Bilski* court starts out with the easy case, stating that 'it is virtually self-evident that a process for a chemical or physical transformation of physical objects or substances is patent-eligible subject-matter.' The more difficult question, the court recognizes, is raised by situations in which the transformation is not 'chemical or physical', and when the thing being transformed is not a 'physical object or substance'. To begin addressing these more difficult cases, the court poses the question:

Which, if any, of [processes that involve the manipulation of abstract constructs] qualify as a transformation or

US process claims

deduction of an article into a different state or thing constituting patent-eligible subject matter?

Bilski uses the facts of a prior case, *Abele*, to explain that:

- Displaying data, without saying what the data represents, or how it was obtained, does not satisfy the transformation part.
- Adding a limitation that says what the data represents, and from where it was obtained¹¹, causes the claim to satisfy the transformation part.
- Electronic transformation of the data itself into a visual

depiction in *Abele* was sufficient; the claim was not required to involve any transformation of the underlying physical object that the data represented.

- 'A claim that is limited to a visual depiction that represents specific physical object or substances' satisfies the transformation part.

Based on these comments, it may be sufficient for the claim to state **what the data represents, or how the data is obtained**, but it is not sufficient to merely recite a step in which the data is obtained.¹²

The transformation test is likely to be the subject of

Notes

1. In our opinion, the court does not always succeed. For example, the *O'Reilly v Morse* invention clearly transformed the state of an article when it printed characters at a distance, yet the outcome of that the claimed method was not patent-eligible. However, given that the outcomes of prior cases were not themselves consistent, there is no rule that could be universally consistent with those outcomes.
2. For example, the *Bilski* court states: 'those portions of our opinions in *State Street and AT&T* relying solely on a 'useful, concrete and tangible result' analysis should no longer be relied on'.
3. 'We do not consider the word 'clue' to indicate that the machine-or-implementation (*sic*) test is optional or merely advisory. Rather, the Court described it as *the* clue, not merely 'a' clue.' [emphasis in original] 'At present, however, and certainly for the present case, we see no need for such a departure and reaffirm that the machine-or-transformation test, properly applied, is the governing test for determining patent eligibility of a process under § 101.... The machine-or-transformation test is the only applicable test and must be applied, in light of the guidance provided by the Supreme Court and this court, when evaluating the patent-eligibility of process claims.'
4. For example, the court states, 'Even a claim that recites 'physical steps' but neither recites a particular machine or apparatus, nor transforms any article into a different state or thing, is not drawn to patent-eligible subject matter.'
5. 'As to machine implementation, Applicants themselves admit that the language of claim 1 does not limit any process step to any specific machine or apparatus. See Appellants' Br. at 11. As a result, issues specific to the machine implementation part of the test are not before us today.'
6. Because the *Bilski* court was not in a position to question the outcome of the Supreme Court cases, the *Bilski* court may not whole-heartedly believe the reasons it gives when arguing that the machine-or-transformation test is consistent with the outcome of those cases. Consequently, it is unclear how much weight one should give to the statements that the *Bilski* court makes during the discussion in which the court applies the machine-or-transformation test to the facts of those cases.
7. An impossible task, in our opinion, because the two are not rationally reconcilable.
8. 'To the extent that some of the reasoning in these decisions relied on considerations or tests, such as 'useful, concrete and tangible result,' that are no longer valid as explained above, those aspects of the decisions should no longer be relied on.'
9. Here, the terms 'may be' are ambiguous. If a claim explicitly says that the steps are performed by a particular machine, yet the steps themselves are for acts that can also be performed mentally, are the claimed steps 'process steps that may be performed entirely in the human mind'?
10. Arguably, the transformation part involves two distinct but related questions: what 'articles' qualify, and what 'transformations' qualify. However, the *Bilski* court declined to bifurcate the transformation part in this manner. It appears from the subsequent discussion that virtually any transformation is sufficient, so the question primarily hinges on the nature of the article itself.
11. In the *Abele* case, the data was 'X-ray attenuation data produced in a two dimensional field by a computed tomography scanner'.
12. 'A requirement simply that data inputs be gathered – without specifying how – is a meaningless limit on a claim to an algorithm because every algorithm inherently requires the gathering of data inputs.'
13. In 1778, John Knox was awarded a patent on 'Plan for assurances on lives of persons from 10 to 80 years of age'.
14. The primary weakness of Newman's argument is that her proposed test would lead to very different outcomes in the majority of the §101 cases. Newman does not have a problem with that because she also dissented in many of those cases. However, if there is going to be any credibility to the court's contention that it is merely clarifying a test that has been consistently applied in the past, they cannot adopt Newman's test.
15. The fact that Newman and Rader propose similar tests, but reach different conclusions, supports the majority's contention that the 'abstract idea' test is too imprecise.

intense study by applicants and counsel who are prosecuting pending applications in which a process involves intangibles or uses a general-purpose computer. (Some commentators do not necessarily agree that a general-purpose computer cannot be a 'particular machine or apparatus' under the first part of the test; a future case will have to resolve that.) For example, the *Bilski* court observed:

Importantly, however, the claim is not limited to transactions involving actual commodities, and the application discloses that the recited transactions may simply involve options, *i.e.*, rights to purchase or sell the commodity at a particular price within a particular timeframe. [Emphasis added].

Why is the commodity/option distinction 'important' to this decision? Arguably, the distinction would only be important if it would change the outcome of the case. Thus, this statement may imply that if *Bilski's* claim was tied to transactions involving real commodities, the claim would satisfy one of the two parts of the machine-or-transformation test. Yet it is unclear how that could be so.

Limiting the *Bilski* claim to transactions involving actual commodities would do nothing towards tying the claim to a specific machine. Therefore, one must assume that the court is suggesting that such a limitation might cause the *Bilski* claim to satisfy the 'transformation' part of the test. However, the items involved in the *Bilski* transactions are not transformed in any way by the process recited in the *Bilski* claims (unless merely offering to sell an item is considered an adequate 'transformation' of the item).

Perhaps the implication is that the entire transformation part hinges on whether the articles involved in the claims 'represent specific physical objects', and has little to do with whether those objects (or the data that represents them) are actually transformed. If that is the case, the 'transformation part' should instead read: '(2) it recites steps involving a specific physical object.'

The concurring and dissenting opinions

Nine judges joined the majority opinion, which was filed by Judge Michel. Judges Dyke and Linn also filed a concurring opinion that argued that there is no inconsistency between the case law governing eligible subject-matter under the applicable statute (35 U.S.C. §101), and the legislative intent of §101. To support their position, they argue that §101 is rooted in eighteenth-century English common law. They then explain how the machine-or-transformation test is consistent with 'what processes were considered to be patentable in England at the time of the 1793 [US] Patent Act.' They conclude that all but one of the patented processes in 1793 would satisfy the machine-or-transformation test. (The one exception is, of course, an 'anomaly'¹³.)

Judge Newman's dissenting opinion argues that the machine-or-transformation test 'is contrary to statute and to explicit rulings of the Supreme Court and this court,'

and that 'process' has always been a distinct category of patentable invention, and not tied to either apparatus or transformation, as this court now holds.' Newman's dissent traces the history of patent processes even earlier than the concurring judges, and explains that 'business methods' have been the subject of patents throughout history, including many financial method patents granted in the US starting as early as 1799.

Newman also 'calls the bluff' of the majority, exposing with quotation after quotation the fact that the prior §101 cases did not apply the machine-or-transformation test. Newman also explains that *Bilski's* process is not a 'fundamental principle' or 'abstract idea', and *Bilski's* failure to satisfy the machine-or-transformation test does not mean that *Bilski's* process would preempt a fundamental principle. Newman's test for patent eligible subject-matter would be that a process invention that is not clearly a fundamental truth, law of nature, or abstract idea is eligible for examination for patentability.¹⁴ In Newman's opinion, the *Bilski* invention passes her test.

Judge Mayer's dissenting opinion argues that all 'methods of conducting business' are *per se* unpatentable. He would expressly overturn *State Street* and *AT&T*.

Judge Rader's dissenting opinion argues that the test should be: a process is patent-eligible if it is not directed to a law of nature, natural phenomena, or an abstract idea. In Rader's opinion, the *Bilski* invention is directed to an 'abstract idea', and therefore fails this test.¹⁵

Conclusions

While *Bilski* offers a needed dose of clarity to an ailing aspect of the US patent system, several issues remain unresolved. What exactly is a 'specific machine or apparatus'? In particular, in software patent cases, can a claim reciting a process that is performed on a general-purpose computer satisfy the test? For the second part of the test, is it sufficient to recite a process that transforms one dataset into a second dataset, if the datasets somehow relate to real-world articles but do not specifically represent the articles?

Will the USPTO apply the *Bilski* criteria conservatively, or mis-apply the tests in a new wave of rejections of claims? To avoid the cost of multiple rejections, applicants and their counsel should consider including as much description as possible of the particular machines, apparatus or other tangible things that are involved in a process claim. Applicants and counsel should also strive to set forth specific transformations of articles, or data or things representing the articles, in the description. Claims should be given a '*Bilski* review' before filing in the US, and pending claims should be reconsidered in light of the decision, which is likely to have significant effect on US practice for decades.

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